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# Math

# Daily Reteach Workbook

Grade 3

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Grade 3



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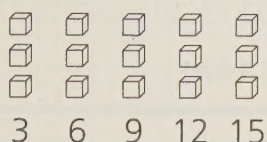
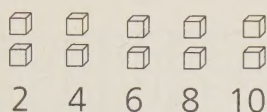
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# Counting and Number Patterns

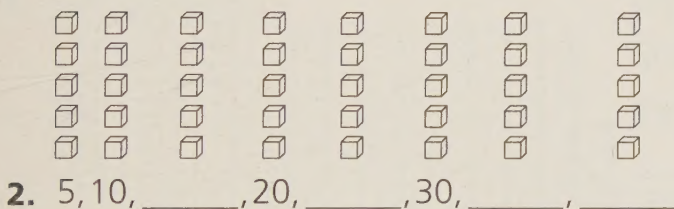
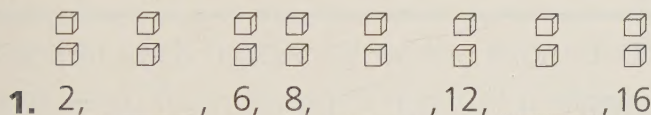
You can use number patterns to help you count.



**Even** numbers have 0, 2, 4, 6, or 8 in the ones place.

**Odd** numbers have 1, 3, 5, 7, or 9 in the ones place.

Find the missing numbers.



3. 3, 6, \_\_\_\_\_, 12, 15, \_\_\_\_\_, 21, \_\_\_\_\_

4. 10, 20, \_\_\_\_\_, 40, \_\_\_\_\_, 60, \_\_\_\_\_, \_\_\_\_\_

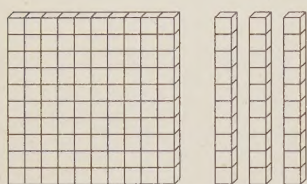
Circle the number in the ones place.

Write whether the number is odd or even.

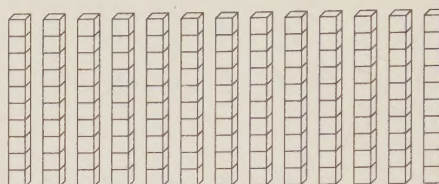
- |              |              |              |
|--------------|--------------|--------------|
| 5. 8 _____   | 6. 13 _____  | 7. 20 _____  |
| 8. 39 _____  | 9. 72 _____  | 10. 94 _____ |
| 11. 61 _____ | 12. 85 _____ | 13. 16 _____ |

# Explore Place Value

You can use models and place value charts to show numbers.  
Here are two ways to show 132.

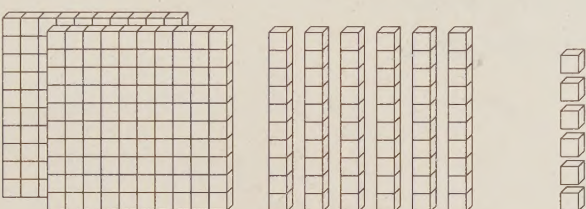


**1 hundred 3 tens 2 ones**

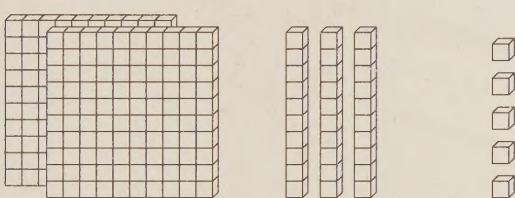


**13 tens 2 ones**

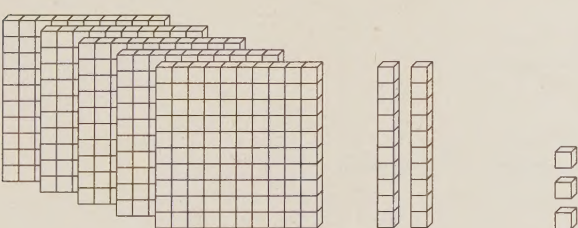
Write how many of each kind of models are shown. Then write the number.

1. 

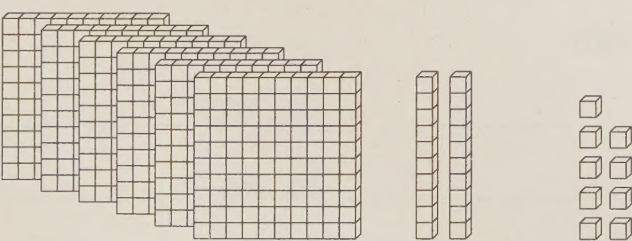
\_\_\_ hundreds    \_\_\_ tens    \_\_\_ ones    \_\_\_\_\_

2. 

\_\_\_ hundreds    \_\_\_ tens    \_\_\_ ones    \_\_\_\_\_

3. 

\_\_\_ hundreds    \_\_\_ tens    \_\_\_ ones    \_\_\_\_\_

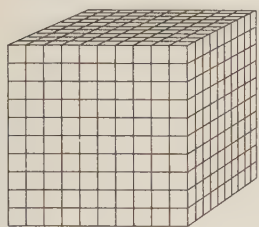
4. 

\_\_\_ hundreds    \_\_\_ tens    \_\_\_ ones    \_\_\_\_\_

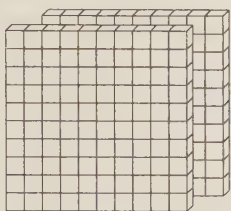
# Place Value Through Thousands

You can write numbers in expanded form, standard form, and word form.

The models show 1,234.



**1 thousand**



**2 hundreds**



**3 tens**



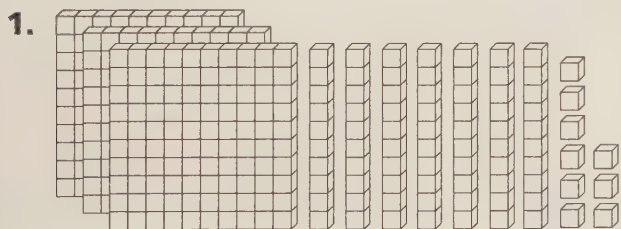
**4 ones**

Expanded Form:  $1,000 + 200 + 30 + 4$

Standard Form: 1,234

Word Form: one thousand, two hundred thirty-four

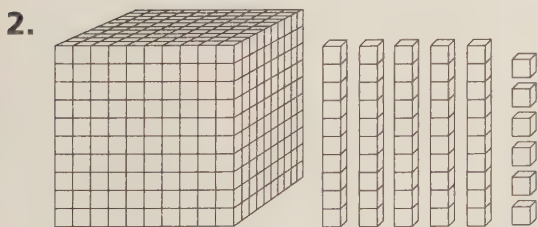
Look at each model. Write the expanded form, standard form, and word form for each number it shows.



Expanded form: \_\_\_\_\_

Standard form: \_\_\_\_\_

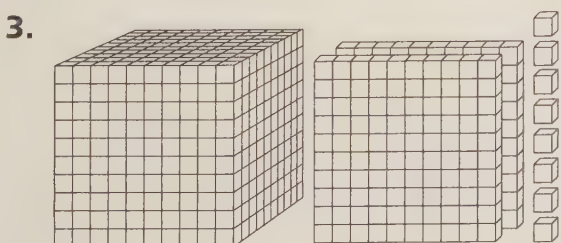
Word form: \_\_\_\_\_



Expanded form: \_\_\_\_\_

Standard form: \_\_\_\_\_

Word form: \_\_\_\_\_



Expanded form: \_\_\_\_\_

Standard form: \_\_\_\_\_

Word form: \_\_\_\_\_

# Place Value Through Hundred Thousands

You can use a chart to find the place value of each digit in a number. Look at the number in the chart below. Then see how to write the number in expanded form and in standard form.

| Thousands         |               |           | Ones     |      |      |
|-------------------|---------------|-----------|----------|------|------|
| Hundred Thousands | Ten Thousands | Thousands | Hundreds | Tens | Ones |
| 2                 | 7             | 8         | 6        | 3    | 5    |

Expanded Form:

$$200,000 + 70,000 + 8,000 + 600 + 30 + 5$$

(The place value of 7 is *ten thousands*. It has a value of 70,000.)

Standard Form: 278,635

Write the number **386,725** in a place-value chart. Then write the number in expanded form.

1.

| Thousands         |               |           | Ones     |      |      |
|-------------------|---------------|-----------|----------|------|------|
| Hundred Thousands | Ten Thousands | Thousands | Hundreds | Tens | Ones |
|                   |               |           |          |      |      |

Expanded Form:

Write the value of each underlined digit.

(Hint: Think about the expanded form of 562,847.)

2. 562,847 \_\_\_\_\_

3. 562,847 \_\_\_\_\_

4. 562,847 \_\_\_\_\_

5. 562,847 \_\_\_\_\_

6. 562,847 \_\_\_\_\_

7. 562,847 \_\_\_\_\_

Explore Money

When you buy something, make sure you get the right change. Suppose something you buy costs \$0.59.



You give \$1.00.  
How much change will you get?  
Count the coins you get back. Write the amount on the line.



Your change \_\_\_\_\_

Find the change. List the coins and bills.

| Cost | Amount Given | Change |
|------|--------------|--------|
| 1.   |              |        |
| 2.   |              |        |
| 3.   |              |        |

Look at problem 3 in the chart. Write the value of the change another way.

# Count Money and Make Change

You can count up to make change. Start with the cost. Then count up from the coin or bill with the least value to the coin or bill with the greatest value. Stop counting when you reach the amount given.



**Cost:** \$0.63



**Amount given:** \$1.00

**Cost**



Count up: \$0.63   \$0.64   \$0.65   \$0.75   \$1.00   The change is \$0.37.

Remember: Try to use the fewest coins and bills to make change.

Count up to find the amount of change.

**1.** Cost: \$0.87

Amount given: \$1.00

Count up: \_\_\_\_\_

The change is \_\_\_\_\_.

**2.** Cost: \$1.35

Amount given: \$2.00

Count up: \_\_\_\_\_

The change is \_\_\_\_\_.

**3.** Cost: \$2.69

Amount given: \$5.00

Count up: \_\_\_\_\_

The change is \_\_\_\_\_.

# Problem Solving: Skill

## Using the Four-Step Process

Allan's game piece is on box 40 of a game board. He moves it ahead 20 boxes two times. Where is his game piece now?

**Step 1****Read****Make sure you understand the problem.**

What do you know? Allan starts on \_\_\_\_\_. He moves his game piece ahead \_\_\_\_\_ boxes \_\_\_\_\_ times.

What do you need to find? \_\_\_\_\_

**Step 2****Plan****Make a plan.**

What strategy will you use?

\_\_\_\_\_

**Step 3****Solve****Carry out your plan.**

Start at 40. Count on 2 tens. Count on 2 more tens.

40, \_\_\_\_\_, \_\_\_\_\_

60, \_\_\_\_\_, \_\_\_\_\_

Allan's game piece is on box \_\_\_\_\_.

**Step 4****Look Back****Check your answer.**

Does your answer make sense?

Solve.

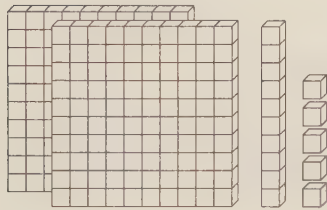
1. Pablo started a game with 650 points. He lost 200 points. How many points did he have at the end of the game?
- \_\_\_\_\_

2. Meg ends a game with 600 points. Ted has 300 points more than Meg. How many points does Ted have?
- \_\_\_\_\_

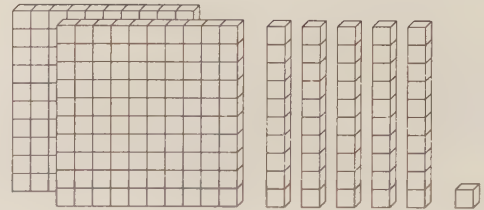
# Compare Numbers and Money

Which number is less, 215 or 251?

Look at the model for each number.



**215**



**251**

Compare the models.

Hundreds: 2

Tens: 1

Hundreds: 2 (The same for each model.)

Tens: 5 (Different for each model.)

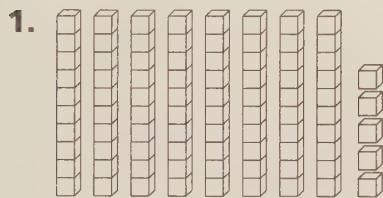
One ten is less than 5 tens.

Say: 215 **is less than** 251.

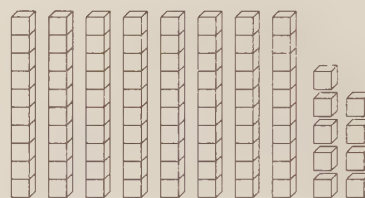
Write: 215      <      251

Write the number for each model. Then compare the numbers.

Write >, <, or =.



\_\_\_\_\_



\_\_\_\_\_



Compare. Write >, <, or =.

**2.** 678  876

**3.** 303  303

**4.** 731  931

**5.** 220  202

**6.** 600  600

**7.** 301  103

**8.** \$3.22  \$2.33

**9.** \$5.18  \$5.81

**10.** \$0.50  \$0.05

**11.** \$9.23  \$9.22

**12.** \$4.04  \$4.44

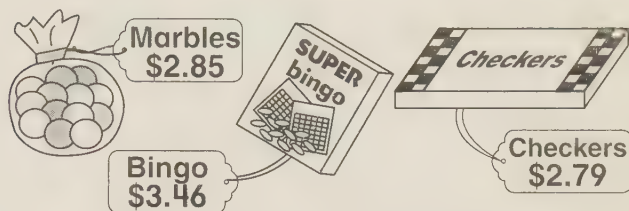
**13.** \$1.00  \$1.00

# Order Numbers and Money

Which toy costs most?

Which toy costs least?

To compare amounts of money, compare the dollars first and then the cents.



## Step 1

Compare the dollars.

\$2.79  
\$3.46 ← most dollars  
\$2.85      $3 > 2$

## Step 2

Compare the cents.

\$2.79  
\$2.85 ← more cents  
85 > 79

## Step 3

Put the amounts in order from most to least.

\$3.46  
\$2.85  
\$2.79

Write the numbers in order from least to greatest.

1. 3,425  
3,525  
3,527

\_\_\_\_\_

2. 1,690  
2,690  
1,900

\_\_\_\_\_

3. 8,800  
8,900  
7,900

\_\_\_\_\_

Write the numbers in order from greatest to least.

4. 7,101  
7,100  
8,100

\_\_\_\_\_

5. 4,689  
6,489  
8,496

\_\_\_\_\_

6. 5,942  
5,949  
5,492

\_\_\_\_\_

Write the amounts in order from greatest to least.

7. \$3.25  
\$3.95  
\$5.23

\_\_\_\_\_

8. \$1.75  
\$3.18  
\$1.83

\_\_\_\_\_

9. \$7.81  
\$8.41  
\$8.09

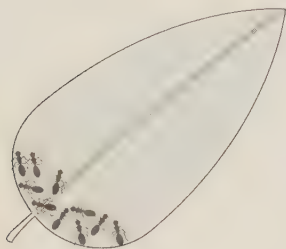
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# Estimate Quantities

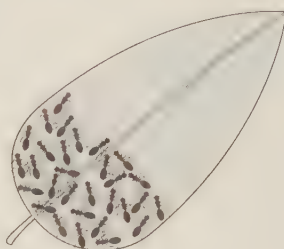
Sometimes you do not need to know an exact number.

You can give an estimate.

A benchmark number can help you estimate.



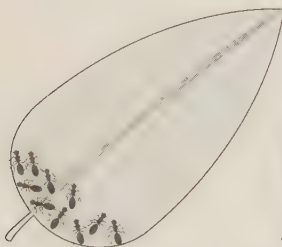
The leaf has 10 ants.



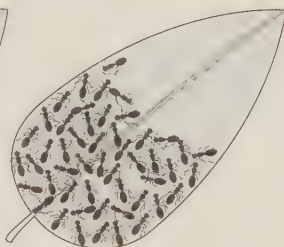
Using 10 as a benchmark number, this leaf has 30 ants.

Use the given benchmark number to estimate the number of ants on the right. Circle your estimate.

1.



10 ants

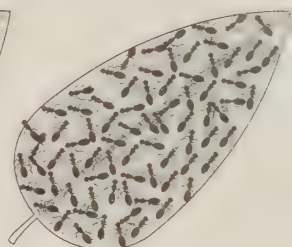


50 or 100

2.



20 ants



30 or 80

3.



5 ants



25 or 50

4.

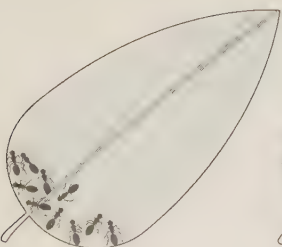


20 ants

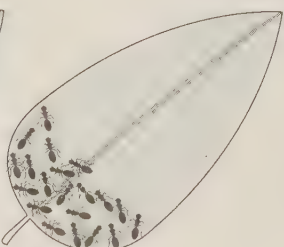


40 or 80

5.

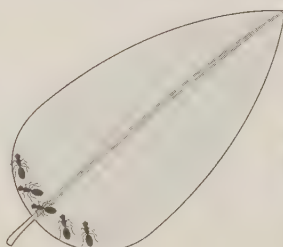


10 ants

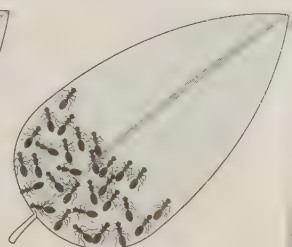


20 or 40

6.



5 ants



15 or 30

# Round to Tens and Hundreds

You can use a number line to help you round numbers. Round 448 to the nearest ten and to the nearest hundred.



448 is closer to 450 than to 440.

To the nearest ten, 448 rounds to 450.

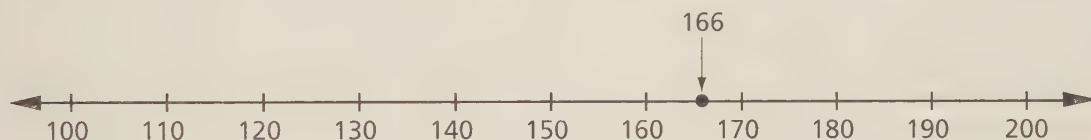
448 is closer to 400 than to 500.

To the nearest hundred, 448 rounds to 400.

Round each number to the nearest ten and nearest hundred.

Use the number line to help you.

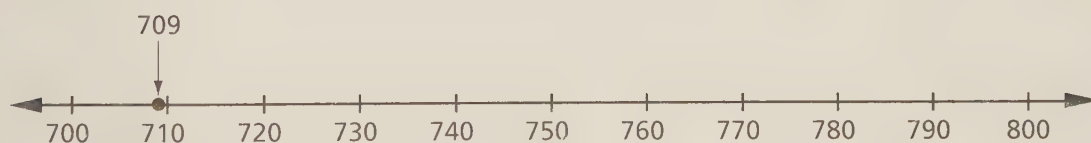
1. 166



ten \_\_\_\_\_

hundred \_\_\_\_\_

2. 709



ten \_\_\_\_\_

hundred \_\_\_\_\_

3. 185

ten \_\_\_\_\_

hundred \_\_\_\_\_

4. 234

ten \_\_\_\_\_

hundred \_\_\_\_\_

5. \$561

ten \_\_\_\_\_

hundred \_\_\_\_\_

# Round to the Nearest Thousand

Use a place-value chart to help you round numbers.

Round 7,485 to the nearest thousand.

| Thousands | Hundreds | Tens | Ones |
|-----------|----------|------|------|
| 7         | 4        | 8    | 5    |

To round to the nearest thousand, look at the hundreds place.

The number of hundreds is less than 5. Round down to 7,000.

Round to the nearest thousand.

1.

| Thousands | Hundreds | Tens | Ones |
|-----------|----------|------|------|
| 5         | 8        | 3    | 4    |

---

2.

| Thousands | Hundreds | Tens | Ones |
|-----------|----------|------|------|
| 3         | 0        | 4    | 8    |

---

3.

| Thousands | Hundreds | Tens | Ones |
|-----------|----------|------|------|
| 1         | 9        | 1    | 6    |

---

4.

| Thousands | Hundreds | Tens | Ones |
|-----------|----------|------|------|
| 4         | 5        | 2    | 0    |

---

5. 2,472

---

6. 7,800

---

7. 1,341

---

8. 6,204

---

9. 8,571

---

10. \$4,622

---

11. 34,281

---

12. 56,704

---

13. \$12,355

---

**Problem Solving: Strategy****Make a Table****Sign Up: After-School Games****Page 37,**  
**Problem 2**Which day  
had the most  
sign-ups?  
  
\_\_\_\_\_

| Day       | Name        |                  |               |               |                |        |      |
|-----------|-------------|------------------|---------------|---------------|----------------|--------|------|
| Monday    | Jim<br>Ron  | Barry<br>Tiffany | Chris<br>Josh | Seth<br>Donna | Eli<br>Bryan   | Taylor |      |
| Tuesday   | Ann<br>Aiko | Steve<br>Warren  | Tara<br>Ian   | Pete<br>Craig | Lily<br>Sereka |        |      |
| Wednesday | Tod         | Bailey           | Carly         | Sudi          | Donna          | Jani   | Beth |

**Step 1****Read****Be sure you understand the problem.**

Read carefully.

What do you know?

- There are \_\_\_\_\_ days for after-school games.
- There is a list of \_\_\_\_\_ for each day.

What do you need to find out?

- You need to find out which day had  
\_\_\_\_\_

- To do this, you need to know \_\_\_\_\_  
sign-ups there were each day.

**Step 2****Plan**

- Make a Table or List
- Write a Number Sentence
- Work Backward
- Find a Pattern
- Guess and Check
- Make a Graph
- Logical Reasoning
- Act It Out
- Solve a Simpler Problem

**Make a plan.**

Choose a strategy.

A table can help you organize what you know. Make a table to solve the problem.

# Problem Solving: Strategy

## Make a Table

**Step 3****Solve****Carry out your plan.**

Make a table.

Tally the \_\_\_\_\_ for each day. Write the total number of tallies for each day. Compare the \_\_\_\_\_ for each day. Complete the table.

| Sign-Up: After-School Games |       |        |
|-----------------------------|-------|--------|
| Day                         | Tally | Number |
| Monday                      |       |        |
| Tuesday                     |       | 10     |
| Wednesday                   |       |        |

There are \_\_\_\_\_ sign-ups for Monday, \_\_\_\_\_ sign-ups for Tuesday, and \_\_\_\_\_ sign-ups for Wednesday.  
\_\_\_\_\_ had the most sign-ups.

**Step 4****Look Back****Is the solution reasonable?**

Reread the problem.

Does your answer match the data given in the problem? \_\_\_\_\_

What other strategy could you use to solve the problem?  
\_\_\_\_\_

**Practice** You will need a sheet of paper.

1. Donna is making a sign that says "Greetings, chess masters!" Which letter does she use the most? Make a table to find out.  
\_\_\_\_\_
2. Four friends were in a tournament. Judy came in sixth, Sam was ninth, Tim was third, Evelyn was fifth. In what order did the friends finish? Make a table to organize your data.  
\_\_\_\_\_

# Addition Properties • Algebra

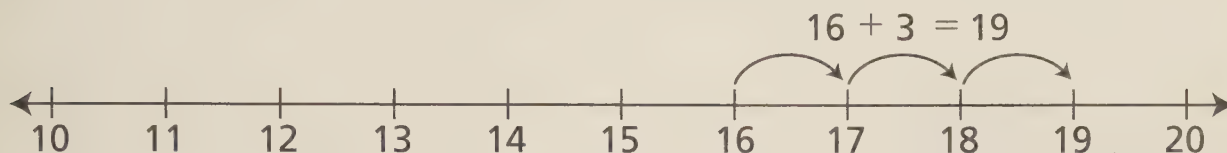


You can use different strategies to help you add.

You can count on to find a sum mentally.

Start with the greater number.

Add  $16 + 3$ . Start at 16. Then count on 3.



You can also use doubles to help you add mentally.



**Think:** 6 is 1 more than 5 and  $5 + 6$  is 1 more than  $5 + 5$ .

$$5 + 5 = 10$$

$$5 + 6 = 11$$

The addition properties can help you add mentally, too.

## Commutative Property

You can change the order of the addends, but the sum is always the same.

$$4 + 5 = 9$$

$$5 + 4 = 9$$

## Identity Property

When you add 0 to a number, the sum is always that number.

$$6 + 0 = 6$$

Complete.

1. If you know  $3 + 6 = \underline{\hspace{2cm}}$ , then you know  $\underline{\hspace{2cm}} + 3 = \underline{\hspace{2cm}}$ .

2. If you know  $8 + 0 = \underline{\hspace{2cm}}$ , then you know  $\underline{\hspace{2cm}} + 8 = \underline{\hspace{2cm}}$ .

Add.

3.  $4 + 7 = \underline{\hspace{2cm}}$

4.  $9 + 2 = \underline{\hspace{2cm}}$

5.  $7 + 5 = \underline{\hspace{2cm}}$

6.  $3 + 9 = \underline{\hspace{2cm}}$

7.  $12 + 5 = \underline{\hspace{2cm}}$

8.  $0 + 4 = \underline{\hspace{2cm}}$

9.  $9 + 9 = \underline{\hspace{2cm}}$

10.  $3 + 17 = \underline{\hspace{2cm}}$

11.  $10 + 10 = \underline{\hspace{2cm}}$

|                                                       |                                                       |                                                       |                                                       |                                                       |                                                        |                                                        |
|-------------------------------------------------------|-------------------------------------------------------|-------------------------------------------------------|-------------------------------------------------------|-------------------------------------------------------|--------------------------------------------------------|--------------------------------------------------------|
| 12. $\begin{array}{r} 7 \\ + 6 \\ \hline \end{array}$ | 13. $\begin{array}{r} 5 \\ + 0 \\ \hline \end{array}$ | 14. $\begin{array}{r} 7 \\ + 8 \\ \hline \end{array}$ | 15. $\begin{array}{r} 8 \\ + 9 \\ \hline \end{array}$ | 16. $\begin{array}{r} 9 \\ + 7 \\ \hline \end{array}$ | 17. $\begin{array}{r} 11 \\ + 4 \\ \hline \end{array}$ | 18. $\begin{array}{r} 10 \\ + 9 \\ \hline \end{array}$ |
|-------------------------------------------------------|-------------------------------------------------------|-------------------------------------------------------|-------------------------------------------------------|-------------------------------------------------------|--------------------------------------------------------|--------------------------------------------------------|

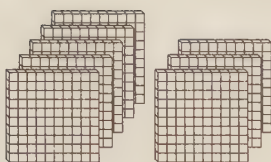
# Addition Patterns • Algebra

Think of basic facts to find these sums.



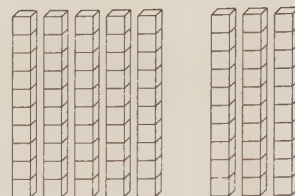
$$5 \text{ ones} + 3 \text{ ones} = 8 \text{ ones}$$

$$5 + 3 = 8$$



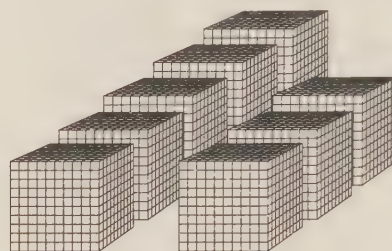
$$5 \text{ hundreds} + 3 \text{ hundreds} = 8 \text{ hundreds}$$

$$500 + 300 = 800$$



$$5 \text{ tens} + 3 \text{ tens} = 8 \text{ tens}$$

$$50 + 30 = 80$$



$$5 \text{ thousands} + 3 \text{ thousands} = 8 \text{ thousands}$$

$$5,000 + 3,000 = 8,000$$

Complete.

1.  $7 + 8 =$  \_\_\_\_\_

$70 + 80 =$  \_\_\_\_\_

$700 + 800 =$  \_\_\_\_\_

2.  $5 + 4 =$  \_\_\_\_\_

$50 + 40 =$  \_\_\_\_\_

$500 + 400 =$  \_\_\_\_\_

3.  $9 + 7 =$  \_\_\_\_\_

$90 + 70 =$  \_\_\_\_\_

$900 + 700 =$  \_\_\_\_\_

4.  $8 + 5 =$  \_\_\_\_\_

$80 + 50 =$  \_\_\_\_\_

$800 + 500 =$  \_\_\_\_\_

Add. Think of basic facts.

5.  $30 + 90 =$  \_\_\_\_\_

6.  $40 + 60 =$  \_\_\_\_\_

7.  $60 + 70 =$  \_\_\_\_\_

8.  $400 + 500 =$  \_\_\_\_\_

9.  $800 + 600 =$  \_\_\_\_\_

10.  $300 + 700 =$  \_\_\_\_\_

11.  $900 + 400 =$  \_\_\_\_\_

12.  $6,000 + 4,000 =$  \_\_\_\_\_

13.  $4,000 + 8,000 =$  \_\_\_\_\_

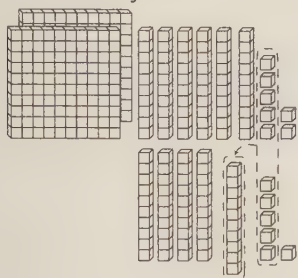
# Explore Regrouping in Addition

You can use models to add.

Add  $267 + 46$ .

## Step 1

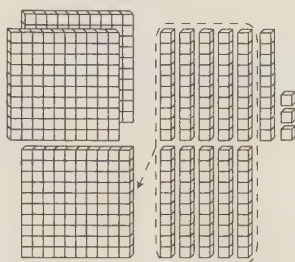
Add the ones. Regroup if necessary.



$$\begin{array}{r} 267 \text{ Think: } 13 \text{ ones} = \\ + 46 \text{ 1 ten, 3 ones} \\ \hline 3 \end{array}$$

## Step 2

Add the tens. Regroup if necessary.



$$\begin{array}{r} 267 \text{ Think: } 11 \text{ tens} = \\ + 46 \text{ 1 hundred, 1 ten} \\ \hline 13 \end{array}$$

## Step 3

Add the hundreds. Regroup if necessary.



$$\begin{array}{r} 267 \\ + 46 \\ \hline 313 \end{array}$$

Find each sum. Use models to help.

1. 
$$\begin{array}{r} 146 \\ + 29 \\ \hline 5 \end{array}$$

2. 
$$\begin{array}{r} 473 \\ + 55 \\ \hline \end{array}$$

3. 
$$\begin{array}{r} 245 \\ + 128 \\ \hline \end{array}$$

4. 
$$\begin{array}{r} 182 \\ + 275 \\ \hline \end{array}$$

5. 
$$\begin{array}{r} 127 \\ + 56 \\ \hline \end{array}$$

6. 
$$\begin{array}{r} 342 \\ + 79 \\ \hline \end{array}$$

# Add Whole Numbers

You can use place-value charts to help you add.

Add  $359 + 172$ .

## Step 1

Add the ones.

Regroup if necessary.

| Hundreds | Tens           | Ones |
|----------|----------------|------|
| 3        | <sup>1</sup> 5 | 9    |
| + 1      | 7              | 2    |
|          |                | 1    |

## Step 2

Add the tens.

Regroup if necessary.

| Hundreds       | Tens           | Ones |
|----------------|----------------|------|
| <sup>1</sup> 3 | <sup>1</sup> 5 | 9    |
| + 1            | 7              | 2    |
|                | 3              | 1    |

## Step 3

Add the hundreds.

| Hundreds       | Tens           | Ones |
|----------------|----------------|------|
| <sup>1</sup> 3 | <sup>1</sup> 5 | 9    |
| + 1            | 7              | 2    |
| 5              | 3              | 1    |

Find each sum.

1. 
$$\begin{array}{r} 236 \\ + 19 \\ \hline \end{array}$$

2. 
$$\begin{array}{r} 320 \\ + 675 \\ \hline \end{array}$$

3. 
$$\begin{array}{r} 569 \\ + 350 \\ \hline \end{array}$$

4. 
$$\begin{array}{r} 809 \\ + 71 \\ \hline \end{array}$$

5. 
$$\begin{array}{r} \$381 \\ + 410 \\ \hline \end{array}$$

6. 
$$\begin{array}{r} \$7.79 \\ + 1.01 \\ \hline \end{array}$$

7. 
$$\begin{array}{r} 960 \\ + 57 \\ \hline \end{array}$$

8. 
$$\begin{array}{r} 147 \\ + 88 \\ \hline \end{array}$$

9. 
$$\begin{array}{r} \$2.14 \\ + 2.86 \\ \hline \end{array}$$

10. 
$$\begin{array}{r} 764 \\ + 577 \\ \hline \end{array}$$

11. 
$$\begin{array}{r} \$608 \\ + 94 \\ \hline \end{array}$$

12. 
$$\begin{array}{r} 465 \\ + 70 \\ \hline \end{array}$$

13. 
$$\begin{array}{r} 897 \\ + 7 \\ \hline \end{array}$$

14. 
$$\begin{array}{r} 365 \\ + 758 \\ \hline \end{array}$$

15. 
$$\begin{array}{r} \$6.21 \\ + 3.45 \\ \hline \end{array}$$

16.  $185 + 91 = \underline{\hspace{2cm}}$

17.  $191 + 508 = \underline{\hspace{2cm}}$

18.  $89 + 635 = \underline{\hspace{2cm}}$

19.  $\$9.15 + \$2.07 = \underline{\hspace{2cm}}$

20.  $653 + 409 = \underline{\hspace{2cm}}$

21.  $\$2.10 + \$7.05 = \underline{\hspace{2cm}}$

22.  $\$3.57 + \$1.23 = \underline{\hspace{2cm}}$

23.  $582 + 13 = \underline{\hspace{2cm}}$

**Estimate Sums**

To estimate sums, round each addend and then add mentally.

Round to the nearest ten.

$$49 + 21$$

↓      ↓

$$50 + 20 = 70$$

Round to the nearest hundred.

$$127 + 468$$

↓      ↓

$$100 + 500 = 600$$

Round to the nearest thousand.

$$2,736 + 4,080$$

↓      ↓

$$3,000 + 4,000 = 7,000$$

Estimate each sum. Show how you rounded the addends.

**1.**  $38 + 53$

\_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_

**2.**  $65 + 19$

\_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_

**3.**  $47 + 229$

\_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_

**4.**  $71 + 491$

\_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_

**5.**  $185 + 307$

\_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_

**6.**  $250 + 693$

\_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_

**7.**  $4,115 + 1,208$

\_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_

**8.**  $2,500 + 5,135$

\_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_

Estimate each sum.

**9.**  $64 + 22$

\_\_\_\_\_

**10.**  $27 + 62$

\_\_\_\_\_

**11.**  $138 + 471$

\_\_\_\_\_

**12.**  $333 + 176$

\_\_\_\_\_

**13.**  $505 + 6,775$

\_\_\_\_\_

**14.**  $897 + 8,598$

\_\_\_\_\_

**15.**  $4,907 + 1,111$

\_\_\_\_\_

**16.**  $7,654 + 1,234$

\_\_\_\_\_

**17.**  $2,378 + 2,873$

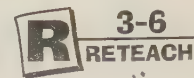
\_\_\_\_\_

**18.**  $3,500 + 6,923$

\_\_\_\_\_

## Problem Solving: Skill

### Estimate or Exact Answer



Sometimes a problem asks for an estimate.

1. This morning the animal shelter took in 14 dogs. The shelter already had 45 dogs. **About** how many dogs does the shelter have now?

Does the problem ask for an estimate or an exact answer?

\_\_\_\_\_

$$14 + 45 = 59$$

$$50 + 10 = 60$$

$$45 > 14$$

\_\_\_\_\_

2. The animal shelter has to buy a water bowl for each animal. How many water bowls does it need?

Does this problem ask for an estimate or an exact answer?

\_\_\_\_\_

Which number sentence will help you answer the problem?

$$14 < 40$$

$$14 + 45 = 59$$

$$59 > 45$$

\_\_\_\_\_

---

Complete. Estimate or find the exact answer.

1. A farmer has 25 sheep, 23 pigs, and 32 chickens. About how many animals does the farmer have?

Does the problem ask for an estimate or exact answer?

\_\_\_\_\_

Which number sentence would you use to solve the problem? (Circle a or b.)

a.  $27 + 23 + 33 = 83$

b.  $30 + 20 + 30 = 80$

2. The owner of a pet store has 26 puppies and 37 kittens. Does she have more than 100 animals altogether?

Does the problem ask for an estimate or exact answer?

\_\_\_\_\_

Which number sentence would you use to solve the problem? (Circle a or b.)

a.  $30 + 40 = 70$

b.  $26 + 37 = 63$

# Add Greater Numbers



You can use a place-value chart to help you add greater numbers.

Add  $6,478 + 2,359$ .

Add the ones.

Regroup if necessary.

17 ones = 1 ten 7 ones

| Thousands | Hundreds       | Tens           | Ones |
|-----------|----------------|----------------|------|
| 6         | <sup>1</sup> 4 | <sup>1</sup> 7 | 8    |
| + 2       | 3              | 5              | 9    |
| 8         | 8              | 3              | 7    |

Add the tens.

Regroup if necessary.

13 tens = 1 hundred 3 tens

Add the hundreds and thousands.

Add. Check if each answer is reasonable.

**1.** 
$$\begin{array}{r} 4,507 \\ + 385 \\ \hline \end{array}$$

**2.** 
$$\begin{array}{r} 3,985 \\ + 4,073 \\ \hline \end{array}$$

**3.** 
$$\begin{array}{r} 5,525 \\ + 797 \\ \hline \end{array}$$

**4.** 
$$\begin{array}{r} \$2,329 \\ + 1,636 \\ \hline \end{array}$$

**5.** 
$$\begin{array}{r} 2,372 \\ + 5,103 \\ \hline \end{array}$$

**6.** 
$$\begin{array}{r} 4,526 \\ + 2,469 \\ \hline \end{array}$$

**7.** 
$$\begin{array}{r} 8,789 \\ + 99 \\ \hline \end{array}$$

**8.** 
$$\begin{array}{r} \$16.85 \\ + 43.70 \\ \hline \end{array}$$

**9.** 
$$\begin{array}{r} 2,391 \\ + 999 \\ \hline \end{array}$$

**10.** 
$$\begin{array}{r} 6,100 \\ + 6,200 \\ \hline \end{array}$$

**11.** 
$$\begin{array}{r} 5,014 \\ + 6,019 \\ \hline \end{array}$$

**12.** 
$$\begin{array}{r} \$36.89 \\ + 1.24 \\ \hline \end{array}$$

**13.** 
$$\begin{array}{r} 7,482 \\ + 6,277 \\ \hline \end{array}$$

**14.** 
$$\begin{array}{r} 8,258 \\ + 9,239 \\ \hline \end{array}$$

**15.** 
$$\begin{array}{r} \$35.27 \\ + 9.98 \\ \hline \end{array}$$

**16.**  $1,021 + 949 = \underline{\hspace{2cm}}$

**17.**  $6,320 + 2,865 = \underline{\hspace{2cm}}$

**18.**  $2,975 + 159 = \underline{\hspace{2cm}}$

**19.**  $\$9,700 + \$2,059 = \underline{\hspace{2cm}}$

**20.**  $\$86.51 + \$20.99 = \underline{\hspace{2cm}}$

**21.**  $987 + 1,343 = \underline{\hspace{2cm}}$

**22.**  $2,458 + 1,236 = \underline{\hspace{2cm}}$

**23.**  $415 + 8,375 = \underline{\hspace{2cm}}$

# Add More Than Two Numbers

You can use a place-value chart to add more than two numbers.

Add  $335 + 274 + 116$ .

**Step 1:** Add the ones.

Regroup if necessary.

| Hundreds | Tens           | Ones |
|----------|----------------|------|
| 3        | <sup>1</sup> 3 | 5    |
| 2        | 7              | 4    |
| + 1      | 1              | 6    |
|          |                | 5    |

**Step 2:** Add the tens.

Regroup if necessary.

| Hundreds       | Tens           | Ones |
|----------------|----------------|------|
| <sup>1</sup> 3 | <sup>1</sup> 3 | 5    |
| 2              | 7              | 4    |
| + 1            | 1              | 6    |
|                | 2              | 5    |

**Step 3:** Add the hundreds.

Regroup if necessary.

| Hundreds       | Tens           | Ones |
|----------------|----------------|------|
| <sup>1</sup> 3 | <sup>1</sup> 3 | 5    |
| 2              | 7              | 4    |
| + 1            | 1              | 6    |
| 7              | 2              | 5    |

Add. Check. Is each answer reasonable?

|                                                                |                                                                  |                                                                |                                                                 |                                                                         |
|----------------------------------------------------------------|------------------------------------------------------------------|----------------------------------------------------------------|-----------------------------------------------------------------|-------------------------------------------------------------------------|
| 1. $\begin{array}{r} 428 \\ 42 \\ + 519 \\ \hline \end{array}$ | 2. $\begin{array}{r} \$819 \\ 133 \\ + 74 \\ \hline \end{array}$ | 3. $\begin{array}{r} 645 \\ 85 \\ + 283 \\ \hline \end{array}$ | 4. $\begin{array}{r} 729 \\ 362 \\ + 202 \\ \hline \end{array}$ | 5. $\begin{array}{r} \$23.15 \\ 19.26 \\ + 23.57 \\ \hline \end{array}$ |
|----------------------------------------------------------------|------------------------------------------------------------------|----------------------------------------------------------------|-----------------------------------------------------------------|-------------------------------------------------------------------------|

|                                                                      |                                                                     |                                                                       |                                                                     |                                                                       |
|----------------------------------------------------------------------|---------------------------------------------------------------------|-----------------------------------------------------------------------|---------------------------------------------------------------------|-----------------------------------------------------------------------|
| 6. $\begin{array}{r} \$6.19 \\ 5.21 \\ + 2.44 \\ \hline \end{array}$ | 7. $\begin{array}{r} 2,903 \\ 448 \\ + 6,127 \\ \hline \end{array}$ | 8. $\begin{array}{r} 6,259 \\ 1,337 \\ + 3,118 \\ \hline \end{array}$ | 9. $\begin{array}{r} 5,065 \\ 8,149 \\ + 717 \\ \hline \end{array}$ | 10. $\begin{array}{r} \$1,084 \\ 3,692 \\ + 98 \\ \hline \end{array}$ |
|----------------------------------------------------------------------|---------------------------------------------------------------------|-----------------------------------------------------------------------|---------------------------------------------------------------------|-----------------------------------------------------------------------|

11.  $635 + 29 + 404 = \underline{\hspace{2cm}}$

12.  $223 + 867 + 919 + 147 = \underline{\hspace{2cm}}$

# Problem Solving: Strategy

## Draw a Diagram

There are 22 students in Mr. Bate's class. Ten students have only sisters. Five students have only brothers. Seven students have both sisters and brothers. How many students have sisters?

**Step 1****Read**

**Make sure you understand the problem.**

What do you know?

There are \_\_\_\_\_ students.  
\_\_\_\_\_ students have sisters, \_\_\_\_\_ students have brothers, and \_\_\_\_\_ students have both.

What do you need to find out?

\_\_\_\_\_

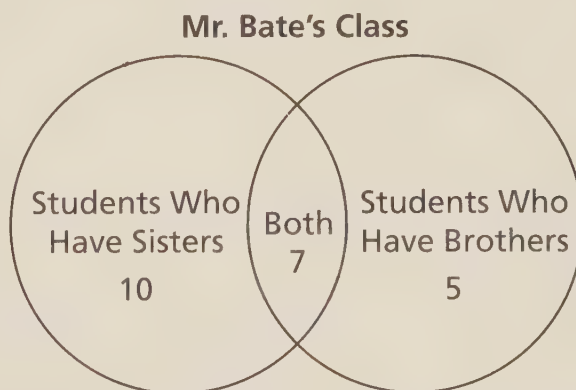
**Step 2****Plan**

- Logical Reasoning
- Draw a Picture
- Make a Graph
- Act It Out
- Make a Table or List
- Find a Pattern
- Guess and Check
- Write an Equation
- Work Backward
- Solve a Simpler Problem
- Draw a Diagram

**Make a plan.**

Choose a strategy.

You can make a Venn diagram to solve.



**Problem Solving: Strategy****Draw a Diagram****Step 3****Solve****Carry out your plan.**

You know that there are \_\_\_\_\_ students who only have sisters.

You know that there are \_\_\_\_\_ students who have both sisters and brothers.

Write an addition sentence that shows the number of students who only have sisters and the number of students who have both sisters and brothers.

$$\underline{\hspace{2cm}} + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

There are \_\_\_\_\_ students who have sisters.

**Step 4****Look Back****Is the solution reasonable?**

Reread the problem.

Does your answer make sense?    Yes    No

Did you answer the question?    Yes    No

What other strategies could you use to solve the problem?

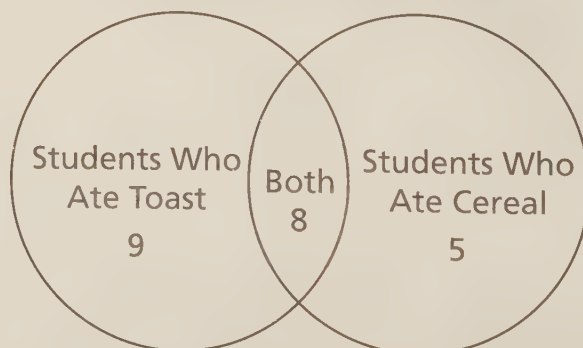
\_\_\_\_\_

**Practice**

Use the Venn diagram to solve.

- How many children ate toast for breakfast?

\_\_\_\_\_

**Students in Mr. Bate's Class**

# Choose a Computation Method



There are several ways to find  $2,629 + 1,123$ .

## Use Paper and Pencil

$$\begin{array}{r} 1 \\ 2,629 \\ + 1,123 \\ \hline \end{array}$$

## Use a Calculator

Press:

Display:

## Use Mental Math

$$2,629 \rightarrow 2,600 + 29$$

$$1,123 \rightarrow 1,100 + 23$$

$$2,600 + 1,100 = 3,700$$

$$29 + 23 = 52$$

$$3,700 + 52 = 3,752$$

Add. Tell which method you use.

- |                                   |                               |
|-----------------------------------|-------------------------------|
| 1. $3,623 + 1,592 =$ _____        | 2. $4,862 + 5,907 =$ _____    |
| 3. $7,124 + 1,068 =$ _____        | 4. $2,741 + 5,823 =$ _____    |
| 5. $7,324 + 612 =$ _____          | 6. $3,863 + 4,208 =$ _____    |
| 7. $1,423 + 897 =$ _____          | 8. $1,898 + 2,010 =$ _____    |
| 9. $5,795 + 1,284 =$ _____        | 10. $684 + 593 + 200 =$ _____ |
| 11. $1,258 + 500 + 3,925 =$ _____ | 12. $467 + 394 + 721 =$ _____ |
| 13. $4,653 + 1,220 + 350 =$ _____ |                               |

## Problem Solving

Solve.

- |                                                                                                                                                               |                                                                                                                                                                                                |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>14. The library has 1,583 books about land animals. It has 425 books about fish. How many books does it have about land animals and fish?</p> <p>_____</p> | <p>15. Mari read three books in one month. The first book had 318 pages, the second book had 200 pages, and the third book had 198 pages. How many pages did she read in all?</p> <p>_____</p> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

# Relate Addition and Subtraction • Algebra

Fact families use the same three numbers.

4

4

8

Fact family for 4, 4, and 8:

$$4 + 4 = 8 \quad 8 - 4 = 4$$

3

5

8

Fact family for 3, 5, and 8:

$$3 + 5 = 8 \quad 8 - 5 = 3$$

$$5 + 3 = 8 \quad 8 - 3 = 5$$

Complete each fact family. Write the missing numbers.

1.  $5 + 7 = 12$

$$7 + \underline{\hspace{2cm}} = 12$$

$$12 - 5 = \underline{\hspace{2cm}}$$

$$12 - \underline{\hspace{2cm}} = 5$$

2.  $6 + 8 = 14$

$$8 + \underline{\hspace{2cm}} = 14$$

$$14 - 6 = \underline{\hspace{2cm}}$$

$$14 - \underline{\hspace{2cm}} = 6$$

3.  $9 + 0 = 9$

$$0 + \underline{\hspace{2cm}} = 9$$

$$9 - 0 = \underline{\hspace{2cm}}$$

$$\underline{\hspace{2cm}} - 9 = 0$$

4.  $5 + 6 = 11$

$$6 + \underline{\hspace{2cm}} = 11$$

$$11 - 5 = \underline{\hspace{2cm}}$$

$$11 - \underline{\hspace{2cm}} = 5$$

5.  $9 + 3 = 12$

$$3 + \underline{\hspace{2cm}} = 12$$

$$12 - 9 = \underline{\hspace{2cm}}$$

$$12 - \underline{\hspace{2cm}} = 9$$

6.  $7 + 3 = 10$

$$3 + \underline{\hspace{2cm}} = 10$$

$$10 - 7 = \underline{\hspace{2cm}}$$

$$\underline{\hspace{2cm}} - 3 = 7$$

Write a fact family for each group of numbers.

7. 3, 8, 11

---

---

---

---

8. 9, 9, 18

---

---

9. 0, 6, 6

---

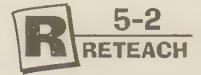
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## Problem Solving: Skill

### Identify Extra Information



Helen and Marlene worked in the school garden 6 times last month. Helen worked for 29 hours. Marlene worked for 22 hours. How many more hours did Helen work than Marlene?

#### Step 1

#### Read

##### Make sure you understand the problem.

What do you know? Helen and Marlene volunteered 6 times last month. Helen worked 29 hours. Marlene worked 22 hours.

Find extra information. Some information in the problem is not needed to solve the problem. You do not need to know that the girls worked 6 times last month.

#### Step 2

#### Plan

##### Make a plan.

Subtract to find the difference between Helen's hours and Marlene's hours.

#### Step 3

#### Solve

##### Carry out your plan.

$29 - 22 = 7$

Helen's hours – Marlene's hours = difference in hours  
So, Helen worked 7 more hours than Marlene.

#### Step 4

#### Look Back

##### Check your answer.

Add.

$$7 + 22 = 29$$

### Practice

Solve. Cross out the information that you do not need to solve the problem.

1. Miko plants 18 cherry trees, 8 oak trees, and 5 spruce trees. How many more cherry trees than spruce trees did she plant?
2. Kate buys 30 flowers in all. She spends \$36 on tulips and \$8 on roses. How much more does Kate spend on tulips than on roses?

**Subtraction Patterns • Algebra**

You can show subtraction patterns with models.



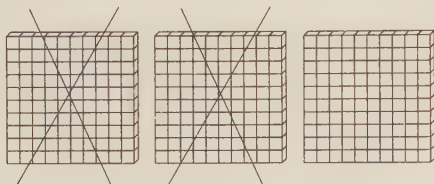
3 ones  $-$  2 ones  $=$  1 one

$3 - 2 = 1$



3 tens  $-$  2 tens  $=$  1 ten

$30 - 20 = 10$



3 hundreds  $-$  2 hundreds  $=$  1 hundred

$300 - 200 = 100$

Complete.

1.  $6 - 4 =$  \_\_\_\_\_

2.  $9 - 8 =$  \_\_\_\_\_

3.  $10 - 7 =$  \_\_\_\_\_

$60 - 40 =$  \_\_\_\_\_

$90 - 80 =$  \_\_\_\_\_

$100 - 70 =$  \_\_\_\_\_

$600 - 400 =$  \_\_\_\_\_

$900 - 800 =$  \_\_\_\_\_

$1,000 - 700 =$  \_\_\_\_\_

Subtract mentally.

4. 
$$\begin{array}{r} 90 \\ - 40 \\ \hline \end{array}$$

5. 
$$\begin{array}{r} 70 \\ - 50 \\ \hline \end{array}$$

6. 
$$\begin{array}{r} 100 \\ - 40 \\ \hline \end{array}$$

7. 
$$\begin{array}{r} 120 \\ - 70 \\ \hline \end{array}$$

8. 
$$\begin{array}{r} 150 \\ - 80 \\ \hline \end{array}$$

9. 
$$\begin{array}{r} 1,000 \\ - 700 \\ \hline \end{array}$$

10. 
$$\begin{array}{r} 800 \\ - 700 \\ \hline \end{array}$$

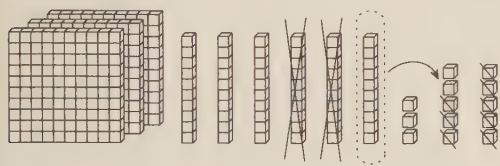
11. 
$$\begin{array}{r} 1,200 \\ - 800 \\ \hline \end{array}$$

12. 
$$\begin{array}{r} 1,100 \\ - 800 \\ \hline \end{array}$$

13. 
$$\begin{array}{r} 800 \\ - 800 \\ \hline \end{array}$$

# Explore Regrouping in Subtraction

You can use models to help you regroup when you subtract.

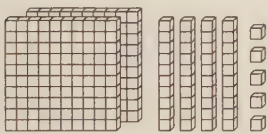


$$\begin{array}{r} 5\ 13 \\ 3\cancel{6} \\ - 28 \\ \hline 335 \end{array}$$

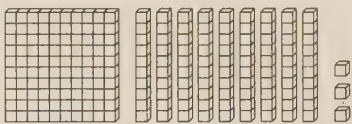
- Remember:
- Regroup 1 ten as 10 ones.
  - Rename 63 as 5 tens 13 ones.

Use models to subtract.

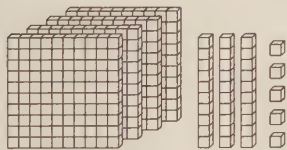
1.  $245 - 19 =$  \_\_\_\_\_



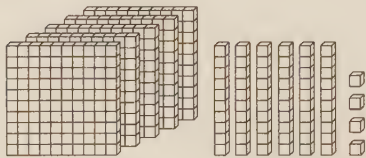
2.  $193 - 44 =$  \_\_\_\_\_



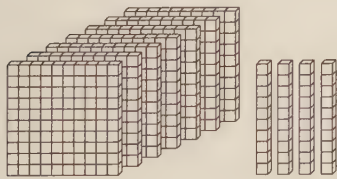
3.  $435 - 219 =$  \_\_\_\_\_



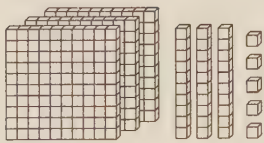
4.  $564 - 228 =$  \_\_\_\_\_



5.  $740 - 426 =$  \_\_\_\_\_



6.  $335 - 127 =$  \_\_\_\_\_



Find each difference.

7.  $962 - 722 =$  \_\_\_\_\_      8.  $681 - 361 =$  \_\_\_\_\_      9.  $750 - 136 =$  \_\_\_\_\_

10.  $435 - 219 =$  \_\_\_\_\_      11.  $865 - 839 =$  \_\_\_\_\_      12.  $942 - 927 =$  \_\_\_\_\_

# Subtract Whole Numbers



You can use place-value charts to help you subtract.

Subtract  $435 - 268$ .

## Step 1

Subtract the ones.  
Regroup if necessary.

## Step 2

Subtract the tens.  
Regroup if necessary.

## Step 3

Subtract the hundreds.

| Hundreds | Tens                         | Ones                          |
|----------|------------------------------|-------------------------------|
| 4        | <sup>2</sup><br><del>3</del> | <sup>15</sup><br><del>5</del> |
| - 2      | 6                            | 8                             |
|          |                              | 7                             |

| Hundreds                     | Tens                          | Ones                          |
|------------------------------|-------------------------------|-------------------------------|
| <sup>3</sup><br><del>4</del> | <sup>12</sup><br><del>3</del> | <sup>15</sup><br><del>5</del> |
| - 2                          | 6                             | 8                             |
|                              | 6                             | 7                             |

| Hundreds                     | Tens                          | Ones                          |
|------------------------------|-------------------------------|-------------------------------|
| <sup>3</sup><br><del>4</del> | <sup>12</sup><br><del>3</del> | <sup>15</sup><br><del>5</del> |
| - 2                          | 6                             | 8                             |
| 1                            | 6                             | 7                             |

Subtract. Check your answer.

1.  $513$   
 $- 161$

2.  $\$6.13$   
 $- 3.50$

3.  $726$   
 $- 8$

4.  $\$4.63$   
 $- 3.04$

5.  $650$   
 $- 312$

6.  $524$   
 $- 257$

7.  $932$   
 $- 735$

8.  $\$7.14$   
 $- 3.48$

9.  $656$   
 $- 368$

10.  $\$9.37$   
 $- 5.48$

11.  $785 - 359 =$  \_\_\_\_\_

12.  $353 - 49 =$  \_\_\_\_\_

13.  $\$5.13 - \$2.25 =$  \_\_\_\_\_

14.  $534 - 356 =$  \_\_\_\_\_

15.  $828 - 49 =$  \_\_\_\_\_

16.  $\$4.35 - \$1.37 =$  \_\_\_\_\_

17.  $\$618 - \$289 =$  \_\_\_\_\_

18.  $362 - 9 =$  \_\_\_\_\_

19.  $630 - 480 =$  \_\_\_\_\_

20.  $115 - 26 =$  \_\_\_\_\_

# Regroup Across Zeros



You can use place-value charts to help you regroup across zeros.

Subtract  $305 - 176$ .

## Step 1

Subtract the ones.  
No tens to regroup.  
Regroup the hundreds.

| Hundreds                 | Tens                    | Ones   |
|--------------------------|-------------------------|--------|
| 2<br><del>3</del><br>- 1 | 10<br><del>0</del><br>7 | 5<br>6 |
|                          |                         |        |

## Step 2

Regroup the tens.

| Hundreds                 | Tens                                    | Ones                    |
|--------------------------|-----------------------------------------|-------------------------|
| 2<br><del>3</del><br>- 1 | 9<br><del>10</del><br><del>0</del><br>7 | 15<br><del>5</del><br>6 |
|                          |                                         |                         |

## Step 3

Subtract the ones, tens, and hundreds.

| Hundreds                 | Tens                                    | Ones                    |
|--------------------------|-----------------------------------------|-------------------------|
| 2<br><del>3</del><br>- 1 | 9<br><del>10</del><br><del>0</del><br>7 | 15<br><del>5</del><br>6 |
| 1                        | 2                                       | 9                       |

Subtract. Add to check.

1.  $106 - 28$

2.  $\$503 - 167$

3.  $405 - 218$

4.  $\$601 - 378$

5.  $200 - 145$

6.  $205 - 92$

7.  $308 - 175$

8.  $300 - 56$

9.  $\$505 - 90$

10.  $802 - 132$

11.  $500 - 418 = \underline{\hspace{2cm}}$

12.  $\$206 - \$138 = \underline{\hspace{2cm}}$

13.  $801 - 482 = \underline{\hspace{2cm}}$

14.  $100 - 33 = \underline{\hspace{2cm}}$

15.  $607 - 527 = \underline{\hspace{2cm}}$

16.  $\$700 - \$19 = \underline{\hspace{2cm}}$

17.  $\$902 - \$863 = \underline{\hspace{2cm}}$

18.  $400 - 189 = \underline{\hspace{2cm}}$

# Estimate Differences



To estimate a difference, round each number and then subtract.

| Round to the nearest ten.                                    | Round to the nearest hundred.                                     | Round to the nearest thousand.                                              |
|--------------------------------------------------------------|-------------------------------------------------------------------|-----------------------------------------------------------------------------|
| $51 - 27$<br>$\downarrow \quad \downarrow$<br>$50 - 30 = 20$ | $913 - 496$<br>$\downarrow \quad \downarrow$<br>$900 - 500 = 400$ | $2,634 - 1,807$<br>$\downarrow \quad \downarrow$<br>$3,000 - 2,000 = 1,000$ |

Estimate each difference. Show how you rounded.

1.  $91 - 38$   
 $\downarrow \quad \downarrow$

\_\_\_\_\_ - \_\_\_\_\_ = \_\_\_\_\_

2.  $685 - 193$   
 $\downarrow \quad \downarrow$

\_\_\_\_\_ - \_\_\_\_\_ = \_\_\_\_\_

3.  $809 - 485$   
 $\downarrow \quad \downarrow$

\_\_\_\_\_ - \_\_\_\_\_ = \_\_\_\_\_

4.  $1,886 - 1,050$   
 $\downarrow \quad \downarrow$

\_\_\_\_\_ - \_\_\_\_\_ = \_\_\_\_\_

5.  $7,801 - 4,118$   
 $\downarrow \quad \downarrow$

\_\_\_\_\_ - \_\_\_\_\_ = \_\_\_\_\_

6.  $9,111 - 5,138$   
 $\downarrow \quad \downarrow$

\_\_\_\_\_ - \_\_\_\_\_ = \_\_\_\_\_

Estimate each difference.

7.  $63 - 28$  \_\_\_\_\_

8.  $82 - 69$  \_\_\_\_\_

9.  $850 - 291$  \_\_\_\_\_

10.  $635 - 119$  \_\_\_\_\_

11.  $709 - 371$  \_\_\_\_\_

12.  $545 - 172$  \_\_\_\_\_

13.  $9,024 - 1,915$  \_\_\_\_\_

14.  $7,070 - 5,885$  \_\_\_\_\_

15.  $4,671 - 2,119$  \_\_\_\_\_

16.  $6,401 - 4,229$  \_\_\_\_\_

# Problem Solving: Strategy

## Write an Equation

Page 119, Problem 2

A Douglas fir tree is 100 meters tall. A ponderosa pine tree is 68 meters tall. How much taller is the Douglas fir than the ponderosa pine?

**Step 1****Read****Be sure you understand the problem.**

Read carefully.

What do you know?

- The Douglas fir is \_\_\_\_\_ tall.
- The ponderosa pine is \_\_\_\_\_ tall.

What do you need to find?

- You need to compare the height of the \_\_\_\_\_ and the \_\_\_\_\_.

**Step 2****Plan**

- Logical Reasoning
- Draw a Picture
- Make a Graph
- Act It Out
- Make a Table or List
- Find a Pattern
- Guess and Check
- Write an Equation
- Work Backward
- Solve a Simpler Problem

**Make a plan.**

Choose a strategy.

Choose the operation that you can use to compare the sizes of the two groups.

Use subtraction to compare.

Write a subtraction sentence to solve the problem.

# Problem Solving: Strategy

## Write an Equation

**Step 3****Solve****Carry out your plan.**

You know:

- The Douglas fir is \_\_\_\_\_ meters tall.
- The ponderosa pine is \_\_\_\_\_ meters tall.

Write a subtraction sentence to find the difference.

\_\_\_\_\_ - \_\_\_\_\_ = \_\_\_\_\_

- The Douglas fir is \_\_\_\_\_ meters taller than the ponderosa pine.

**Step 4****Look Back****Is the solution reasonable?**

Reread the problem.

Does your answer make sense?

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How did you check your answer?

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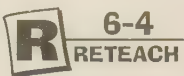
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**Practice**

Solve.

1. Tony's Garden Supplies sells \$525 worth of plants. The store also sells \$234 worth of supplies. How much money does the store make in all?  
\_\_\_\_\_
2. A tree farm has 248 balsam fir trees and 96 Douglas fir trees. How many more balsam firs are there than Douglas firs?  
\_\_\_\_\_

# Subtract Greater Numbers



Subtract  $6,426 - 3,278$ .

Subtract the ones.

Regroup if necessary.

2 tens 6 ones = 1 ten 16 ones

Subtract the tens.

Regroup if necessary.

4 hundreds 1 ten = 3 hundreds 11 tens

Subtract the hundreds and thousands.

| Thousands | Hundreds          | Tens         | Ones         |
|-----------|-------------------|--------------|--------------|
|           |                   | 11           |              |
| 6         | 3<br><del>4</del> | <del>2</del> | 16           |
| - 3       | 2                 | 7            | <del>8</del> |
| 3         | 1                 | 4            | 8            |

Subtract. Check each answer.

1.  $4,685$   
 $- 1,279$

2.  $\$93.54$   
 $- 19.53$

3.  $6,527$   
 $- 432$

4.  $8,711$   
 $- 7,338$

5.  $6,005$   
 $- 5,732$

6.  $\$88.32$   
 $- 4.48$

7.  $4,213$   
 $- 2,999$

8.  $\$9,595$   
 $- 1,396$

9.  $6,762$   
 $- 3,883$

10.  $9,000$   
 $- 457$

11.  $8,447 - 4,191 =$  \_\_\_\_\_
12.  $\$62.29 - \$53.37 =$  \_\_\_\_\_
13.  $8,674 - 482 =$  \_\_\_\_\_
14.  $\$13.73 - \$9.98 =$  \_\_\_\_\_
15.  $7,147 - 2,639 =$  \_\_\_\_\_
16.  $9,521 - 3,587 =$  \_\_\_\_\_
17.  $5,010 - 1,999 =$  \_\_\_\_\_
18.  $6,000 - 2,730 =$  \_\_\_\_\_
19.  $\$83.15 - \$7.98 =$  \_\_\_\_\_
20.  $7,040 - 655 =$  \_\_\_\_\_
21.  $4,000 - 1,432 =$  \_\_\_\_\_
22.  $\$3,208 - \$625 =$  \_\_\_\_\_

# Choose a Computation Method

There are different ways to find  $2,354 - 1,852$ .

## Paper and Pencil

$$\begin{array}{r} 1\ 13 \\ 2,354 \\ - 1,852 \\ \hline 502 \end{array}$$

## Calculator

Press:

$$\boxed{2,354} \quad \boxed{-} \quad \boxed{1,852} \quad \boxed{\text{ENTER} =}$$

Display:

$$\boxed{2354 - 1852 = 502}$$

$$2354 - 1852 = 502$$

## Mental Math

$$2,354 - 2,300 = 54$$

$$1,852 - 1,800 = 52$$

$$2,300 - 1,800 = 500$$

$$54 - 52 = 2$$

$$500 + 2 = 502$$

Subtract. Tell which method you use.

- |                                                |                                                |
|------------------------------------------------|------------------------------------------------|
| 1. $782 - 634 = \underline{\hspace{2cm}}$      | 2. $907 - 425 = \underline{\hspace{2cm}}$      |
| 3. $521 - 333 = \underline{\hspace{2cm}}$      | 4. $3,589 - 2,178 = \underline{\hspace{2cm}}$  |
| 5. $6,085 - 4,216 = \underline{\hspace{2cm}}$  | 6. $8,253 - 4,146 = \underline{\hspace{2cm}}$  |
| 7. $5,324 - 835 = \underline{\hspace{2cm}}$    | 8. $4,072 - 2,029 = \underline{\hspace{2cm}}$  |
| 9. $6,287 - 178 = \underline{\hspace{2cm}}$    | 10. $1,683 - 1,219 = \underline{\hspace{2cm}}$ |
| 11. $7,352 - 3,161 = \underline{\hspace{2cm}}$ | 12. $3,990 - 1,684 = \underline{\hspace{2cm}}$ |
| 13. $4,375 - 2,627 = \underline{\hspace{2cm}}$ | 14. $6,848 - 5,279 = \underline{\hspace{2cm}}$ |
| 15. $8,442 - 2,176 = \underline{\hspace{2cm}}$ |                                                |

## Problem Solving

Solve.

- |                                                                                                                              |                                                                                                                                                     |
|------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>16. The soccer camp ordered 555 T-shirts. It received 469 T-shirts. How many more T-shirts does it need?</p> <p>_____</p> | <p>17. Mr. Mooney ordered 1,100 applications for soccer camp. He mailed 998 applications. How many applications does he have left?</p> <p>_____</p> |
|------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|

# Tell Time

You can tell time in different ways.



Write: 10:15

You can say:

- ten fifteen
- fifteen minutes after ten
- a quarter past ten



Write: 4:28

You can say:

- four twenty-eight
- twenty-eight minutes past four
- twenty-eight minutes after four



Write: 1:45

You can say:

- one forty-five
- forty-five minutes past one
- a quarter to two

Write each time. Then write one way to say the time in words.

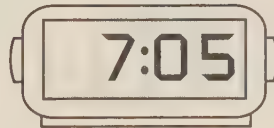
1.



Write: \_\_\_\_\_

Say: \_\_\_\_\_

2.



Write: \_\_\_\_\_

Say: \_\_\_\_\_

3.



Write: \_\_\_\_\_

Say: \_\_\_\_\_

4.



Write: \_\_\_\_\_

Say: \_\_\_\_\_

5.



Write: \_\_\_\_\_

Say: \_\_\_\_\_

6.



Write: \_\_\_\_\_

Say: \_\_\_\_\_

# Convert Time

There are 60 minutes in 1 hour.

$$1 \text{ hour} = 60 \text{ minutes}$$



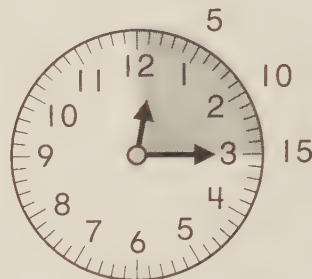
There are 30 minutes in a half hour.

$$\frac{1}{2} \text{ hour} = 30 \text{ minutes}$$



There are 15 minutes in a quarter hour.

$$\frac{1}{4} \text{ hour} = 15 \text{ minutes}$$



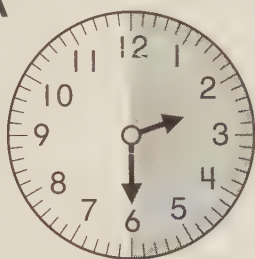
Match. Write the correct letter of the clockface.

1. half hour \_\_\_\_\_

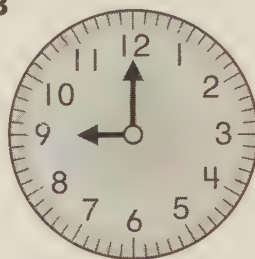
2. hour \_\_\_\_\_

3. quarter hour \_\_\_\_\_

**A**



**B**



**C**



Match the times.

4. 15 minutes \_\_\_\_\_

**A** 1 hour

**B** half hour

**C** quarter hour

5. 60 minutes \_\_\_\_\_

**A** 1 hour

**B** half hour

**C** quarter hour

6. 30 minutes \_\_\_\_\_

**A** 1 hour

**B**  $\frac{1}{2}$  hour

**C**  $\frac{1}{4}$  hour

7. 2 hours \_\_\_\_\_

**A** 30 minutes

**B** 60 minutes

**C** 120 minutes

8. 180 minutes \_\_\_\_\_

**A** 1 hour

**B**  $1\frac{1}{2}$  hours

**C** 3 hours

9. 90 minutes \_\_\_\_\_

**A**  $1\frac{1}{2}$  hours

**B**  $1\frac{1}{4}$  hours

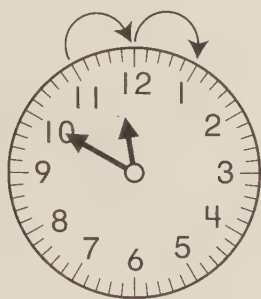
**C**  $1\frac{3}{4}$  hours

# Elapsed Time



Find when an activity ends.

The movie begins at 11:50 A.M.  
It is 2 hours long. When does the movie end?



Think: 1 hour past 11:50 A.M. is  
12:50 P.M.  
2 hours past 11:50 A.M. is  
1:50 P.M.

The movie ends at 1:50 P.M.

Find how much time has passed.

Megan began to study at 6:50 P.M.  
She finished studying at 8:30 P.M.  
How long did she study?



Think: From 6:50 P.M. to 7:50 P.M. is  
1 hour.  
Then skip count by fives to  
8:30.

Megan studied for 1 hour 40 minutes.

What time will it be in 4 hours?

1.



2.



3.



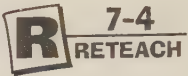
How much time has passed?

4. Begin: 8:10 A.M.  
End: 8:45 A.M.

5. Begin: 2:25 P.M.  
End: 6:30 P.M.

6. Begin: 10:30 A.M.  
End: 1:30 P.M.

Calendar



July

| S  | M  | T  | W  | T  | F               | S  |
|----|----|----|----|----|-----------------|----|
|    | 1  | 2  | 3  | 4  | 5               | 6  |
| 7  | 8  | 9  | 10 | 11 | 12              | 13 |
| 14 | 15 | 16 | 17 | 18 | 19<br>Swim Meet | 20 |
| 21 | 22 | 23 | 24 | 25 | 26              | 27 |
| 28 | 29 | 30 | 31 |    |                 |    |

What is the date two weeks after July 6?

- Find Saturday, July 6.
- Move down two rows to Saturday, July 20.

Use the calendar to solve each problem.

1. On which day of the week is July 4?

\_\_\_\_\_
2. On which day of the week is the twenty-sixth?

\_\_\_\_\_
3. What is the date for the second Tuesday in July?

\_\_\_\_\_
4. What is the date for the swim meet?

\_\_\_\_\_
5. How many days is it from the Fourth of July to the swim meet?

\_\_\_\_\_
6. How many weeks are there from July 7 through July 28?

\_\_\_\_\_
7. What is the date one week after July 10?

\_\_\_\_\_
8. What is the date three weeks after July 4?

\_\_\_\_\_

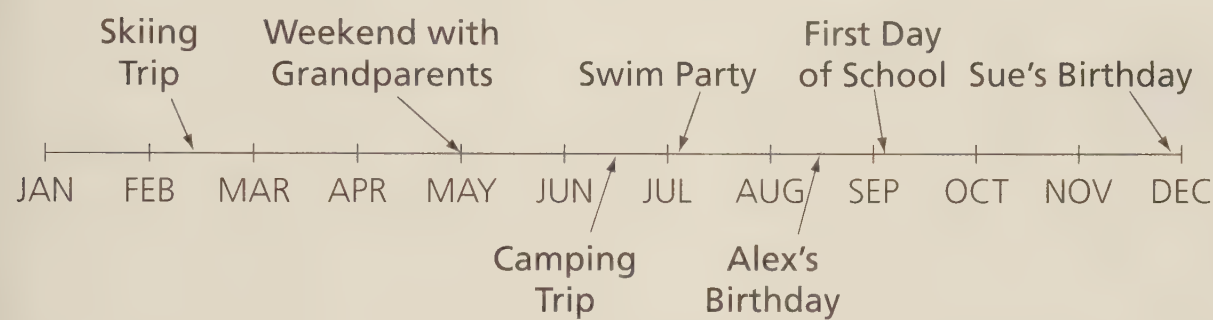
# Time Lines



Alex made a time line to show some events in the year 2003. It shows the month when each event happened. In what month did he visit his grandparents for a weekend?

Use Alex's time line to solve the problem.

Read the time line from left to right.



Alex visited his grandparents for a weekend in May.

Use the time line above for problems 1–4.

- 1. What happened in August?  
\_\_\_\_\_
- 2. What happened after Alex's birthday and before Sue's birthday?  
\_\_\_\_\_
- 3. What month did Alex go skiing?  
\_\_\_\_\_
- 4. What events happened after April and before July?  
\_\_\_\_\_
- 5. Alex forgot to include his fishing trip on his time line. He went fishing during the month after the camping trip and before his birthday. What month did Alex go fishing?  
\_\_\_\_\_

# Problem Solving: Skill

## Identify Missing Information



Math class starts at 10:00 A.M. and lasts for 55 minutes. Art class starts 5 minutes after math class ends. Art class ends at 11:45 A.M. How long is art class?

**Step 1****Read**

**Make sure you understand the problem.**

What do you need to find?    How long is art class?

**Step 2****Plan**

**Make a plan.**

Find out when art class begins and ends.

Find the necessary information. Math starts at 10:00.

It lasts for 55 minutes.

Art starts 5 minutes later.

Art class ends at 11:45.

**Step 3****Solve**

**Carry out your plan.**

Find when math class ends.    10:00 → 55 minutes later → 10:55

Art starts 5 minutes later.    10:55 → 5 minutes later → 11:00

How long is art class?    11:00 → 11:45 = 45 minutes

Art class is 45 minutes long.

**Step 4****Look Back**

**Check your answer.**

Make sure you used the correct information.

### Practice

Solve. Identify the missing information.

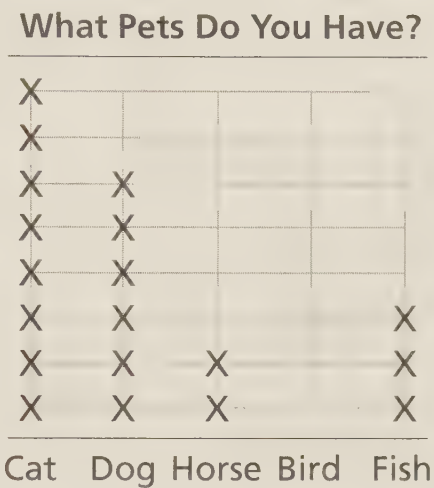
1. Kirk practices the trumpet for 30 minutes on Tuesday, 45 minutes longer than that on Wednesday, and 30 minutes on Thursday. How much time does Kirk practice his trumpet in all?  
\_\_\_\_\_
2. Meg does spelling homework for 1 hour and reading homework for 30 minutes. Her science homework takes 10 minutes longer than her reading homework. How long does she spend on her homework?  
\_\_\_\_\_

# Collect and Organize Data



Lana asks the students in her class what pets they have. She makes a tally chart and a line plot of the results.

| What Pets Do You Have? |       |                     |
|------------------------|-------|---------------------|
| Kind of Pet            | Tally | Number of Responses |
| Cat                    |       | 8                   |
| Dog                    |       | 6                   |
| Horse                  |       | 2                   |
| Bird                   |       | 5                   |
| Fish                   |       | 3                   |



Look at the tally chart. *|||||* stands for 5 tally marks. So there are 8 tally marks for cat. 8 Xs in the line plot show the same data.

Use the tally chart and the line plot to answer the questions.

1. How many tally marks are there in the chart for the number of students who have a bird?

\_\_\_\_\_
2. Show the number of Xs in the line plot for the number of students who have a bird.

\_\_\_\_\_
3. Show the number of tally marks in the tally chart for the number of students who have a fish.

\_\_\_\_\_
4. Which two pets have the most responses? Did the tally chart or the line plot help you decide? Explain.

\_\_\_\_\_
5. Lana asks 3 more students what kind of pet each has. Each student has a dog. How does this information change the line plot?

\_\_\_\_\_

# Find Median, Mode, and Range

Each morning for 9 days, Lou counts the number of blue jays that come to his bird feeder. He puts his data in a tally chart. Look at Lou's data at right.

| Blue Jays Seen at Bird Feeder |       |                     |
|-------------------------------|-------|---------------------|
| Number of Blue Jays           | Tally | Number of Responses |
| 4                             |       | 1                   |
| 5                             |       | 3                   |
| 6                             |       | 2                   |
| 8                             |       | 3                   |

Listed below is the number of blue jays in order from least to greatest.

4, 5, 5, 5, 6, 6, 8, 8, 8

|                                                                                                                                                                                                                                         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>The median is the number in the middle.</p> <p>4,      5,      5,      5,      <b>6</b>,      6,      8,      8,      8</p> <p>The median is 6.</p>                                                                                  |
| <p>The mode is the number that occurs most often. There can be more than one mode.</p> <p>4,      <b>5</b>,      <b>5</b>,      <b>5</b>,      6,      6,      <b>8</b>,      <b>8</b>,      <b>8</b></p> <p>The modes are 5 and 8.</p> |
| <p>The range is the least number subtracted from the greatest number.</p> <p>4,      5,      5,      5,      6,      6,      8,      8,      8</p> <p><math>8 - 4 = 4</math> The range is 4.</p>                                        |

The median is 6, the modes are 5 and 8, and the range is 4.

Find the range, median, and mode.

1. 7, 3, 3, 8, 3, 9, 2, 1, 9, 2, 8

\_\_\_\_\_

2. 5, 6, 4, 6, 3, 5, 6, 3, 6, 3, 4

\_\_\_\_\_

3. 7, 10, 5, 8, 9, 8, 5, 8, 9, 6, 7

\_\_\_\_\_

4. 6, 8, 7, 7, 8, 7, 6, 8, 8

\_\_\_\_\_

# Explore Pictographs

Some friends recorded the number of books they read in a chart. Then they used the chart to make a pictograph.

A **pictograph** is a graph that shows data using symbols.  
The **key** tells how many items each symbol stands for.

| Books Read in the Read-a-Thon for One Month |                      |
|---------------------------------------------|----------------------|
| Student                                     | Number of Books Read |
| Sue Lin                                     | 12                   |
| Aretha                                      | 8                    |
| Sam                                         | 6                    |
| Juan                                        | 8                    |

| Books Read in the Read-a-Thon for One Month |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sue Lin                                     |       |
| Aretha                                      |                                                                                                                                                                             |
| Sam                                         |                                                                                                                                                                                                                                                                |
| Juan                                        |                                                                                                                                                                             |
|                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

Key: Each  stands for 2 books.

Use the data in the pictograph to answer the questions.

1. What does each  stand for?

\_\_\_\_\_
2. How many books did Aretha read?

\_\_\_\_\_
3. Which two students read the same number of books?

\_\_\_\_\_
4. Who read the fewest number of books?

\_\_\_\_\_
5. How many books did Sam and Sue Lin read altogether?

\_\_\_\_\_
6. How many books did Sue Lin and her friends read altogether?

\_\_\_\_\_
7. What if you read 10 books? How many symbols would you draw?

\_\_\_\_\_
8. Write your name in the pictograph and draw the symbols.

\_\_\_\_\_

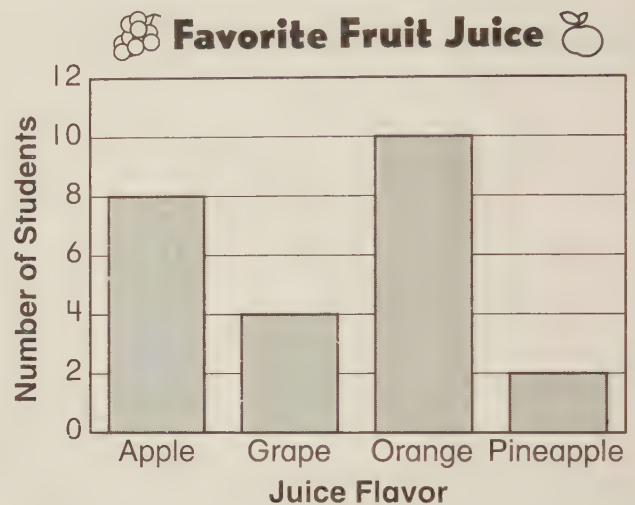
# Explore Bar Graphs

Mark takes a survey of some third-grade students to find out which flavor of juice they like best. He shows the results in a chart. Then Mark uses the chart to make a bar graph.

A **bar graph** is a graph that shows data using bars. The **scale** along one side of the bar graph is a set of equally spaced marks to tell how many.

The first bar in the graph tells you that 8 students like apple juice.

| Favorite Fruit Juice |                    |
|----------------------|--------------------|
| Juice                | Number of Students |
| Apple                | 8                  |
| Grape                | 4                  |
| Orange               | 10                 |
| Pineapple            | 2                  |



Use the data in the bar graph to answer the questions.

- How many students like grape juice?  
\_\_\_\_\_
- Which juice flavor is the students' least favorite?  
\_\_\_\_\_
- How many more students like orange juice than pineapple juice?  
\_\_\_\_\_
- Which two juice flavors do the students like the best?  
\_\_\_\_\_
- Which juice flavor did the students like the most? How can you tell?  
\_\_\_\_\_  
\_\_\_\_\_
- How many students were in this survey? How do you know?  
\_\_\_\_\_  
\_\_\_\_\_

# Problem Solving: Strategy

## Work Backward

Page 171, Problem 5

On weekends, Alani has cheerleading practice for 45 minutes each day. She finishes at 12:30 P.M. What time does she begin cheerleading practice?

### Step 1

#### Read

**Be sure you understand the problem.**

Read carefully.

What do you know?

- On weekends, Alani practices cheerleading \_\_\_\_\_ minutes each day.
- Alani finishes at \_\_\_\_\_.

What do you need to find?

- You need to find the time that Alani begins \_\_\_\_\_.

### Step 2

#### Plan

- Logical Reasoning
- Draw a Picture or Diagram
- Make a Graph
- Act It Out
- Make a Table or List
- Find a Pattern
- Guess and Check
- Write an Equation
- Work Backward
- Solve a Simpler Problem

**Make a plan.**

Choose a strategy.

You can work backward to solve the problem.

Start by finding the time that Alani finishes her cheerleading practice.

Then work backward to find the time that Alani begins practice.

# Problem Solving: Strategy

## Work Backward

**Step 3****Solve****Carry out your plan.**

- Alani finishes cheerleading practice at \_\_\_\_\_.
- She practices for \_\_\_\_\_ minutes.

Start at 12:30 P.M.

Skip-count backward by 5s to 45 to find the time that Alani begins practice.

Alani begins practice at \_\_\_\_\_.

**Step 4****Look Back****Is the solution reasonable?**

Reread the problem.

Start with your answer. Move forward 45 minutes.

Did you end at 12:30 P.M.? \_\_\_\_\_

What other strategies could you use to solve the problem?

\_\_\_\_\_

**Practice**

1. Ellen went to a movie. The movie was 1 hour 30 minutes long. If the movie ended at 4:20 P.M., at what time did it begin?  
\_\_\_\_\_
2. Stan must do 1 hour of homework and then practice the piano for 45 minutes before he can watch TV. He wants to watch TV at 9:00 P.M. At what time does he have to start doing his homework?  
\_\_\_\_\_

# Coordinate Graphs

You can name the location on a map by using an **ordered pair**.

Where is the magic show on the map?

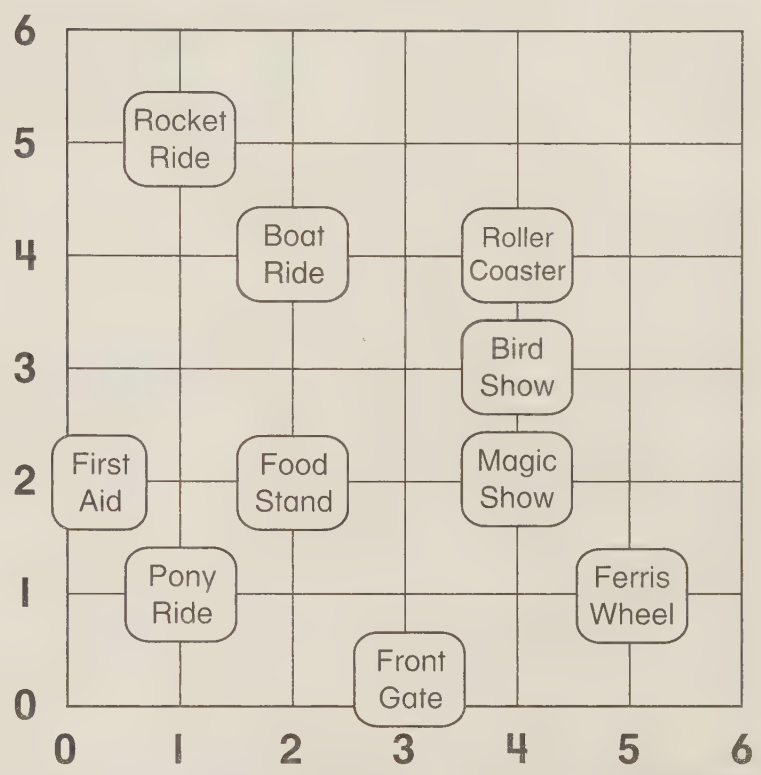
Start at (0, 0).

The first number tells you how many spaces to count to the *right*.

The second number tells you how many spaces to count *up*.

Think of an ordered pair this way: ( $\rightarrow$ ,  $\uparrow$ )

The Magic Show is located at (4, 2) on the map.



Use the map to write the location of each place.

1. Pony Ride \_\_\_\_\_

2. Rocket Ride \_\_\_\_\_

3. Front Gate \_\_\_\_\_

4. Roller Coaster \_\_\_\_\_

5. First Aid station \_\_\_\_\_

6. Bird Show \_\_\_\_\_

Name the place at each location on the map.

7. (2, 2) \_\_\_\_\_

8. (5, 1) \_\_\_\_\_

9. (2, 4) \_\_\_\_\_

10. (1, 5) \_\_\_\_\_

## Problem Solving

Solve.

11. The amusement park has a Fun House. It's located at (3, 5). Draw the Fun House on the map above.

12. The ride Twirling Teacups is located between the Boat Ride and the Roller Coaster. Write the ordered pair for the ride.

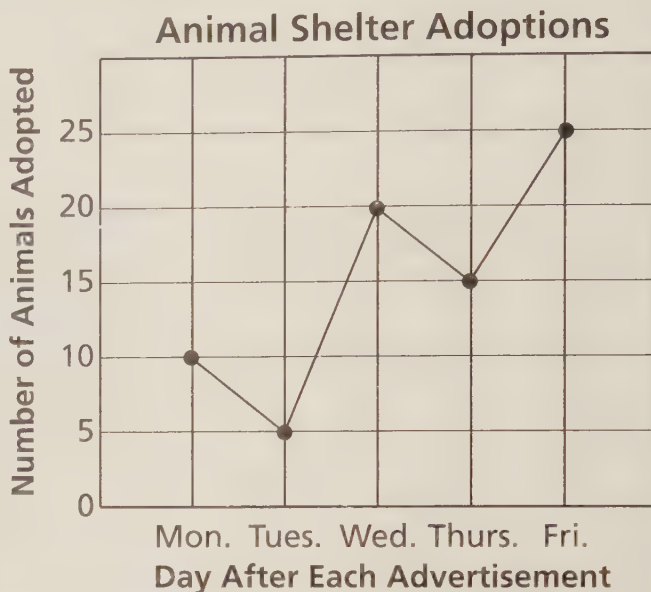
## Interpret Line Graphs

The town animal shelter wants more animals adopted. It decides to advertise on television every evening for one week, beginning on Sunday. The shelter recorded the number of animals adopted after each advertisement appeared.

How many animals were adopted on Wednesday?

Interpret the line graph to solve the problem.

Find the day labeled Wednesday.  
Move up that line to the point.  
Move left to the scale and find the number of animals.  
20 animals were adopted on Wednesday.



**Use the line graph above for problems 1–4.**

1. How many animals were adopted on Monday?

\_\_\_\_\_

2. On which day were 5 animals adopted?

\_\_\_\_\_

3. On which day were the most animals adopted?

\_\_\_\_\_

4. Do you think advertising helped get animals adopted? Explain your reasoning.

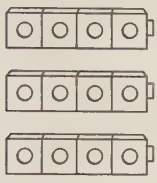
\_\_\_\_\_

\_\_\_\_\_

# Explore the Meaning of Multiplication

Find  $3 \times 4$ .

## Using Models



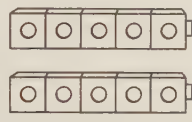
3 groups of 4 cubes

## Using Paper and Pencil

| Number<br>of Groups |          | Number in<br>Each Group |     | Total        |
|---------------------|----------|-------------------------|-----|--------------|
| 3                   | $\times$ | 4                       | $=$ | 12           |
| $\downarrow$        |          | $\downarrow$            |     | $\downarrow$ |
| factor              |          | factor                  |     | product      |

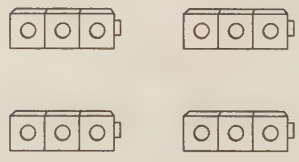
Use models to find the total number.

1.



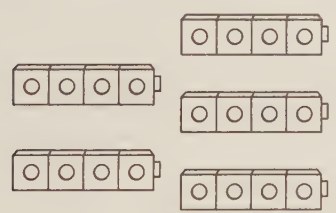
2 groups of 5 = \_\_\_\_\_

2.



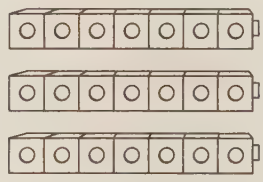
4 groups of 3 = \_\_\_\_\_

3.



5 groups of 4 = \_\_\_\_\_

4.



3 groups of 7 = \_\_\_\_\_

5. 3 groups of 6 = \_\_\_\_\_

6. 7 groups of 2 = \_\_\_\_\_

7. 5 groups of 3 = \_\_\_\_\_

8. 6 groups of 4 = \_\_\_\_\_

9. 4 groups of 8 = \_\_\_\_\_

10. 6 groups of 5 = \_\_\_\_\_

# Relate Multiplication and Addition • Algebra

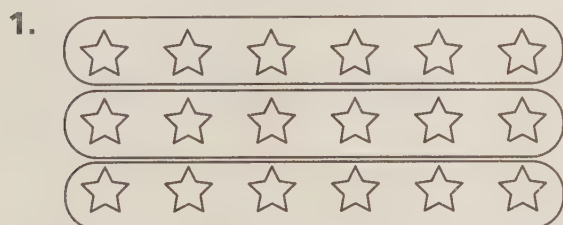
When there is an equal number in each group, you can find the total by using repeated addition or multiplication.



Multiply: 4 groups of 3 = 12  
 $4 \times 3 = 12$

Add:  $3 + 3 + 3 + 3 = 12$

Find each total. Write an addition sentence and a multiplication sentence.



$$6 + 6 + 6 = \underline{\hspace{2cm}}$$

$$3 \text{ groups of } 6 = \underline{\hspace{2cm}}$$

$$3 \times 6 = \underline{\hspace{2cm}}$$

2.

\_\_\_\_\_

$$7 \text{ groups of } \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

$$\underline{\hspace{1cm}} \times 2 = \underline{\hspace{1cm}}$$

3.

\_\_\_\_\_

$$\underline{\hspace{1cm}} \text{ groups of } \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

$$\underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

4.

\_\_\_\_\_

$$\underline{\hspace{1cm}} \text{ groups of } \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

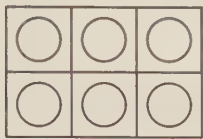
$$\underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

# Explore Multiplication Using Arrays

Find  $2 \times 3$  and  $3 \times 2$ .

### Using Models

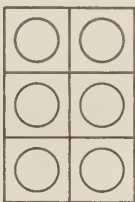
Make 2 rows of 3 counters to show  $2 \times 3$ .



### Using Paper and Pencil

| Number of rows |          | Number in each row |     | Product |
|----------------|----------|--------------------|-----|---------|
| 2              | $\times$ | 3                  | $=$ | 6       |

Make 3 rows of 2 counters to show  $3 \times 2$ .



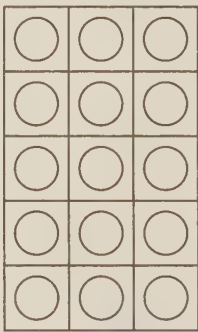
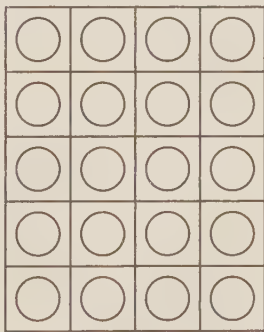
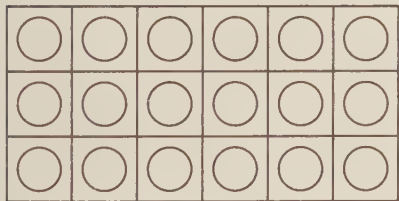
| Number of rows |          | Number in each row |     | Product |
|----------------|----------|--------------------|-----|---------|
| 3              | $\times$ | 2                  | $=$ | 6       |

Draw lines to match the multiplication sentence with an array.

1.  $5 \times 3 = 15$

2.  $3 \times 6 = 18$

3.  $5 \times 4 = 20$



Find each product. Then use the Commutative Property to write a different multiplication sentence.

4.  $2 \times 4 =$  \_\_\_\_\_

5.  $3 \times 6 =$  \_\_\_\_\_

6.  $5 \times 6 =$  \_\_\_\_\_

7.  $4 \times 6 =$  \_\_\_\_\_

8.  $2 \times 7 =$  \_\_\_\_\_

9.  $8 \times 3 =$  \_\_\_\_\_

# Problem Solving: Skill

## Choose an Operation

Joan buys 6 tickets. Each ticket costs \$3. How much money did Joan spend on tickets in all?

**Step 1****Read**

**Make sure you understand the problem.**

- What do you know?  
Joan buys 6 tickets. Each ticket costs \$3.
- What do you need to find?  
How much money did Joan spend on tickets?

**Step 2****Plan**

**Make a plan.**

You can add or multiply to find the total.

**Step 3****Solve**

**Carry out your plan.**

$$\$3 + \$3 + \$3 + \$3 + \$3 + \$3 = \$18$$

$$6 \times \$3 = \$18$$

Multiplication is the better choice.

Joan spends \$18 on tickets.

**Step 4****Look Back**

**Check your answer.**

Does it make sense?

### Practice

Solve. Explain why you chose the operation.

1. A rock band has 5 students. A jazz band has 9 students. Altogether how many students are in the two bands?  
\_\_\_\_\_
2. There are 3 jugglers on the stage. Each juggler is juggling 4 oranges. How many oranges are there in all?  
\_\_\_\_\_

# Multiply by 2 and 5

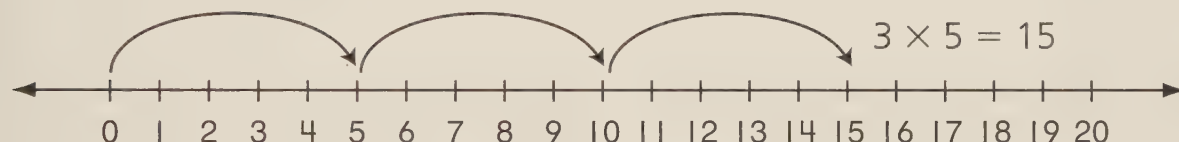


You can skip-count on the number line to help you find the product of two numbers.

Find  $6 \times 2$ . Think: 6 groups of 2



Find  $3 \times 5$ . Think: 3 groups of 5



Find each product. You may use a number line.

- |                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 1. $4 \times 2 =$ _____  | 2. $4 \times 5 =$ _____  | 3. $7 \times 2 =$ _____  |
| 4. $5 \times 5 =$ _____  | 5. $2 \times 9 =$ _____  | 6. $1 \times 5 =$ _____  |
| 7. $6 \times 5 =$ _____  | 8. $5 \times 2 =$ _____  | 9. $5 \times 8 =$ _____  |
| 10. $2 \times 6 =$ _____ | 11. $3 \times 5 =$ _____ | 12. $2 \times 3 =$ _____ |
| 13. $5 \times 7 =$ _____ | 14. $2 \times 2 =$ _____ | 15. $4 \times 2 =$ _____ |
| 16. $9 \times 2 =$ _____ | 17. $8 \times 5 =$ _____ | 18. $6 \times 5 =$ _____ |
| 19. $1 \times 2 =$ _____ | 20. $8 \times 2 =$ _____ | 21. $5 \times 9 =$ _____ |

# Problem Solving: Strategy

## Find a Pattern

Page 209, Problem 2

There are 24 dancers in the show. They dance in one long line running across the stage. Every third dancer wears a red costume. All of the others wear blue. Kitty is the 14th dancer on the stage. What color is her costume?

### Step 1

#### Read

#### Be sure you understand the problem.

Read carefully.

What do you know?

- There are \_\_\_\_\_ dancers in a chorus line.
- Every \_\_\_\_\_ dancer wears a red costume.
- All of the other dancers wear \_\_\_\_\_ costumes.
- Kitty is the \_\_\_\_\_ dancer in the line.

What do you need to find?

- You need to find what \_\_\_\_\_ costume the \_\_\_\_\_ dancer wears.

### Step 2

#### Plan

- Logical Reasoning
- Draw a Picture or Diagram
- Make a Graph
- Act It Out
- Make a Table or List
- Find a Pattern
- Guess and Check
- Write an Equation
- Work Backward
- Solve a Simpler Problem

#### Make a plan.

Choose a strategy.

Finding a pattern will help you solve the problem

Find the pattern for the first three dancers in the line.

Continue the pattern to find the color costume that the 14th dancer wears.

# Problem Solving: Strategy

## Find a Pattern

### Step 3

### Solve

#### Carry out your plan.

There are 24 dancers in a line. Every third dancer wears a red costume. All the other dancers wear blue.

Use a number chart to help you find the pattern.

Color every third number red.

Color each of the other numbers blue.

|    |    |    |    |    |    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|----|----|----|----|----|
| 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 |
| 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |

Is the number 14 colored in red or blue? \_\_\_\_\_

The 14th dancer is wearing a \_\_\_\_\_ costume.

### Step 4

### Look Back

#### Is the solution reasonable?

Reread the problem.

Does your answer make sense? Yes No

Did you answer the question? Yes No

Did you find a pattern and continue it? Yes No

What other strategies could you use to solve the problem?

\_\_\_\_\_

## Practice

Find a pattern to solve.

- Jennifer is playing the bass drum. In one performance, she hits the drum on each of the first 3 beats, then rests for 2 beats. If this pattern continues, will she hit the drum on the 15th beat?

\_\_\_\_\_

- In a dance show, 20 dancers line up in a row. Every 4th dancer wears a cat costume. The rest of dancers wear dog costumes. Nadia is the 16th dancer in the row. What costume does she wear?

\_\_\_\_\_

# Multiply by 3 and 4

Find  $3 \times 5$ .

## Using Models



## Using Pencil and Paper

| Number<br>of rows |          | Number in<br>each row |     | Total |
|-------------------|----------|-----------------------|-----|-------|
| 3                 | $\times$ | 5                     | $=$ | 15    |

Use the picture to find the product.

**1.**

$3 \times 6 = \underline{\hspace{2cm}}$

**2.**

$4 \times 5 = \underline{\hspace{2cm}}$

**3.**

$3 \times 9 = \underline{\hspace{2cm}}$

Multiply.

- |                                                    |                                                    |                                                    |
|----------------------------------------------------|----------------------------------------------------|----------------------------------------------------|
| <b>4.</b> $3 \times 7 = \underline{\hspace{2cm}}$  | <b>5.</b> $4 \times 4 = \underline{\hspace{2cm}}$  | <b>6.</b> $4 \times 3 = \underline{\hspace{2cm}}$  |
| <b>7.</b> $3 \times 3 = \underline{\hspace{2cm}}$  | <b>8.</b> $3 \times 4 = \underline{\hspace{2cm}}$  | <b>9.</b> $3 \times 8 = \underline{\hspace{2cm}}$  |
| <b>10.</b> $4 \times 6 = \underline{\hspace{2cm}}$ | <b>11.</b> $3 \times 9 = \underline{\hspace{2cm}}$ | <b>12.</b> $4 \times 8 = \underline{\hspace{2cm}}$ |
| <b>13.</b> $4 \times 7 = \underline{\hspace{2cm}}$ | <b>14.</b> $4 \times 9 = \underline{\hspace{2cm}}$ | <b>15.</b> $3 \times 1 = \underline{\hspace{2cm}}$ |
| <b>16.</b> $5 \times 4 = \underline{\hspace{2cm}}$ | <b>17.</b> $3 \times 6 = \underline{\hspace{2cm}}$ | <b>18.</b> $4 \times 1 = \underline{\hspace{2cm}}$ |
| <b>19.</b> $9 \times 3 = \underline{\hspace{2cm}}$ | <b>20.</b> $2 \times 4 = \underline{\hspace{2cm}}$ | <b>21.</b> $6 \times 3 = \underline{\hspace{2cm}}$ |

# Multiply by 0 and 1 • Algebra

Find each product.

### Using Models



### Using Pencil and Paper

1 group of 4 stars = 4 stars  
 $1 \times 4 = 4$

4 groups of 1 star = 4 stars  
 $4 \times 1 = 4$

0 groups of 4 stars = 0 stars  
 $0 \times 4 = 0$

4 groups of 0 stars = 0 stars  
 $4 \times 0 = 0$

### Identity Property of Multiplication

The product of a nonzero number and 1 is the number itself.

### Zero Property of Multiplication

The product of a number and 0 is 0.

Find each product.

1.  $1 \times 0 =$  \_\_\_\_\_

2.  $5 \times 1 =$  \_\_\_\_\_

3.  $1 \times 8 =$  \_\_\_\_\_

4.  $0 \times 3 =$  \_\_\_\_\_

5.  $7 \times 1 =$  \_\_\_\_\_

6.  $0 \times 5 =$  \_\_\_\_\_

7.  $4 \times 0 =$  \_\_\_\_\_

8.  $1 \times 4 =$  \_\_\_\_\_

9.  $9 \times 0 =$  \_\_\_\_\_

10.  $6 \times 1 =$  \_\_\_\_\_

11.  $2 \times 1 =$  \_\_\_\_\_

12.  $0 \times 9 =$  \_\_\_\_\_

13.  $1 \times 6 =$  \_\_\_\_\_

14.  $2 \times 0 =$  \_\_\_\_\_

15.  $9 \times 1 =$  \_\_\_\_\_

16.  $0 \times 6 =$  \_\_\_\_\_

17.  $1 \times 2 =$  \_\_\_\_\_

18.  $5 \times 0 =$  \_\_\_\_\_

19.  $7 \times 1 =$  \_\_\_\_\_

20.  $0 \times 8 =$  \_\_\_\_\_

21.  $3 \times 1 =$  \_\_\_\_\_

# Explore Square Numbers

The product of multiplying a number by itself is a **square number**.

## Models



## Multiplication Sentence

Number  $\times$  Number in = Total  
of Rows Each Row

$$3 \times 3 = 9$$

$$4 \times 4 = 16$$

**factor  $\times$  factor = product**

The products are square numbers.

Write a multiplication sentence.

1.



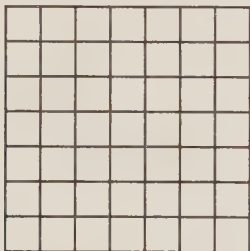
\_\_\_\_\_

2.



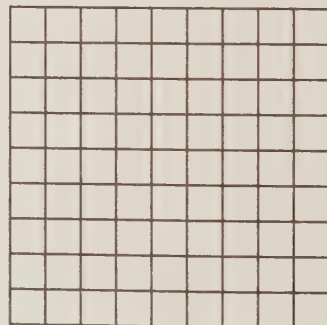
\_\_\_\_\_

3.



\_\_\_\_\_

4.



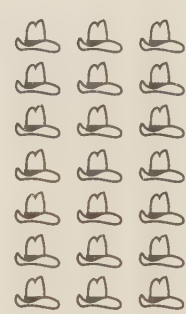
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# Multiply by 6 and 8



You can add on to a known fact to find a new fact.

Find  $7 \times 6$ .



|               |   |               |      |               |
|---------------|---|---------------|------|---------------|
| 7 groups of 6 | = | 7 groups of 3 | plus | 7 groups of 3 |
| $7 \times 6$  | = | $7 \times 3$  | +    | $7 \times 3$  |
|               | = | 21            | +    | 21 = 42       |

Write a multiplication sentence for the picture.



\_\_\_\_\_

Find each product.

- |                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 4. $6 \times 3 =$ _____  | 5. $8 \times 5 =$ _____  | 6. $6 \times 6 =$ _____  |
| 7. $6 \times 8 =$ _____  | 8. $8 \times 8 =$ _____  | 9. $6 \times 9 =$ _____  |
| 10. $9 \times 8 =$ _____ | 11. $6 \times 7 =$ _____ | 12. $7 \times 8 =$ _____ |

# Multiply by 7

You can add on to a known fact to find a new fact.

Find  $7 \times 3$ .



7 groups of 3

$$7 \times 3$$



6 groups of 3

$$6 \times 3$$

$$= 18$$

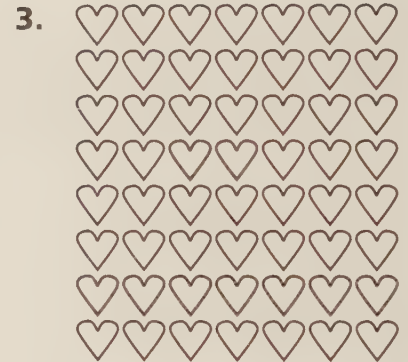
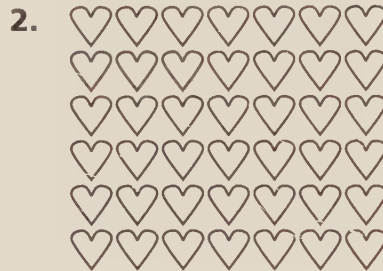


plus 1 group of 3

$$+ 1 \times 3$$

$$+ 3 = 21$$

Write a multiplication sentence for the picture.



Find each product.

4.  $3 \times 7 =$  \_\_\_\_\_

5.  $5 \times 7 =$  \_\_\_\_\_

6.  $7 \times 7 =$  \_\_\_\_\_

7.  $8 \times 7 =$  \_\_\_\_\_

8.  $7 \times 6 =$  \_\_\_\_\_

9.  $7 \times 9 =$  \_\_\_\_\_

10.  $9 \times 7 =$  \_\_\_\_\_

11.  $4 \times 7 =$  \_\_\_\_\_

12.  $7 \times 1 =$  \_\_\_\_\_

13.  $6 \times 7 =$  \_\_\_\_\_

14.  $3 \times 7 =$  \_\_\_\_\_

15.  $0 \times 7 =$  \_\_\_\_\_

16.  $7 \times 4 =$  \_\_\_\_\_

17.  $1 \times 7 =$  \_\_\_\_\_

18.  $2 \times 7 =$  \_\_\_\_\_

# Find Missing Factors • Algebra



Dan used several pages in his photo album. He placed 4 photographs on each page. He placed 12 photographs in all. How many pages did he use?

You can solve the problem by finding a missing factor. Find the number of groups of 4 when the total is 12.

groups of 4 equals 12.

|                      |   |                                       |   |                                |
|----------------------|---|---------------------------------------|---|--------------------------------|
| <input type="text"/> | × | 4                                     | = | 12                             |
| number of<br>pages   |   | number of<br>photographs<br>on a page |   | total number<br>of photographs |

Write an equation. Let  $p$  = the number of pages used. Then solve for  $p$ .

|     |   |   |   |    |
|-----|---|---|---|----|
| $p$ | × | 4 | = | 12 |
| 3   | × | 4 | = | 12 |

Dan used 3 pages in his photo album.

Find the missing factor.

1.  groups of 6 is 18.    2. 7 groups of  is 35.    3. 4 groups of  is 36.

4.  groups of 2 is 14.    5.  groups of 3 is 27.    6. 5 groups of  is 20.

7.  $d \times 3 = 24$

\_\_\_\_\_

8.  $6 \times y = 30$

\_\_\_\_\_

9.  $b \times 2 = 18$

\_\_\_\_\_

10.  $5 \times k = 25$

\_\_\_\_\_

11.  $7 \times s = 21$

\_\_\_\_\_

12.  $n \times 8 = 16$

\_\_\_\_\_

## Problem Solving: Skill

### Solve Multistep Problems

Aretha rode on a bus for 2 miles from home to the train station. Then she took a train for 6 miles to the city. She returned home the same way. How many miles did she travel on her trip from home to the city and back again?

**Step 1****Read**

**Make sure you understand the problem.**

How many miles did she travel in all?

**Step 2****Plan**

**Make a plan.**

She rode on the bus 2 miles and rode on the train 6 miles each way.

**Step 3****Solve**

**Carry out your plan.**

**Step 1** Find the number of miles each way.  
 $2 + 6 = 8$

**Step 2** She travels to the city and back again.  
 $8 + 8 = 16$

She travels 16 miles from home to the city and back.

**Step 4****Look Back**

**Check your answer.**

Make sure your answer is reasonable.

### Practice

1. The South Sound Ferry has a snack bar. Drinks cost \$1 and hamburgers cost \$3. Julia has 1 drink and 1 hamburger. Harry has 2 drinks and 2 hamburgers. How much do Julia and Harry spend altogether?
2. Tickets for the ferry are \$5 for adults and \$2 for children. What does it cost for Mr. and Mrs. Anderson and their 3 children to ride the ferry?

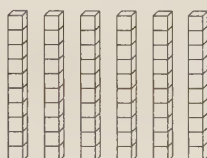
# Multiply by 10



You can use models to help you multiply by tens.



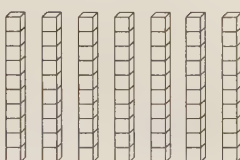
$1 \times 10 = 10$



$6 \times 10 = 60$



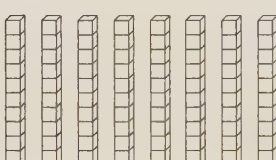
$2 \times 10 = 20$



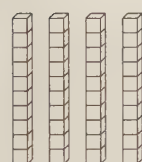
$7 \times 10 = 70$



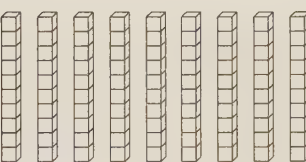
$3 \times 10 = 30$



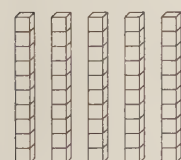
$8 \times 10 = 80$



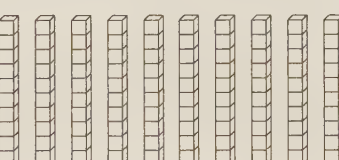
$4 \times 10 = 40$



$9 \times 10 = 90$



$5 \times 10 = 50$



$10 \times 10 = 100$

Find each product.

1.  $\begin{array}{r} 10 \\ \times 2 \\ \hline \end{array}$

2.  $\begin{array}{r} 10 \\ \times 7 \\ \hline \end{array}$

3.  $\begin{array}{r} 10 \\ \times 8 \\ \hline \end{array}$

4.  $\begin{array}{r} 10 \\ \times 4 \\ \hline \end{array}$

5.  $\begin{array}{r} 10 \\ \times 9 \\ \hline \end{array}$

6.  $10 \times 3 = \underline{\hspace{2cm}}$

7.  $10 \times 1 = \underline{\hspace{2cm}}$

8.  $10 \times 7 = \underline{\hspace{2cm}}$

9.  $10 \times 2 = \underline{\hspace{2cm}}$

10.  $10 \times 6 = \underline{\hspace{2cm}}$

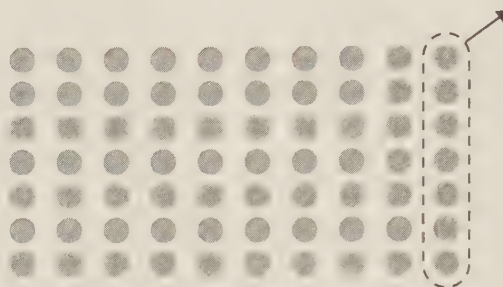
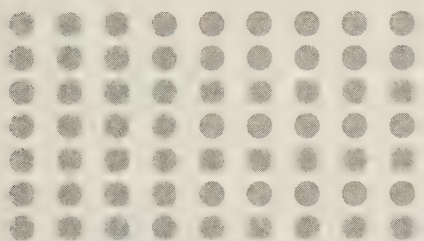
11.  $10 \times 5 = \underline{\hspace{2cm}}$

# Multiply by 9

Here is a strategy you can use when multiplying by 9.

You can multiply the number by 10 and then subtract the number to find a new fact.

Find  $9 \times 7$ .



|               |   |                |       |              |
|---------------|---|----------------|-------|--------------|
| 9 groups of 7 | = | 10 groups of 7 | minus | 1 group of 7 |
| $9 \times 7$  | = | $10 \times 7$  | —     | $1 \times 7$ |
|               | = | 70             | —     | 7 = 63       |

Find each product.

1.  $\begin{array}{r} 9 \\ \times 4 \\ \hline \end{array}$

2.  $\begin{array}{r} 9 \\ \times 5 \\ \hline \end{array}$

3.  $\begin{array}{r} 3 \\ \times 9 \\ \hline \end{array}$

4.  $\begin{array}{r} 9 \\ \times 7 \\ \hline \end{array}$

5.  $\begin{array}{r} 9 \\ \times 8 \\ \hline \end{array}$

6.  $\begin{array}{r} 6 \\ \times 9 \\ \hline \end{array}$

7.  $9 \times 2 = \underline{\hspace{2cm}}$

8.  $5 \times 9 = \underline{\hspace{2cm}}$

9.  $9 \times 4 = \underline{\hspace{2cm}}$

10.  $6 \times 9 = \underline{\hspace{2cm}}$

11.  $9 \times 3 = \underline{\hspace{2cm}}$

12.  $9 \times 1 = \underline{\hspace{2cm}}$

13.  $9 \times 9 = \underline{\hspace{2cm}}$

14.  $9 \times 0 = \underline{\hspace{2cm}}$

15.  $9 \times 8 = \underline{\hspace{2cm}}$

16.  $0 \times 10 = \underline{\hspace{2cm}}$

17.  $6 \times 8 = \underline{\hspace{2cm}}$

18.  $4 \times 7 = \underline{\hspace{2cm}}$

# Multiplication Table



Find  $11 \times 5$ .

| X  | 0 | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9   | 10  | 11  | 12  |
|----|---|----|----|----|----|----|----|----|----|-----|-----|-----|-----|
| 0  | 0 | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0   | 0   | 0   | 0   |
| 1  | 0 | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9   | 10  | 11  | 12  |
| 2  | 0 | 2  | 4  | 6  | 8  | 10 | 12 | 14 | 16 | 18  | 20  | 22  | 24  |
| 3  | 0 | 3  | 6  | 9  | 12 | 15 | 18 | 21 | 24 | 27  | 30  | 33  | 36  |
| 4  | 0 | 4  | 8  | 12 | 16 | 20 | 24 | 28 | 32 | 36  | 40  | 44  | 48  |
| 5  | 0 | 5  | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45  | 50  | 55  | 60  |
| 6  | 0 | 6  | 12 | 18 | 24 | 30 | 36 | 42 | 48 | 54  | 60  | 66  | 72  |
| 7  | 0 | 7  | 14 | 21 | 28 | 35 | 42 | 49 | 56 | 63  | 70  | 77  | 84  |
| 8  | 0 | 8  | 16 | 24 | 32 | 40 | 48 | 56 | 64 | 72  | 80  | 88  | 96  |
| 9  | 0 | 9  | 18 | 27 | 36 | 45 | 54 | 63 | 72 | 81  | 90  | 99  | 108 |
| 10 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90  | 100 | 110 | 120 |
| 11 | 0 | 11 | 22 | 33 | 44 | 55 | 66 | 77 | 88 | 99  | 110 | 121 | 132 |
| 12 | 0 | 12 | 24 | 36 | 48 | 60 | 72 | 84 | 96 | 108 | 120 | 132 | 144 |

Start at the row for 11.  
Look at the column for 5. Find the box where the row and column meet.  
 $11 \times 5 = 55$

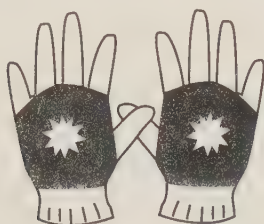
Find each product.

1.  $12 \times 9 =$  \_\_\_\_\_
2.  $11 \times 12 =$  \_\_\_\_\_
3.  $11 \times 4 =$  \_\_\_\_\_
4.  $12 \times 5 =$  \_\_\_\_\_
5.  $11 \times 6 =$  \_\_\_\_\_
6.  $12 \times 12 =$  \_\_\_\_\_
7.  $12 \times 8 =$  \_\_\_\_\_
8.  $10 \times 11 =$  \_\_\_\_\_
9.  $12 \times 11 =$  \_\_\_\_\_
10.  $11 \times 8 =$  \_\_\_\_\_
11.  $12 \times 4 =$  \_\_\_\_\_
12.  $11 \times 11 =$  \_\_\_\_\_

# Multiply 3 Numbers • Algebra

You can use the properties of multiplication to multiply 3 numbers.

Find  $3 \times 2 \times 5$ .



## The Commutative Property of Multiplication

When multiplying, the *order* of the factors does not change the product.

$$3 \times 2 \times 5 =$$

$$2 \times 5 \times 3 =$$

$$10 \times 3 = 30$$

You can use the Commutative Property to switch the order of the numbers 3, 2, and 5.

## The Associative Property of Multiplication

When multiplying, the *grouping* of the factors does not change the product.

$$3 \times 2 \times 5 =$$

$$3 \times (2 \times 5) =$$

$$3 \times 10 = 30$$

You can use the Associative Property to group two factors.

Find each product.

1.  $5 \times 3 \times 2 =$  \_\_\_\_\_

2.  $2 \times 2 \times 6 =$  \_\_\_\_\_

3.  $7 \times 4 \times 1 =$  \_\_\_\_\_

4.  $3 \times 2 \times 3 =$  \_\_\_\_\_

5.  $5 \times 6 \times 2 =$  \_\_\_\_\_

6.  $7 \times 8 \times 0 =$  \_\_\_\_\_

7.  $2 \times 7 \times 2 =$  \_\_\_\_\_

8.  $3 \times 6 \times 2 =$  \_\_\_\_\_

9.  $8 \times 7 \times 1 =$  \_\_\_\_\_

10.  $(3 \times 4) \times 3 =$  \_\_\_\_\_

11.  $6 \times (3 \times 3) =$  \_\_\_\_\_

12.  $(6 \times 2) \times 3 =$  \_\_\_\_\_

13.  $(8 \times 12) \times 0 =$  \_\_\_\_\_

14.  $8 \times (12 \times 0) =$  \_\_\_\_\_

15.  $9 \times (2 \times 5) =$  \_\_\_\_\_

16.  $(5 \times 2) \times 8 =$  \_\_\_\_\_

17.  $3 \times (4 \times 2) =$  \_\_\_\_\_

18.  $0 \times (11 \times 3) =$  \_\_\_\_\_

# Problem Solving: Strategy

## Draw a Picture

Page 261, Problem 3

An amusement park has 4 roller coasters. Each roller coaster has 6 cars. Each car has 2 wheels. How many wheels are there in all?

|                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <div>Step 1</div> <div>Read</div>                                                                                                                                                                                                                                                                                                                             | <p><b>Make sure that you understand the problem.</b></p> <ul style="list-style-type: none"><li>• What do you know?<br/>An amusement park has _____ roller coasters.<br/>Each roller coaster has _____ cars.<br/>Each car has _____ wheels.</li><li>• What do you need to find?<br/>_____</li></ul> |
| <div>Step 2</div> <div>Plan</div> <ul style="list-style-type: none"><li>▪ Logical Reasoning</li><li>▪ Draw a Picture or Diagram</li><li>▪ Make a Graph</li><li>▪ Act It Out</li><li>▪ Make a Table or List</li><li>▪ Find a Pattern</li><li>▪ Guess and Check</li><li>▪ Write an Equation</li><li>▪ Work Backward</li><li>▪ Solve a Simpler Problem</li></ul> | <p><b>Figure out a plan.</b></p> <p>Choose a strategy.</p> <p>You can draw a picture to show what you know and what you need to find out.</p>                                                                                                                                                      |

# Problem Solving: Strategy

## Draw a Picture

**Step 3****Solve****Carry out your plan.**

Draw 4 roller coasters.

Draw 6 cars on each roller coaster.

Draw 2 wheels on each car.

Count the number of wheels.

There are \_\_\_\_\_ wheels.

**Step 4****Look Back**

**Is the solution reasonable?**    Yes    No

How can you use your picture to check your answer?

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**Practice**

1. There are 3 rows of 5 cupcakes on a tray. Each cupcake has 2 candles on it. How many candles are there in all?  
\_\_\_\_\_
2. Reshma baked 3 batches of cookies. Each batch has 8 cookies. Each cookie has 3 nuts on it. How many nuts did Reshma use in all?  
\_\_\_\_\_

# Explore the Meaning of Division

There are two ways to divide 15 counters into equal groups.

15 counters in all

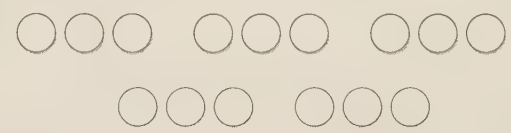
5 counters in each group



There are 3 groups of 5 counters.

15 counters in all

3 counters in each group



There are 5 groups of 3 counters.

Complete. Use the counters to help you.

1.



\_\_\_\_\_ counters in all

\_\_\_\_\_ in each group

\_\_\_\_\_ groups

2.



\_\_\_\_\_ counters in all

\_\_\_\_\_ in each group

\_\_\_\_\_ groups

3.



\_\_\_\_\_ counters in all

\_\_\_\_\_ in each group

\_\_\_\_\_ groups

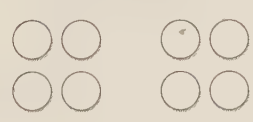
Find the number of equal groups.

4.



\_\_\_\_\_ groups

5.



\_\_\_\_\_ groups

6.



\_\_\_\_\_ groups

Complete.

7. 24 in all

\_\_\_\_\_ in each group

8 groups

8. 25 in all

5 in each group

\_\_\_\_\_ groups

9. 32 in all

\_\_\_\_\_ in each group

8 groups

**Relate Division and Subtraction • Algebra**

Cal put 18 astronaut collector's cards in a scrapbook. He put 6 cards on each page. How many pages did Cal use?

Find  $18 \div 6$ .

You can use repeated subtraction.

$$\begin{array}{r} 18 \\ - 6 \\ \hline 12 \\ - 6 \\ \hline 6 \\ - 6 \\ \hline 0 \end{array}$$

Keep subtracting the same number until there is nothing left. Since the 6 was subtracted 3 times,  $18 \div 6 = 3$ .

Complete. Subtract to find the answer.

1.  $12 \div 4 = \underline{\hspace{2cm}}$

$$\begin{array}{r} 12 \\ - 4 \\ \hline \square \\ - 4 \\ \hline \square \\ - 4 \\ \hline \square \end{array}$$

2.  $20 \div 5 = \underline{\hspace{2cm}}$

$$\begin{array}{r} 20 \\ - 5 \\ \hline \square \\ - 5 \\ \hline \square \\ - 5 \\ \hline \square \\ - 5 \\ \hline \square \end{array}$$

3.  $21 \div 7 = \underline{\hspace{2cm}}$

$$\begin{array}{r} 21 \\ - 7 \\ \hline \square \\ - 7 \\ \hline \square \\ - 7 \\ \hline \square \end{array}$$

Write how many times you need to subtract.

4.  $8 \div 2 = \underline{\hspace{2cm}}$

5.  $6 \div 3 = \underline{\hspace{2cm}}$

6.  $10 \div 5 = \underline{\hspace{2cm}}$

7.  $12 \div 6 = \underline{\hspace{2cm}}$

8.  $14 \div 7 = \underline{\hspace{2cm}}$

9.  $20 \div 4 = \underline{\hspace{2cm}}$

Divide.

10.  $18 \div 3 = \underline{\hspace{2cm}}$

11.  $24 \div 6 = \underline{\hspace{2cm}}$

12.  $28 \div 7 = \underline{\hspace{2cm}}$

13.  $30 \div 6 = \underline{\hspace{2cm}}$

14.  $8 \div 8 = \underline{\hspace{2cm}}$

15.  $18 \div 3 = \underline{\hspace{2cm}}$

# Relate Multiplication to Division • Algebra

Multiplication and division are related.

2 groups  
4 in each group  
8 in all

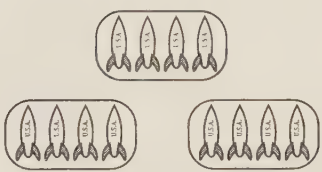


8 in all  
2 groups  
4 in each group

|                  |                      |               |               |                  |                      |
|------------------|----------------------|---------------|---------------|------------------|----------------------|
| Number of groups | Number in each group | Number in all | Number in all | Number of groups | Number in each group |
| 2                | 4                    | 8             | 8             | 2                | 4                    |
| $\times$         |                      | $=$           | $\div$        |                  | $=$                  |

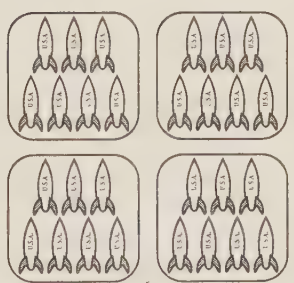
Complete.

1. 3 groups  
4 in each group  
\_\_\_\_\_ in all  
 $3 \times 4 =$  \_\_\_\_\_



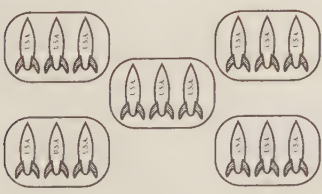
12 in all  
3 groups  
\_\_\_\_\_ in each group  
 $12 \div 3 =$  \_\_\_\_\_

2. \_\_\_\_\_ groups  
\_\_\_\_\_ in each group  
\_\_\_\_\_ in all  
\_\_\_\_\_  $\times$  \_\_\_\_\_  $=$  \_\_\_\_\_



\_\_\_\_\_ in all  
\_\_\_\_\_ groups  
\_\_\_\_\_ in each group  
\_\_\_\_\_  $\div$  \_\_\_\_\_  $=$  \_\_\_\_\_

Write a pair of related multiplication and division sentences for each picture.

3. 

\_\_\_\_\_  $\times$  \_\_\_\_\_  $=$  \_\_\_\_\_

\_\_\_\_\_  $\div$  \_\_\_\_\_  $=$  \_\_\_\_\_

4. 

\_\_\_\_\_  $\times$  \_\_\_\_\_  $=$  \_\_\_\_\_

\_\_\_\_\_  $\div$  \_\_\_\_\_  $=$  \_\_\_\_\_

# Divide by 2

You have 10 counters. How many groups of 2 can you make?



Think: 5 groups of 2 counters or  $5 \times 2 = 10$

You can write  $10 \div 2 = 5$ , or  $2 \overline{)10}^5$ .

Complete.

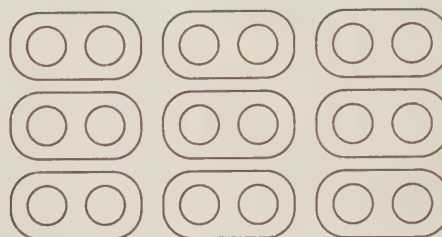
1.



$$3 \times 2 = \underline{\hspace{2cm}}$$

$$6 \div 2 = \underline{\hspace{2cm}}$$

2.



$$9 \times 2 = \underline{\hspace{2cm}}$$

$$18 \div 2 = \underline{\hspace{2cm}}$$

Divide. Write a related multiplication fact.

3.  $16 \div 2 = \underline{\hspace{2cm}}$

\_\_\_\_\_

4.  $14 \div 2 = \underline{\hspace{2cm}}$

\_\_\_\_\_

5.  $8 \div 2 = \underline{\hspace{2cm}}$

\_\_\_\_\_

6.  $6 \div 2 = \underline{\hspace{2cm}}$

\_\_\_\_\_

7.  $12 \div 2 = \underline{\hspace{2cm}}$

\_\_\_\_\_

8.  $4 \div 2 = \underline{\hspace{2cm}}$

\_\_\_\_\_

9.  $2 \overline{)8}$

\_\_\_\_\_

10.  $2 \overline{)12}$

\_\_\_\_\_

11.  $2 \overline{)14}$

\_\_\_\_\_

12.  $2 \overline{)16}$

\_\_\_\_\_

13.  $2 \overline{)2}$

\_\_\_\_\_

14.  $2 \overline{)4}$

\_\_\_\_\_

# Problem Solving: Skill

## Choose an Operation



Sabrina’s class uses 24 rubber balls to make models of the planets in our solar system. There are 8 groups of students. Each group gets the same number of rubber balls. How many rubber balls does each group get?

|                                   |                                                                                                                                                    |
|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Step 1</b><br><b>Read</b>      | <b>Make sure you understand the problem.</b><br><br>What do you need to find?<br><br>You need to find how many groups of _____ there are in _____. |
| <b>Step 2</b><br><b>Plan</b>      | <b>Choose the operation.</b><br><br>You can use division.<br><br>You can separate the rubber balls into equal groups.                              |
| <b>Step 3</b><br><b>Solve</b>     | <b>Carry out your plan.</b><br><br>Write a division sentence.<br><br>_____ ÷ _____ = _____                                                         |
| <b>Step 4</b><br><b>Look Back</b> | <b>Check your answer.</b><br><br>You can use repeated subtraction to check.                                                                        |

### Practice

Solve. Tell how you chose the operation.

1. Three friends make a model of a space station. They spend \$21 on supplies and split the cost equally. How much does each friend spend?

\_\_\_\_\_

\_\_\_\_\_
2. There are 32 people in line for the planetarium. There are only 8 tickets left. How many people will not get tickets?

\_\_\_\_\_

\_\_\_\_\_

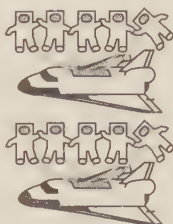
# Divide by 5

Think of a related multiplication fact to divide by 5.

4 space shuttles

5 astronauts on each shuttle

20 astronauts in all



20 astronauts in all

5 astronauts on each shuttle

4 space shuttles

Number  
of groups

Number in  
each group

Number  
in all

Number  
in all

Number in  
each group

Number of  
groups

$$4 \times 5 = 20$$

$$20 \div 5 = 4$$

Divide.

1.



$$15 \div 5 = \underline{\quad}$$

2.



$$10 \div 5 = \underline{\quad}$$

3.



$$5 \div 5 = \underline{\quad}$$

4.



$$25 \div 5 = \underline{\quad}$$

5.  $30 \div 5 = \underline{\quad}$

6.  $35 \div 5 = \underline{\quad}$

7.  $20 \div 5 = \underline{\quad}$

8.  $5 \overline{)25}$

9.  $5 \overline{)45}$

10.  $5 \overline{)40}$

11.  $5 \overline{)35}$

12.  $5 \overline{)20}$

# Divide by 3

You can use models to divide.

Find  $18 \div 3$ .

18 stars in all

3 groups

6 stars in each group

$18 \div 3 = 6$



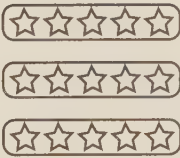
Divide.

1.



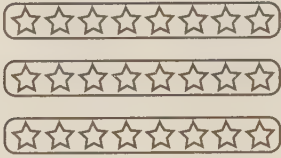
$12 \div 3 = \underline{\hspace{2cm}}$

2.



$15 \div 3 = \underline{\hspace{2cm}}$

3.



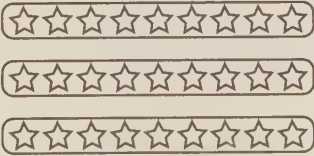
$24 \div 3 = \underline{\hspace{2cm}}$

4.



$9 \div 3 = \underline{\hspace{2cm}}$

5.



$27 \div 3 = \underline{\hspace{2cm}}$

6.



$3 \div 3 = \underline{\hspace{2cm}}$

7.  $21 \div 3 = \underline{\hspace{2cm}}$

8.  $15 \div 3 = \underline{\hspace{2cm}}$

9.  $24 \div 3 = \underline{\hspace{2cm}}$

10.  $6 \div 3 = \underline{\hspace{2cm}}$

11.  $27 \div 3 = \underline{\hspace{2cm}}$

12.  $3 \div 3 = \underline{\hspace{2cm}}$

13.  $3 \overline{)18}$

14.  $3 \overline{)21}$

15.  $3 \overline{)12}$

16.  $3 \overline{)27}$

17.  $3 \overline{)24}$

# Divide by 4

To divide the total number of objects, you can make equal groups.

There are 20 astronauts. Divide the number of astronauts by 4.

To divide by 4, make equal groups of 4.



$20 \div 4 = 5$

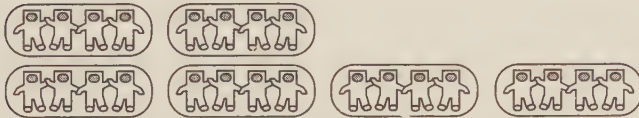
Divide.

1.



$12 \div 4 = \underline{\quad}$

2.



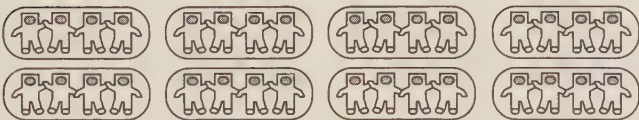
$24 \div 4 = \underline{\quad}$

3.



$16 \div 4 = \underline{\quad}$

4.



$32 \div 4 = \underline{\quad}$

5.  $8 \div 4 = \underline{\quad}$

6.  $16 \div 4 = \underline{\quad}$

7.  $12 \div 4 = \underline{\quad}$

8.  $28 \div 4 = \underline{\quad}$

9.  $36 \div 4 = \underline{\quad}$

10.  $4 \div 4 = \underline{\quad}$

11.  $4 \overline{)24}$

12.  $4 \overline{)28}$

13.  $4 \overline{)16}$

14.  $4 \overline{)36}$

15.  $4 \overline{)32}$

16.  $4 \overline{)4}$

17.  $4 \overline{)20}$

18.  $4 \overline{)8}$

19.  $4 \overline{)40}$

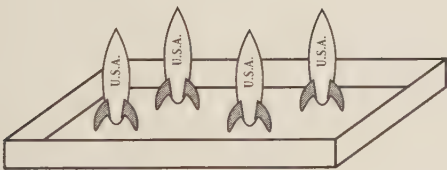
20.  $4 \overline{)12}$

# Divide with 0 and 1 • Algebra

|                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                            |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>When you divide any number (except 0) by itself, the quotient is 1.</p> <p>Kelly has 5 model rockets in 5 different boxes. How many model rockets are in each box?</p> <p><math>5 \div 5 = 1</math></p> <p>There is 1 rocket in each box.</p> | <p>When you divide any number by 1, the quotient is the original number.</p> <p>Kelly wants to put 1 model rocket on each shelf. She has 5 model rockets. How many shelves does she need?</p> <p><math>5 \div 1 = 5</math></p> <p>She needs 5 shelves.</p> | <p>When you divide 0 by any number (except 0), the quotient is 0.</p> <p>Kelly has 3 boxes and no model rockets. How many rockets are in each box?</p> <p><math>0 \div 3 = 0</math></p> <p>There are no rockets in any of the boxes.</p> <p>Remember: You cannot divide a number by 0.</p> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

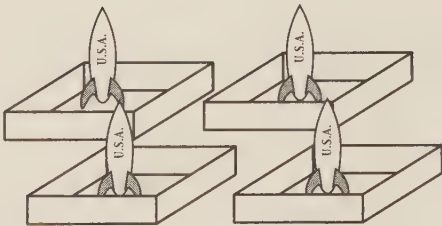
Divide.

1.



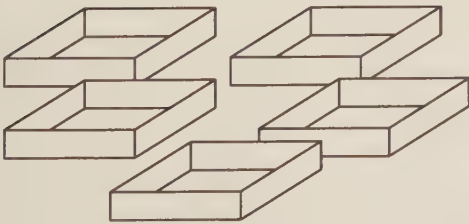
$4 \div 1 = \underline{\hspace{2cm}}$

2.



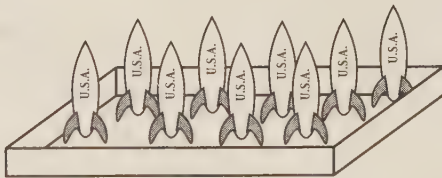
$4 \div 4 = \underline{\hspace{2cm}}$

3.



$0 \div 5 = \underline{\hspace{2cm}}$

4.



$9 \div 1 = \underline{\hspace{2cm}}$

5.  $3 \div 1 = \underline{\hspace{2cm}}$

6.  $6 \div 6 = \underline{\hspace{2cm}}$

7.  $0 \div 8 = \underline{\hspace{2cm}}$

8.  $7 \div 7 = \underline{\hspace{2cm}}$

9.  $6 \div 1 = \underline{\hspace{2cm}}$

10.  $0 \div 3 = \underline{\hspace{2cm}}$

# Problem Solving: Strategy

## Act It Out

Page 307, Problem 2

Enzo has 10 pictures of Jupiter to give away. He gives the same number of pictures to 2 friends. How many pictures does each friend get?

### Step 1

#### Read

**Make sure that you understand the problem.**

- What do you know?

Enzo has \_\_\_\_\_ pictures.

He gives pictures to \_\_\_\_\_ friends.

- What do you need to find?

---

---

### Step 2

#### Plan

- Logical Reasoning
- Draw a Picture or Diagram
- Make a Graph
- Act It Out
- Make a Table or List
- Find a Pattern
- Guess and Check
- Write an Equation
- Work Backward
- Solve a Simpler Problem

**Make a plan.**

Choose a strategy.

You can act out the problem.

Use counters to show the number of pictures.

How many counters will you need? \_\_\_\_\_

# Problem Solving: Strategy

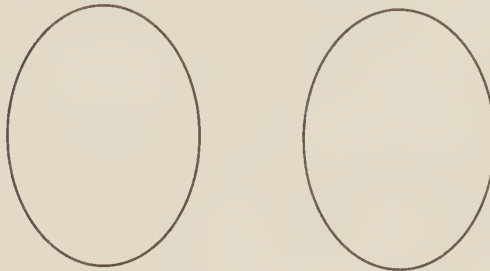
## Act It Out

**Step 3****Solve**

Carry out your plan.

Draw a counter to show each picture of Jupiter.

Make 2 equal groups.



How many counters are in each group? \_\_\_\_\_

Each friend gets \_\_\_\_\_ pictures.

**Step 4****Look Back**

Is the solution reasonable?

Does your answer make sense?      Yes      No

### Practice

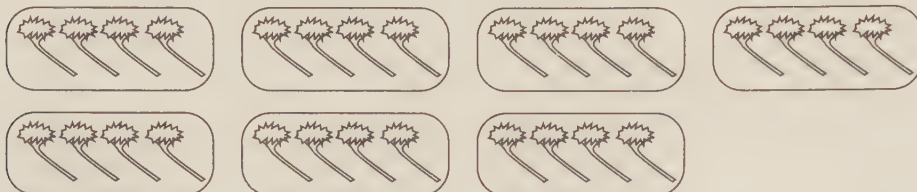
Solve.

1. Robert buys 4 models of Saturn. Each model costs \$8. How much does Robert spend on the models?  
\_\_\_\_\_
2. Tina draws 15 pictures of stars. She puts the pictures in 5 rows on the bulletin board. Each row has the same number of pictures. How many pictures are in each row?  
\_\_\_\_\_

# Divide by 6 and 7

You can make groups to help you divide.

Suppose you have 28 wildflowers. You want to make 7 groups of wildflowers. How many wildflowers will you have in each group?

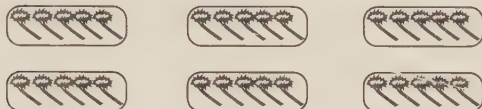


| Number in All | Number of Groups | Number in Each Group |
|---------------|------------------|----------------------|
| 28            | 7                | 4                    |

So,  $28 \div 7 = 4$ .

Complete the division sentence for each picture.

1.



$$30 \div 6 = \underline{\hspace{2cm}}$$

2.



$$35 \div 7 = \underline{\hspace{2cm}}$$

3.



$$49 \div 7 = \underline{\hspace{2cm}}$$

4.



$$42 \div 7 = \underline{\hspace{2cm}}$$

Divide.

5.  $54 \div 6 = \underline{\hspace{2cm}}$

6.  $48 \div 6 = \underline{\hspace{2cm}}$

7.  $56 \div 7 = \underline{\hspace{2cm}}$

8.  $6 \overline{)24}$

9.  $7 \overline{)21}$

10.  $7 \overline{)63}$

11.  $7 \overline{)35}$

12.  $6 \overline{)36}$

# Problem Solving: Skill

## Solve Multistep Problems



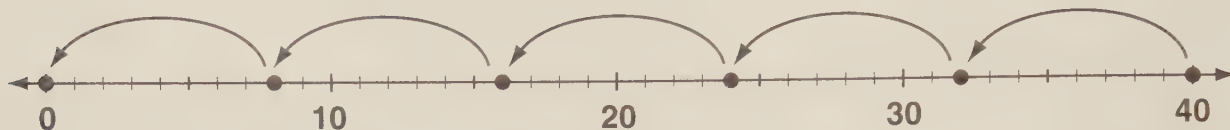
Delon collected 4 bags of cans. Darah collected twice as many bags. They put an equal number of bags in 2 recycling bins. How many bags did they put in each bin?

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                  |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <div>Step 1</div> <div>Read</div>      | <p><b>Make sure you understand the problem.</b></p> <p>What do you know?</p> <ul style="list-style-type: none"><li>• Delon collected _____ bags of cans.</li><li>• Darah collected _____ as many.</li><li>• They put an equal number of bags in 2 recycling bins.</li></ul> <p>What do you need to find?</p> <ul style="list-style-type: none"><li>• How many bags did they put in each recycling bin?</li></ul> |
| <div>Step 2</div> <div>Plan</div>      | <p><b>Make a plan.</b></p> <p>You can add, multiply, and divide to solve the problem.</p>                                                                                                                                                                                                                                                                                                                        |
| <div>Step 3</div> <div>Solve</div>     | <p><b>Carry out your plan.</b></p> <p>Find the number of bags Darah collected.</p> <p>_____ × _____ = _____</p> <p>Find the number of bags of cans collected in all.</p> <p>_____ + _____ = _____</p> <p>Find the number of bags in each bin.</p> <p>_____ ÷ _____ = _____</p> <p>They put 6 bags in each recycling bin.</p>                                                                                     |
| <div>Step 4</div> <div>Look Back</div> | <p><b>Check your answer.</b></p> <p>Make sure your answer is reasonable.</p>                                                                                                                                                                                                                                                                                                                                     |

# Divide by 8 and 9

Divide  $40 \div 8$ .

Skip-count to divide.



So,  $40 \div 8 = 5$ .

Skip-count on the number line to find the answer.

Draw arrows on the number line to show your work.

Then complete the number sentence.

1.  $32 \div 8 = \underline{\hspace{2cm}}$



2.  $36 \div 9 = \underline{\hspace{2cm}}$



Divide. Use a number line.

3.  $48 \div 8 = \underline{\hspace{2cm}}$       4.  $27 \div 9 = \underline{\hspace{2cm}}$       5.  $56 \div 8 = \underline{\hspace{2cm}}$

6.  $54 \div 9 = \underline{\hspace{2cm}}$       7.  $81 \div 9 = \underline{\hspace{2cm}}$       8.  $9 \div 9 = \underline{\hspace{2cm}}$

9.  $63 \div 9 = \underline{\hspace{2cm}}$       10.  $16 \div 8 = \underline{\hspace{2cm}}$       11.  $24 \div 8 = \underline{\hspace{2cm}}$

12.  $8 \overline{)64}$       13.  $9 \overline{)45}$       14.  $8 \overline{)72}$       15.  $9 \overline{)72}$       16.  $9 \overline{)18}$

17.  $8 \overline{)40}$       18.  $8 \overline{)32}$       19.  $9 \overline{)63}$       20.  $9 \overline{)27}$       21.  $8 \overline{)8}$

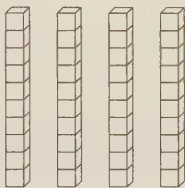
# Explore Dividing by 10

You can use models to divide.

Divide  $40 \div 10$ .

Show 40 ones using ones models.

Count the number of groups of ten.



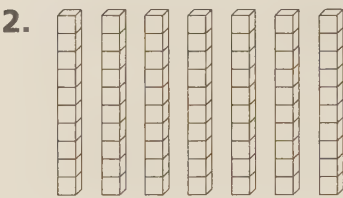
There are 4 groups of 10 in 40.

So,  $40 \div 10 = 4$ .

Divide. You may use models.



$30 \div 10 = \underline{\hspace{2cm}}$



$70 \div 10 = \underline{\hspace{2cm}}$

3.  $20 \div 10 = \underline{\hspace{2cm}}$       4.  $40 \div 10 = \underline{\hspace{2cm}}$       5.  $60 \div 10 = \underline{\hspace{2cm}}$

6.  $90 \div 10 = \underline{\hspace{2cm}}$       7.  $70 \div 10 = \underline{\hspace{2cm}}$       8.  $80 \div 10 = \underline{\hspace{2cm}}$

9.  $50 \div 10 = \underline{\hspace{2cm}}$       10.  $10 \div 10 = \underline{\hspace{2cm}}$       11.  $30 \div 10 = \underline{\hspace{2cm}}$

12.  $10 \overline{)10}$       13.  $10 \overline{)30}$       14.  $10 \overline{)20}$       15.  $10 \overline{)60}$       16.  $10 \overline{)80}$

17.  $10 \overline{)40}$       18.  $10 \overline{)90}$       19.  $10 \overline{)70}$       20.  $10 \overline{)50}$       21.  $10 \overline{)0}$

# Use a Multiplication Table

You can use a multiplication table to help you divide.

| ×  | 0 | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9   | 10  | 11  | 12  |
|----|---|----|----|----|----|----|----|----|----|-----|-----|-----|-----|
| 0  | 0 | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0   | 0   | 0   | 0   |
| 1  | 0 | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9   | 10  | 11  | 12  |
| 2  | 0 | 2  | 4  | 6  | 8  | 10 | 12 | 14 | 16 | 18  | 20  | 22  | 24  |
| 3  | 0 | 3  | 6  | 9  | 12 | 15 | 18 | 21 | 24 | 27  | 30  | 33  | 36  |
| 4  | 0 | 4  | 8  | 12 | 16 | 20 | 24 | 28 | 32 | 36  | 40  | 44  | 48  |
| 5  | 0 | 5  | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45  | 50  | 55  | 60  |
| 6  | 0 | 6  | 12 | 18 | 24 | 30 | 36 | 42 | 48 | 54  | 60  | 66  | 72  |
| 7  | 0 | 7  | 14 | 21 | 28 | 35 | 42 | 49 | 56 | 63  | 70  | 77  | 84  |
| 8  | 0 | 8  | 16 | 24 | 32 | 40 | 48 | 56 | 64 | 72  | 80  | 88  | 96  |
| 9  | 0 | 9  | 18 | 27 | 36 | 45 | 54 | 63 | 72 | 81  | 90  | 99  | 108 |
| 10 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90  | 100 | 110 | 120 |
| 11 | 0 | 11 | 22 | 33 | 44 | 55 | 66 | 77 | 88 | 99  | 110 | 121 | 132 |
| 12 | 0 | 12 | 24 | 36 | 48 | 60 | 72 | 84 | 96 | 108 | 120 | 132 | 144 |

Divide  $84 \div 7$ .

|                                                                                                 |                                                                                           |                                                                                                                      |
|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| <b>Step 1</b><br>The divisor is 7. Find row 7.<br>Go across row 7 to 84.<br>The dividend is 84. | <b>Step 2</b><br>Go up to see which<br>column the number 84 is<br>in. The quotient is 12. | <b>Step 3</b><br>Write a multiplication and<br>a division sentence.<br>$7 \times 12 = 84 \rightarrow 84 \div 7 = 12$ |
|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|

Find each missing number. Use the multiplication table.

1.  $72 \div 8 = \underline{\hspace{2cm}}$

2.  $99 \div 9 = \underline{\hspace{2cm}}$

3.  $96 \div 12 = \underline{\hspace{2cm}}$

$8 \times \underline{\hspace{2cm}} = 72$

$9 \times \underline{\hspace{2cm}} = 99$

$12 \times \underline{\hspace{2cm}} = 96$

4.  $110 \div 10 = \underline{\hspace{2cm}}$

5.  $72 \div 6 = \underline{\hspace{2cm}}$

6.  $120 \div 12 = \underline{\hspace{2cm}}$

$10 \times \underline{\hspace{2cm}} = 110$

$6 \times \underline{\hspace{2cm}} = 72$

$10 \times \underline{\hspace{2cm}} = 120$

Divide.

7.  $9 \overline{)108}$

8.  $6 \overline{)54}$

9.  $11 \overline{)77}$

10.  $12 \overline{)132}$

11.  $10 \overline{)120}$

12.  $10 \overline{)0}$

13.  $12 \overline{)60}$

14.  $3 \overline{)36}$

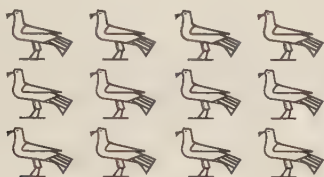
15.  $12 \overline{)84}$

16.  $12 \overline{)144}$

# Use Related Facts • Algebra

Multiplication and division sentences that have the same numbers belong to the same fact family.

Use the picture to write a fact family for the numbers 3, 4, and 12.



$3 \times 4 = 12$

3 rows of 4 birds

$4 \times 3 = 12$

4 columns of 3 birds

$12 \div 3 = 4$

4 groups of 3 birds

$12 \div 4 = 3$

3 groups of 4 birds

Use the picture to complete each fact family.

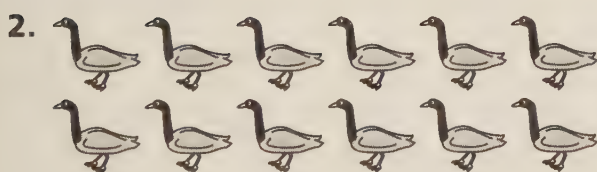


$3 \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

$\underline{\hspace{2cm}} \times 3 = \underline{\hspace{2cm}}$

$\underline{\hspace{2cm}} \div 3 = \underline{\hspace{2cm}}$

$\underline{\hspace{2cm}} \div \underline{\hspace{2cm}} = 3$



$2 \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

$\underline{\hspace{2cm}} \times 2 = \underline{\hspace{2cm}}$

$\underline{\hspace{2cm}} \div \underline{\hspace{2cm}} = 2$

$\underline{\hspace{2cm}} \div \underline{\hspace{2cm}} = 6$

Complete each fact family.

3.  $6 \times 7 = 42$

$\underline{\hspace{2cm}} \times 6 = \underline{\hspace{2cm}}$

$42 \div 7 = \underline{\hspace{2cm}}$

$\underline{\hspace{2cm}} \div 6 = \underline{\hspace{2cm}}$

4.  $9 \times 6 = 54$

$6 \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

$\underline{\hspace{2cm}} \div 9 = \underline{\hspace{2cm}}$

$54 \div \underline{\hspace{2cm}} = 9$

5.  $56 \div 7 = 8$

$\underline{\hspace{2cm}} \div 8 = \underline{\hspace{2cm}}$

$7 \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

$8 \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

# Problem Solving: Strategy

## Guess and Check

Page 347, Problem 2

Two numbers have a sum of 8 and quotient of 3. What are the 2 numbers?

**Step 1****Read****Be sure you understand the problem.**

Read carefully.

What do you know?

- There are \_\_\_\_\_ numbers.
- The sum of the numbers is \_\_\_\_\_.
- The quotient of the numbers is \_\_\_\_\_.

What do you need to find?

- You need to find \_\_\_\_\_.

**Step 2****Plan**

- Logical Reasoning
- Draw a Picture or Diagram
- Make a Graph
- Act It Out
- Make a Table or List
- Find a Pattern
- Guess and Check
- Write an Equation
- Work Backward
- Solve a Simpler Problem

**Make a plan.**

Choose a strategy.

Guess 2 numbers that have a sum of 8. Check the guess. Then divide one number by the other. If the quotient is not 3, revise the guess and try again.

Guess, check, and revise until you find the answer that makes sense.

# Problem Solving: Strategy

## Guess and Check

**Step 3****Solve**

**Carry out your plan.**

You know that

- the the sum of the numbers is 8.
- the quotient of the numbers is 3.

**Guess** Try 4 and 4.

**Check**  $4 + 4 =$  \_\_\_\_\_

$4 \div 4 =$  \_\_\_\_\_

**Revise** Try 6 and 2.

**Check**  $6 + 2 =$  \_\_\_\_\_

$6 \div 2 =$  \_\_\_\_\_

**Step 4****Look Back**

**Is the solution reasonable?**

Reread the problem.

How can you check to make sure your answer is correct?

\_\_\_\_\_

**Practice**

Solve.

1. There are 2 numbers with a quotient of 4 and sum of 20. What are the 2 numbers?

\_\_\_\_\_

2. You have 5 coins that total \$0.55. What are the coins?

\_\_\_\_\_

\_\_\_\_\_

# Explore the Mean

The **mean** is the number found by adding a group of numbers and dividing that sum by the number of addends.

You can draw a picture to find the mean for 2, 3, and 4.

Draw dots to show each number.

•• ••• ••••

Move the dots to make equal groups of dots.

•• ••• ••••

Count the number of dots in each group.

This is the mean.

••• ••• •••

The mean for 2, 3, and 4 is 3.

Find the mean.

1. 1, 3, 5 \_\_\_\_\_

• ••• •••••

2. 4, 6 \_\_\_\_\_

•••• ••••••

3. 4, 2, 3, 3 \_\_\_\_\_

•••• •• ••• •••

4. 2, 5, 5 \_\_\_\_\_

•• ••••• •••••

5. 4, 3, 5 \_\_\_\_\_

•••• ••• •••••

6. 6, 8 \_\_\_\_\_

•••••• ••••••••

7. 1, 0, 3, 4 \_\_\_\_\_

• ••• ••••

8. 5, 4, 6 \_\_\_\_\_

••••• •••• ••••••

9. 2, 3, 7, \_\_\_\_\_

•• ••• •••••••

10. 1, 2, 6 \_\_\_\_\_

• •• ••••••

# Find the Mean

The Bird Watchers Club counted the number of cardinals that came to the feeder during lunchtime. The table shows the number of cardinals that came each day. What is the mean number of cardinals that came to the feeder?

| Day of the Week | Number of Cardinals |
|-----------------|---------------------|
| Sunday          | 2                   |
| Monday          | 4                   |
| Tuesday         | 3                   |
| Wednesday       | 4                   |
| Thursday        | 0                   |
| Friday          | 1                   |
| Saturday        | 0                   |

The pictures can help show how to use paper and pencil to find the mean.

The picture shows each number.

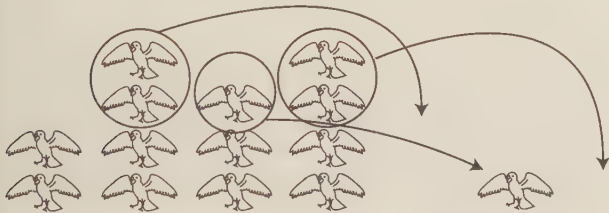


Add the numbers.

$$2 + 4 + 3 + 4 + 0 + 1 + 0 = 14$$

Count the addends.  
There are 7 addends.

Move the birds so that there is an equal number in each group:



Divide the sum by the number of addends.

$$14 \div 7 = n$$

Count the number of birds in each group. Solve for  $n$ .



$$14 \div 7 = 2$$

The mean number of cardinals that came to the feeder is 2.

Find the mean.

1. number of robins at the feeder  
5, 6, 7, 4, 3 \_\_\_\_\_

2. number of wrens at the feeder  
8, 2, 4, 6 \_\_\_\_\_

3. number of cardinals at the feeder  
4, 0, 5, 3, 2, 4 \_\_\_\_\_

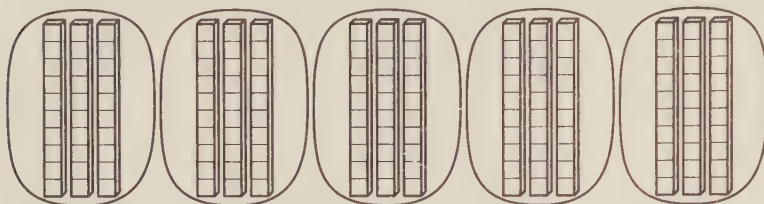
4. number of blue jays at the feeder  
6, 3, 4, 4, 5, 2 \_\_\_\_\_

# Explore Multiplying Multiples of 10

Using models can help you multiply a multiple of 10 by a number.

Find  $5 \times 30$ .

Make 5 groups with 30 in each group.

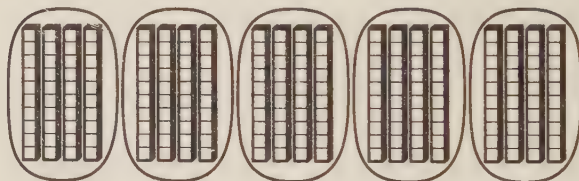
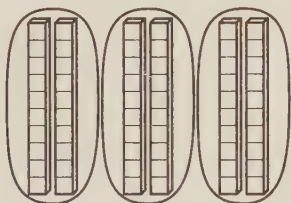


$$3 \text{ tens} + 3 \text{ tens} + 3 \text{ tens} + 3 \text{ tens} + 3 \text{ tens} = 15 \text{ tens} = 150$$

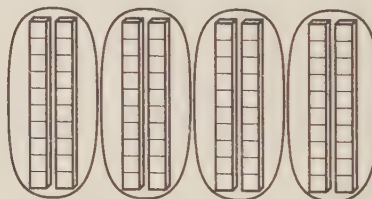
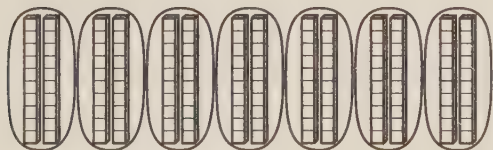
So,  $5 \times 30 = 150$ .

Multiply. Use models if you wish.

1.  $3 \times 20 = \underline{60}$  tens = 60      2.  $5 \times 40 = \underline{\hspace{2cm}}$  tens =         



3.  $7 \times 20 = \underline{\hspace{2cm}}$  tens =               4.  $4 \times 20 = \underline{\hspace{2cm}}$  tens =         



5.  $2 \times 30 = \underline{\hspace{2cm}}$  tens =               6.  $3 \times 30 = \underline{\hspace{2cm}}$  tens =         

7.  $8 \times 20 = \underline{\hspace{2cm}}$       8.  $2 \times 50 = \underline{\hspace{2cm}}$       9.  $6 \times 30 = \underline{\hspace{2cm}}$

10.  $5 \times 50 = \underline{\hspace{2cm}}$       11.  $3 \times 80 = \underline{\hspace{2cm}}$       12.  $2 \times 90 = \underline{\hspace{2cm}}$

# Multiplication Patterns • Algebra



You know your basic multiplication facts. You can use what you know to multiply by tens, hundreds, and thousands.

Find  $3 \times 3,000$ .

Use basic facts. Look for a pattern.

$3 \times 3 = 3 \times 3 \text{ ones} = 9 \text{ ones} = 9$

$3 \times 30 = 3 \times 3 \text{ tens} = 9 \text{ tens} = 90$

$3 \times 300 = 3 \times 3 \text{ hundreds} = 9 \text{ hundreds} = 900$

$3 \times 3,000 = 3 \times 3 \text{ thousands} = 9 \text{ thousands} = 9,000$

So,  $3 \times 3,000 = 9,000$ .

Multiply.

1.  $9 \times 4 =$  \_\_\_\_\_ ones = \_\_\_\_\_

$9 \times 40 =$  \_\_\_\_\_ tens = \_\_\_\_\_

$9 \times 400 =$  \_\_\_\_\_ hundreds = \_\_\_\_\_

$9 \times 4,000 =$  \_\_\_\_\_ thousands = \_\_\_\_\_
2.  $5 \times 3 =$  \_\_\_\_\_ ones = \_\_\_\_\_

$5 \times 30 =$  \_\_\_\_\_ tens = \_\_\_\_\_

$5 \times 300 =$  \_\_\_\_\_ hundreds = \_\_\_\_\_

$5 \times 3,000 =$  \_\_\_\_\_ thousands = \_\_\_\_\_
3.  $8 \times 2 =$  \_\_\_\_\_

$8 \times 20 =$  \_\_\_\_\_

$8 \times 200 =$  \_\_\_\_\_

$8 \times 2,000 =$  \_\_\_\_\_
4.  $4 \times 4 =$  \_\_\_\_\_

$4 \times 40 =$  \_\_\_\_\_

$4 \times 400 =$  \_\_\_\_\_

$4 \times 4,000 =$  \_\_\_\_\_
5.  $7 \times 3 =$  \_\_\_\_\_

$7 \times 30 =$  \_\_\_\_\_

$7 \times 300 =$  \_\_\_\_\_

$7 \times 3,000 =$  \_\_\_\_\_

Multiply. Use mental math.

6.  $7 \times 20 =$  \_\_\_\_\_

9.  $5 \times 600 =$  \_\_\_\_\_
7.  $5 \times 60 =$  \_\_\_\_\_

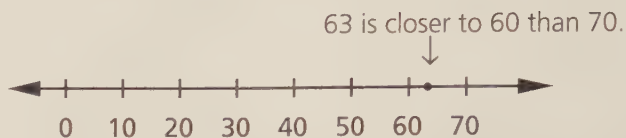
10.  $2 \times 9,000 =$  \_\_\_\_\_
8.  $4 \times 700 =$  \_\_\_\_\_

11.  $6 \times 8,000 =$  \_\_\_\_\_

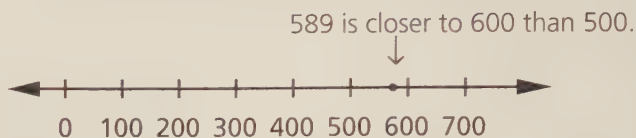
# Estimate Products

To estimate a product, round the greater number to a simpler number.

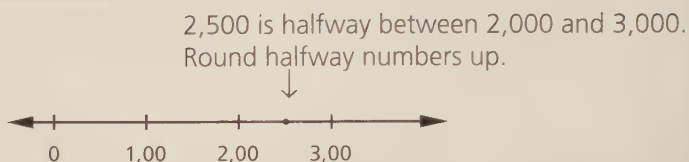
Estimate:  $4 \times 63$   
 $4 \times 60 = 240$



Estimate:  $3 \times 589$   
 $3 \times 600 = 1,800$



Estimate:  $8 \times 2,500$   
 $8 \times 3,000 = 24,000$



Estimate each product. Write how you estimate.

1.  $5 \times 33$  \_\_\_\_\_
2.  $7 \times 48$  \_\_\_\_\_
3.  $2 \times 175$  \_\_\_\_\_
4.  $6 \times 837$  \_\_\_\_\_
5.  $3 \times 1,624$  \_\_\_\_\_

Estimate each product.

- |                            |                            |
|----------------------------|----------------------------|
| 6. $2 \times 29$ _____     | 7. $3 \times 88$ _____     |
| 8. $4 \times 41$ _____     | 9. $4 \times 532$ _____    |
| 10. $8 \times 816$ _____   | 11. $7 \times 365$ _____   |
| 12. $6 \times 4,593$ _____ | 13. $8 \times 2,294$ _____ |
| 14. $4 \times 1,090$ _____ | 15. $9 \times 2,756$ _____ |
| 16. $5 \times 9,320$ _____ | 17. $9 \times 2,134$ _____ |

# Problem Solving: Skill

## Find an Estimate or Exact Answer



Elise has 9 boxes of shells. Each box has 72 shells. Does Elise have more than 600 shells?

|                                   |                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Step 1</b><br><b>Read</b>      | <b>Make sure you understand the problem.</b><br>What do you know? <ul style="list-style-type: none"><li>• Elsie has 9 boxes of shells.</li><li>• Each box has 72 shells.</li></ul> What do you need to find? <ul style="list-style-type: none"><li>• Does Elise have more than 600 shells?</li></ul>                                                                                                                   |
| <b>Step 2</b><br><b>Plan</b>      | <b>Make a plan.</b><br>Do you need an estimate or an exact answer?<br>Is the product greater than 600? You can estimate to solve.                                                                                                                                                                                                                                                                                      |
| <b>Step 3</b><br><b>Solve</b>     | <b>Carry out your plan.</b><br>Round to estimate the product. <div style="text-align: center;"><math display="block">\begin{array}{ccc} 9 &amp; \times &amp; 72 \\ \downarrow &amp; &amp; \downarrow \\ \underline{\hspace{1cm}} &amp; \times &amp; \underline{\hspace{1cm}} = \underline{\hspace{1cm}} \end{array}</math></div> <p>630 is greater than 600.      630 ○ 600</p> <p>Elise has more than 600 shells.</p> |
| <b>Step 4</b><br><b>Look Back</b> | <b>Check your answer.</b><br>Is your answer reasonable?                                                                                                                                                                                                                                                                                                                                                                |

**Practice** Solve. Tell if you found an estimate or exact answer.

1. Patrick filled 6 pages of an album with pictures of shells. Each page has 16 pictures. How many pictures does the album have in all?

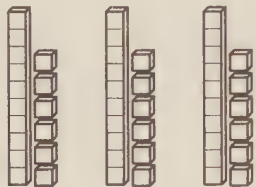
\_\_\_\_\_
2. Emma makes 6 necklaces using shells. Each necklace has 32 shells. About how many shells does she use in all?

\_\_\_\_\_

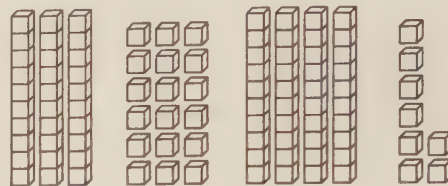
# Explore Multiplying 2-Digit Numbers

You can use models to multiply 2-digit numbers.

Find  $3 \times 16$ .



Combine the tens and ones models.  
Regroup 18 ones as 1 ten and 8 ones.



So,  $3 \times 16 = 48$ .

Use place-value models to multiply.

1.  $3 \times 22 =$  \_\_\_\_\_



2.  $4 \times 33 =$  \_\_\_\_\_



3.  $7 \times 12 =$  \_\_\_\_\_



4.  $4 \times 25 =$  \_\_\_\_\_



5.  $3 \times 21 =$  \_\_\_\_\_

6.  $2 \times 22 =$  \_\_\_\_\_

7.  $4 \times 31 =$  \_\_\_\_\_

8.  $3 \times 34 =$  \_\_\_\_\_

9.  $5 \times 23 =$  \_\_\_\_\_

10.  $6 \times 31 =$  \_\_\_\_\_

11.  $5 \times 33 =$  \_\_\_\_\_

12.  $7 \times 14 =$  \_\_\_\_\_

13.  $8 \times 18 =$  \_\_\_\_\_

# Multiply 2-Digit Numbers

Multiply  $4 \times 16$ .

**Step 1**

Multiply the ones.  
Regroup if necessary.

2

16

← 2 tens

× 4

4 ← 4 ones

**Step 2**

Multiply the tens.  
Add all the tens.

2

16

× 4

64

**Think:**  $4 \times 6 = 24$  ones  
 $24$  ones = 2 tens 4 ones

**Think:**  $4 \times 1$  ten = 4 tens  
 $4$  tens + 2 tens = 6 tens

So,  $4 \times 16 = 64$ .

Multiply. Remember to regroup if necessary.

15

× 3

38

× 3

59

× 7

68

× 2

74

× 8

28

× 5

\$0.82

× 6

45

× 4

49

× 2

53

× 8

45

× 6

58

× 5

38

× 7

\$0.95

× 4

34

× 8

16.  $2 \times 39 =$  \_\_\_\_\_ 17.  $\$0.45 \times 7 =$  \_\_\_\_\_ 18.  $6 \times 77 =$  \_\_\_\_\_

# Problem Solving: Strategy

## Make a Graph

### Page 389, Problem 3

Suzie has a collection of 225 CDs and 150 dolls. Tony has a collection of 75 model robots and 175 comic books. Mike has a collection of 350 game cards. Whose collection has the greatest number of items? The fewest?

#### Step 1

#### Read

**Be sure you understand the problem.**

Read carefully.

What do you know?

- You know how many \_\_\_\_\_  
\_\_\_\_\_.

What do you need to find?

- You need to find \_\_\_\_\_  
\_\_\_\_\_.

#### Step 2

#### Plan

- Logical Reasoning
- Draw a Picture or Diagram
- Make a Graph
- Act It Out
- Make a Table or List
- Find a Pattern
- Guess and Check
- Write an Equation
- Work Backward
- Solve a Simpler Problem

**Make a plan.**

Choose a strategy.

A graph can help you compare data quickly.

Make a pictograph to solve the problem.

# Problem Solving: Strategy

## Make a Graph

Step 3

Solve

Carry out your plan. Make a pictograph.

Key: Each  stands for 50 items.

Each  stands for 25 items.

| Collection | Number of Items                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CDs        |                                                                                                                                                                              |
| Dolls      |                                                                                                                                                                                                                                                                                                                                                   |
| Toy robots |                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Comics     |                                                                                                                                                                                                                                                                 |
| Game cards |        |

Compare the number of symbols for each item.

\_\_\_\_\_ has the most symbols.

So her collection is the largest.

\_\_\_\_\_ has the fewest symbols.

So Tony's collection is the smallest.

Step 4

Look Back

Is the solution reasonable?

Reread the problem.

Does your answer match the data given in the problem? \_\_\_\_\_

**Practice** Use your own paper.

1. Morris School has 48 stamp collectors, 60 comic book collectors, 54 toy collectors, and 66 coin collectors. Make a graph that shows this data.
2. Which type of collecting is most popular? Least popular?  
\_\_\_\_\_  
\_\_\_\_\_

# Multiply Greater Numbers

Use what you know about multiplying 2-digit numbers to multiply 3- and 4-digit numbers.

Multiply  $2 \times 2,739$ .

**Step 1**

Multiply the ones.  
Regroup if necessary.

$$\begin{array}{r} 1 \\ 2,739 \\ \times 2 \\ \hline 8 \end{array}$$

**Step 2**

Multiply the tens.  
Regroup if necessary.

$$\begin{array}{r} 1 \\ 2,739 \\ \times 2 \\ \hline 78 \end{array}$$

**Step 3**

Multiply the hundreds.  
Regroup if necessary.

$$\begin{array}{r} 1 \quad 1 \\ 2,739 \\ \times 2 \\ \hline 478 \end{array}$$

**Step 4**

Multiply the thousands.  
Regroup if necessary.

$$\begin{array}{r} 1 \quad 1 \\ 2,739 \\ \times 2 \\ \hline 5,478 \end{array}$$

|                                             |                                            |                                 |                                              |
|---------------------------------------------|--------------------------------------------|---------------------------------|----------------------------------------------|
| $2 \times 9 \text{ ones} = 18 \text{ ones}$ | $2 \times 3 \text{ tens} = 6 \text{ tens}$ | $2 \times 7 \text{ hundreds} =$ | $2 \times 2 \text{ thousands} =$             |
| 18 ones =                                   | 6 tens + 1 ten =                           | 14 hundreds =                   | 4 thousands                                  |
| 1 ten 8 ones                                | 7 tens                                     | 1 thousand<br>4 hundreds        | 4 thousands +<br>1 thousand =<br>5 thousands |

Multiply.

1.  $\begin{array}{r} \square \square \\ 252 \\ \times 3 \\ \hline \end{array}$

2.  $\begin{array}{r} \square \square \\ 164 \\ \times 4 \\ \hline \end{array}$

3.  $\begin{array}{r} \square \square \\ 736 \\ \times 6 \\ \hline \end{array}$

4.  $\begin{array}{r} \square \square \\ \$2.05 \\ \times 8 \\ \hline \end{array}$

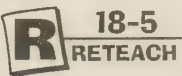
5.  $\begin{array}{r} \square \square \square \\ 1,246 \\ \times 3 \\ \hline \end{array}$

6.  $\begin{array}{r} \square \square \square \\ 5,718 \\ \times 4 \\ \hline \end{array}$

7.  $\begin{array}{r} \square \square \square \\ 3,962 \\ \times 7 \\ \hline \end{array}$

8.  $\begin{array}{r} \square \square \square \\ \$24.98 \\ \times 5 \\ \hline \end{array}$

# Choose a Computation Method



The Harlow School has 412 students. Each student sold 4 tickets for a raffle. How many tickets did the students sell?

Find  $4 \times 412$ . First, estimate. Then you can check your answer to see if it is reasonable.  $4 \times 400 = 1,600$

You can choose from different methods to solve the problem.

|                                                                                                                                           |                                                                                                 |                                                                                                                                                                                                                                                                           |
|-------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>You can use paper and pencil.</p> <div><math display="block">\begin{array}{r} 412 \\ \times 4 \\ \hline 1,648 \end{array}</math></div> | <p>You can use a calculator.</p> <div><div>412 X 4 ENTER =</div><div>412 x 4 = 1648</div></div> | <p>You can use mental math.<br/>Use the distributive property.</p> <p>Split 412 into 2 parts.<br/><math>412 = 400 + 12</math></p> <p>Multiply: <math>4 \times 400 = 1,600</math><br/>Multiply: <math>4 \times 12 = 48</math><br/>Add: <math>1,600 + 48 = 1,648</math></p> |
| <p>Check your answer: 1,648 is close to the estimate of 1,600. The answer is reasonable.</p> <p>The students sold 1,648 tickets.</p>      |                                                                                                 |                                                                                                                                                                                                                                                                           |

Multiply. Tell which method you use.

1.  $3 \times 71 =$  \_\_\_\_\_

2.  $5 \times 75 =$  \_\_\_\_\_

3.  $4 \times 92 =$  \_\_\_\_\_

4.  $9 \times 483 =$  \_\_\_\_\_

5.  $2 \times 717 =$  \_\_\_\_\_

6.  $6 \times 432 =$  \_\_\_\_\_

7.  $8 \times 921 =$  \_\_\_\_\_

8.  $7 \times 689 =$  \_\_\_\_\_

9.  $4 \times 234 =$  \_\_\_\_\_

10.  $3 \times 1,243 =$  \_\_\_\_\_

11.  $4 \times 2,982 =$  \_\_\_\_\_

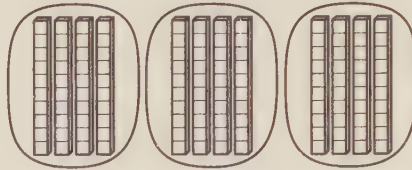
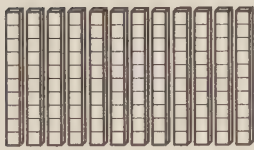
12.  $2 \times 8,863 =$  \_\_\_\_\_

# Explore Dividing Multiples of 10

You can use models to divide multiples of 10.

Find  $120 \div 3$ .

First model 120. Then divide the models into 3 groups.

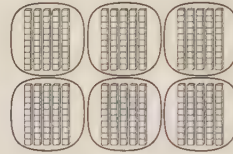
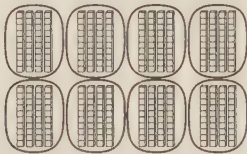


So,  $120 \div 3 = 40$ .

Divide.

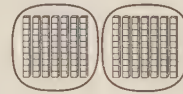
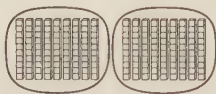
1.  $320 \div 8 = \underline{40}$

2.  $300 \div 6 = \underline{\hspace{2cm}}$



3.  $180 \div 2 = \underline{\hspace{2cm}}$

4.  $140 \div 2 = \underline{\hspace{2cm}}$



Divide. You may use place-value models.

5.  $2 \overline{)160}$

6.  $4 \overline{)280}$

7.  $8 \overline{)240}$

8.  $6 \overline{)180}$

9.  $7 \overline{)350}$

10.  $9 \overline{)270}$

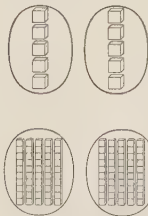
11.  $3 \overline{)90}$

12.  $5 \overline{)400}$

# Division Patterns • Algebra

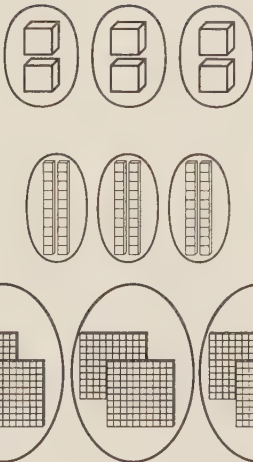
Use basic facts and division patterns to divide.

If  $10 \div 2 = 5$ ,  
then  $10 \text{ tens} \div 2 = 5 \text{ tens}$ .  
So,  $100 \div 2 = 50$ .



$10 \div 2 = 5$   
 $100 \div 2 = 50$   
An arrow points from the 0 in 100 to the 0 in 50, and another arrow points from the 1 in 100 to the 5 in 50.

If  $6 \div 3 = 2$ ,  
and  $6 \text{ tens} \div 3 = 2 \text{ tens}$ ,  
then  $6 \text{ hundreds} \div 3 = 2 \text{ hundreds}$ .  
So,  $600 \div 3 = 200$ .



$6 \div 3 = 2$   
 $60 \div 3 = 20$   
 $600 \div 3 = 200$   
Arrows indicate the pattern: from 6 to 60 to 600, and from 2 to 20 to 200.

Divide. Complete each pattern.

- |                                                                                       |                                                                                      |                                                                                       |
|---------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| 1. $12 \div 2 = \underline{6}$<br>$120 \div 2 = \underline{60}$                       | 2. $8 \div 4 = \underline{\hspace{2cm}}$<br>$800 \div 4 = \underline{\hspace{2cm}}$  | 3. $15 \div 3 = \underline{\hspace{2cm}}$<br>$150 \div 3 = \underline{\hspace{2cm}}$  |
| 4. $21 \div 3 = \underline{\hspace{2cm}}$<br>$210 \div 3 = \underline{\hspace{2cm}}$  | 5. $54 \div 6 = \underline{\hspace{2cm}}$<br>$540 \div 6 = \underline{\hspace{2cm}}$ | 6. $56 \div 7 = \underline{\hspace{2cm}}$<br>$560 \div 7 = \underline{\hspace{2cm}}$  |
| 7. $45 \div 9 = \underline{\hspace{2cm}}$<br>$450 \div 9 = \underline{\hspace{2cm}}$  | 8. $32 \div 4 = \underline{\hspace{2cm}}$<br>$320 \div 4 = \underline{\hspace{2cm}}$ | 9. $16 \div 2 = \underline{\hspace{2cm}}$<br>$160 \div 2 = \underline{\hspace{2cm}}$  |
| 10. $27 \div 3 = \underline{\hspace{2cm}}$<br>$270 \div 3 = \underline{\hspace{2cm}}$ | 11. $5 \div 5 = \underline{\hspace{2cm}}$<br>$50 \div 5 = \underline{\hspace{2cm}}$  | 12. $72 \div 9 = \underline{\hspace{2cm}}$<br>$720 \div 9 = \underline{\hspace{2cm}}$ |

# Estimate Quotients

Think about **compatible numbers**—near basic facts—to help you estimate quotients.

Estimate  $375 \div 6$ .

Think about multiplication facts for 6.  
Try to find a fact you can use that will help you divide 375 by 6 mentally.

|                   |                    |
|-------------------|--------------------|
| $6 \times 1 = 6$  | $6 \times 6 = 36$  |
| $6 \times 2 = 12$ | $6 \times 7 = 42$  |
| $6 \times 3 = 18$ | $6 \times 8 = 48$  |
| $6 \times 4 = 24$ | $6 \times 9 = 54$  |
| $6 \times 5 = 30$ | $6 \times 10 = 60$ |

375 is  
between  
360 and  
420.

Try  $360 \div 6 = 60$ .

Try  $420 \div 6 = 70$ .

So,  $375 \div 6$  is about 60.

Circle the compatible numbers you can use to estimate each quotient.  
Write each estimate.

1.  $184 \div 4$  60

$180 \div 3$

$200 \div 4$

$240 \div 4$

2.  $110 \div 5$  \_\_\_\_\_

$100 \div 5$

$120 \div 6$

$100 \div 2$

3.  $280 \div 3$  \_\_\_\_\_

$270 \div 3$

$210 \div 3$

$280 \div 4$

4.  $405 \div 8$  \_\_\_\_\_

$400 \div 5$

$400 \div 8$

$320 \div 8$

5.  $300 \div 7$  \_\_\_\_\_

$210 \div 7$

$300 \div 6$

$280 \div 7$

6.  $57 \div 2$  \_\_\_\_\_

$56 \div 7$

$600 \div 2$

$60 \div 2$

Estimate each quotient. Write the compatible numbers you used.

7.  $370 \div 6 =$  60

8.  $200 \div 9 =$  \_\_\_\_\_

9.  $124 \div 4 =$  \_\_\_\_\_

10.  $490 \div 9 =$  \_\_\_\_\_

11.  $253 \div 3 =$  \_\_\_\_\_

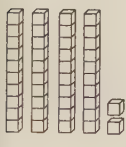
12.  $750 \div 8 =$  \_\_\_\_\_

# Explore Division

You can use models to divide.

$42 \div 3$

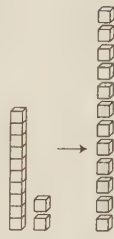
Show 42 as 4 tens and 2 ones.



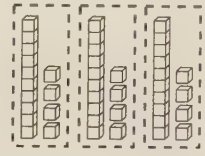
Make an equal number of tens in each of 3 groups.



Regroup the remaining 1 ten and 2 ones as 12 ones.



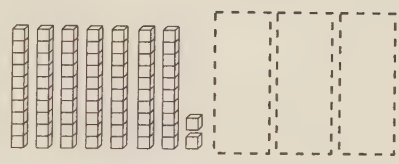
Place an equal number of ones in each group.



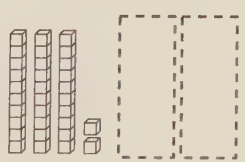
$42 \div 3 = 14$

Use models to divide.

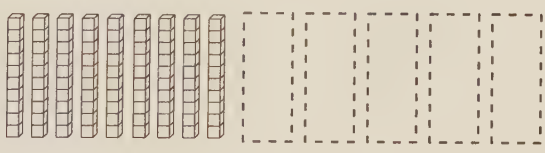
1.  $72 \div 3 =$  \_\_\_\_\_



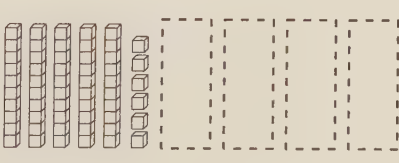
2.  $32 \div 2 =$  \_\_\_\_\_



3.  $90 \div 5 =$  \_\_\_\_\_



4.  $56 \div 4 =$  \_\_\_\_\_



# Divide 2-Digit Numbers

Divide  $64 \div 4$ .
**Step 1**

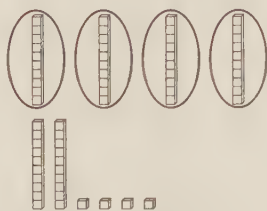
Decide if there are enough tens for 4 groups.



$\overline{4)64}$  ← There are enough tens, so the first digit goes in the tens place.

**Step 2**

Divide the tens into 4 groups.



$\overline{1}4)64$  ← 1 ten in each group  
 $\begin{array}{r} 4)64 \\ -4\downarrow \\ \hline 24 \end{array}$  ← 4 tens used  
 ← 2 tens left.  
 Bring down the ones.

**Step 3**

Regroup 2 tens 4 ones as 24 ones.  
 Divide the ones into 4 groups.  
 So,  $64 \div 4 = 16$ .



$\overline{16}4)64$  ← 6 ones in each group  
 $\begin{array}{r} 4)64 \\ -4\downarrow \\ \hline 24 \end{array}$  ← 24 ones to start  
 $\begin{array}{r} -24 \\ \hline 0 \end{array}$  ← 24 ones used  
 ← 0 ones left

Divide. Check your answer.

1.  $\overline{\phantom{00}}\phantom{00}4)84$   
 $\begin{array}{r} 3\phantom{0}4 \\ -6\phantom{0}\downarrow \\ \hline \phantom{0}4 \\ -\phantom{0}\phantom{0} \\ \hline \phantom{0}\phantom{0} \end{array}$

2.  $\overline{\phantom{00}}\phantom{00}R\phantom{00})98$   
 $\begin{array}{r} 5\phantom{0}8 \\ -\phantom{0}\phantom{0}\downarrow \\ \hline \phantom{0}8 \\ -\phantom{0}\phantom{0} \\ \hline \phantom{0}\phantom{0} \end{array}$

3.  $\overline{\phantom{00}}\phantom{00}R\phantom{00})86$   
 $\begin{array}{r} 4\phantom{0}6 \\ -\phantom{0}\phantom{0}\downarrow \\ \hline \phantom{0}\phantom{0} \\ -\phantom{0}\phantom{0} \\ \hline \phantom{0}\phantom{0} \end{array}$

4.  $2\overline{)54}$

5.  $7\overline{)86}$

6.  $4\overline{)98}$

7.  $5\overline{)81}$

8.  $8\overline{)93}$

9.  $3\overline{)68}$

10.  $6\overline{)75}$

11.  $2\overline{)82}$

# Problem Solving: Skill

## Interpret the Remainder

There are 51 people who sign up for the Brookdale volleyball league. Each volleyball team will have 6 players. Extra players can be used as substitutes. How many teams can the league make? How many people will be substitutes?

|                                   |                                                                                                                                                                                 |
|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Step 1</b><br><b>Read</b>      | <b>Make sure you understand the problem.</b><br>You will need to find how many teams the league can make with 51 people.<br>The number of people remaining will be substitutes. |
| <b>Step 2</b><br><b>Plan</b>      | <b>Make a plan.</b><br>Divide to find how many teams there will be.<br>The remainder will be part of the answer.                                                                |
| <b>Step 3</b><br><b>Solve</b>     | <b>Carry out your plan.</b><br>$51 \div 6 = 8 \text{ R}3$<br>The league can make 8 teams. 3 people will be substitutes.                                                         |
| <b>Step 4</b><br><b>Look Back</b> | <b>Is your answer reasonable?</b><br>How can you check your answer?                                                                                                             |

### Practice

Solve.

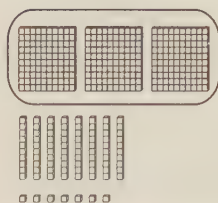
- There are 30 people at a community meeting. They are at tables that each seat 8 people. How many tables are needed for the people at the meeting?  
\_\_\_\_\_
- There are 30 people at the meeting. There can be 4 people on each committee. How many committees can there be? How many people will not be on a committee?  
\_\_\_\_\_  
\_\_\_\_\_

# Divide 3-Digit Numbers

Divide  $387 \div 3$ .

## Step 1

Decide if there are enough hundreds for 3 groups.



$3 = 3$

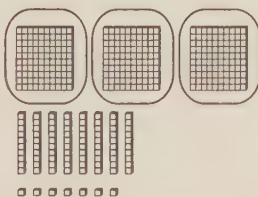
There are enough hundreds.

$\square \leftarrow$  There are enough hundreds, so the first digit goes in the hundreds place.

$$\begin{array}{r} 3 \overline{)387} \end{array}$$

## Step 2

Divide the hundreds into 3 groups.



$1 \leftarrow$  1 hundred in each group

$$\begin{array}{r} 1 \phantom{00} \\ 3 \overline{)387} \\ - 3 \phantom{00} \end{array}$$

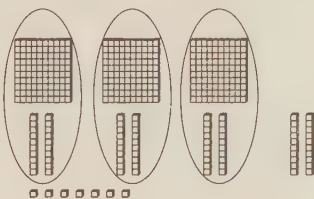
$\leftarrow$  3 hundreds used

$08 \leftarrow$  no hundreds left

Bring down the tens.

## Step 3

Divide the tens into 3 groups.



$12 \leftarrow$  2 tens in each group

$$\begin{array}{r} 12 \phantom{00} \\ 3 \overline{)387} \\ - 3 \phantom{00} \end{array}$$

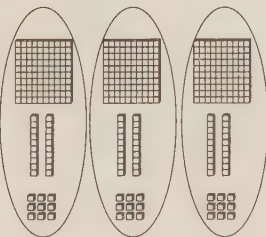
$08$

$\leftarrow$  6 tens used

$2 \leftarrow$  2 tens left

## Step 4

Regroup 2 tens 7 ones as 27 ones.  
Divide the ones into 3 groups.



$129 \leftarrow$  9 ones in each group

$$\begin{array}{r} 129 \phantom{00} \\ 3 \overline{)387} \\ - 3 \phantom{00} \end{array}$$

$08$

$\leftarrow$  6 tens used

$27$

$\leftarrow$  27 ones used

$0 \leftarrow$  no ones left

So,  $387 \div 3 = 129$ .

Divide. Check your answer.

1.  $864 \div 4 =$  \_\_\_\_\_ 2.  $987 \div 3 =$  \_\_\_\_\_ 3.  $574 \div 3 =$  \_\_\_\_\_

4.  $839 \div 7 =$  \_\_\_\_\_ 5.  $725 \div 5 =$  \_\_\_\_\_ 6.  $289 \div 2 =$  \_\_\_\_\_

7.  $673 \div 4 =$  \_\_\_\_\_ 8.  $570 \div 2 =$  \_\_\_\_\_ 9.  $\$9.90 \div 6 =$  \_\_\_\_\_

10.  $912 \div 4 =$  \_\_\_\_\_ 11.  $\$8.75 \div 5 =$  \_\_\_\_\_ 12.  $973 \div 8 =$  \_\_\_\_\_

# Quotients with Zeros

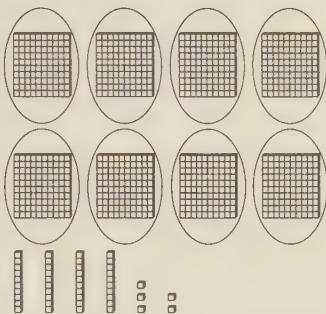


When you divide, sometimes there are not enough tens or ones for each group. Use a zero in the quotient to show that.

Divide  $845 \div 8$ .

**Step 1**

Divide the hundreds.  
There are enough  
hundreds for  
8 groups.

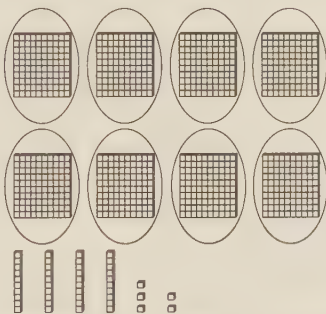


$$\begin{array}{r} 1 \leftarrow 1 \text{ hundred in each group} \\ 8 \overline{)845} \\ - 8 \downarrow \leftarrow 8 \text{ hundreds used} \\ \hline 04 \leftarrow \text{no hundreds left} \end{array}$$

Bring down the tens.

**Step 2**

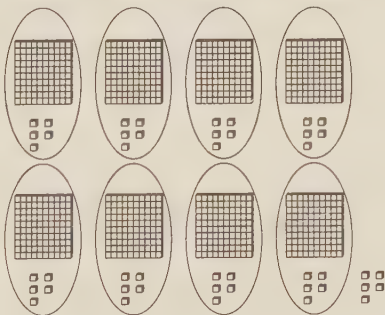
Divide the tens.  
There are not enough  
tens for 8 groups.  
Write a zero in the  
tens place.



$$\begin{array}{r} 10 \leftarrow \text{not enough tens for 8 groups} \\ 8 \overline{)845} \\ - 8 \downarrow \\ \hline 04 \\ - 0 \leftarrow \text{no tens used} \\ \hline 4 \leftarrow 4 \text{ tens left} \end{array}$$

**Step 3**

Regroup 4 tens  
5 ones as 45 ones.  
Divide the ones.



$$\begin{array}{r} 105 \text{ R}5 \leftarrow 5 \text{ ones in each group with a remainder of 5} \\ 8 \overline{)845} \\ - 8 \downarrow \\ \hline 04 \\ - 0 \downarrow \\ \hline 45 \leftarrow 45 \text{ ones left} \\ - 40 \leftarrow 40 \text{ ones used} \\ \hline 5 \leftarrow 5 \text{ ones left} \end{array}$$

So,  $845 \div 8 = 105 \text{ R}5$ .

Divide. Check your answer.

1.  $3 \overline{)62}$
2.  $4 \overline{)83}$
3.  $3 \overline{)91}$
4.  $5 \overline{)54}$
5.  $5 \overline{)521}$
6.  $2 \overline{)816}$
7.  $7 \overline{)739}$
8.  $8 \overline{)870}$
9.  $4 \overline{)\$4.08}$
10.  $3 \overline{)\$9.15}$
11.  $5 \overline{)\$5.20}$
12.  $4 \overline{)\$8.12}$

# Choose a Computation Method

Four different clubs made 284 picture frames for the crafts fair. Each club made the same number of frames. How many frames did each club make?

Find:  $284 \div 4$  First, estimate. Then you can check your answer to see if it is reasonable.

Estimate:  $280 \div 4 = 70$

You can choose from different methods to solve the problem.

You can use paper and pencil.

$$\begin{array}{r} 71 \\ 4 \overline{)284} \\ \underline{-28} \phantom{0} \\ 04 \\ \underline{-4} \\ 0 \end{array}$$

You can use a calculator.

Press:

2 8 4

$\div$  4 ENTER

$284 \div 4 = 71$

You can use mental math.

Split 284 into 2 parts.

$$284 = 280 + 4$$

$$\text{Divide: } 280 \div 4 = 70$$

$$\text{Divide: } 4 \div 4 = 1$$

$$\text{Add: } 70 + 1 = 71$$

Check your answer. 71 is close to the estimate of 70.

The answer is reasonable.

Each club made 71 picture frames.

Divide. Tell which method you use.

- |                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 1. $639 \div 3 =$ _____  | 2. $804 \div 2 =$ _____  | 3. $426 \div 3 =$ _____  |
| 4. $217 \div 7 =$ _____  | 5. $183 \div 3 =$ _____  | 6. $424 \div 2 =$ _____  |
| 7. $525 \div 5 =$ _____  | 8. $328 \div 4 =$ _____  | 9. $830 \div 8 =$ _____  |
| 10. $229 \div 6 =$ _____ | 11. $215 \div 5 =$ _____ | 12. $498 \div 4 =$ _____ |
| 13. $336 \div 5 =$ _____ | 14. $728 \div 6 =$ _____ | 15. $977 \div 9 =$ _____ |

# Problem Solving: Strategy

## Choose a Strategy

Page 439, Problem 2

If Juan cuts a 144-inch-long piece of wood into 8-inch pieces, how many pieces will he have?

Step 1

Read

Be sure you understand the problem.

What do you know?

- A piece of wood is \_\_\_\_\_ inches long.
- The wood will be cut into \_\_\_\_\_ inch pieces.

What do you need to find?

- You need to find how many \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

Step 2

Plan

Make a plan.

Choose a strategy.

- Logical Reasoning
- Draw a Picture or Diagram
- Make a Graph
- Act It Out
- Make a Table or List
- Find a Pattern
- Guess and Check
- Write an Equation
- Work Backward
- Solve a Simpler Problem

You may draw a diagram. Show a piece of wood that is 144 inches long. Count by 8s to see how many 8-inch pieces will fit.

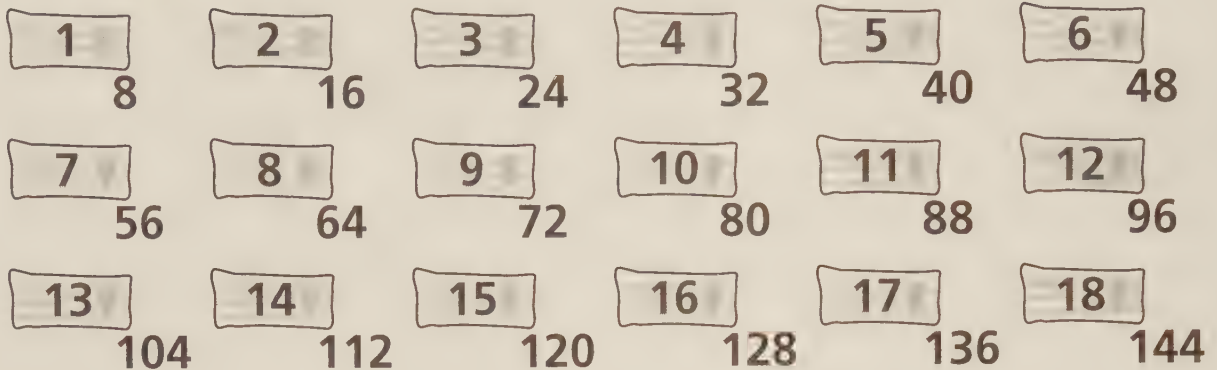
You can also write a number sentence (an equation). Each piece of wood is the same length. Use division to find how many 8-inch pieces of wood will fit.

# Problem Solving: Strategy

## Choose a Strategy

**Step 3**
**Solve**

Carry out your plan.

**Plan 1** Draw a diagram. Count up groups of 8.


Count. There are \_\_\_\_\_ pieces of wood in all.

**Plan 2** Write a division sentence. \_\_\_\_\_  $\div$  \_\_\_\_\_ = \_\_\_\_\_

He will have \_\_\_\_\_ pieces of wood.

**Step 4**
**Look Back**
**Is the solution reasonable?**

Reread the problem.

How can you check your answer?

---



---

## Practice

Solve.

1. Jim has 5 packs of cards. There are 15 cards in each pack. He gives all of the cards to 3 boys. Each boy gets the same number of cards. How many cards does each boy receive?  
\_\_\_\_\_
2. Winnie has a piece of fabric that is 60 inches long. She cuts it into 6 equal pieces. How many inches long is each piece?  
\_\_\_\_\_

# Explore Lengths

Remember that length is the measurement of distance between two end points. You can use almost anything to measure length.

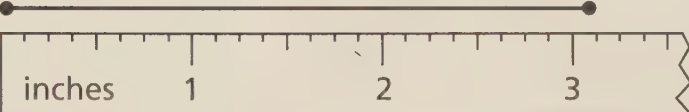
Use the nonstandard unit of a penny to measure length.

Count the number of pennies.



An inch is a standard unit. Use an inch ruler to measure length.

Place the ruler so that the left edge or the "0" mark lines up with the endpoint. Find the inch mark nearest the other endpoint.



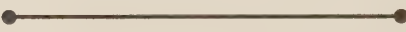
The line is about 4 pennies long.

The line is 3 inches long to the nearest inch.

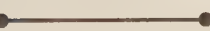
Use a nonstandard unit and a ruler to measure. Measure to the nearest inch. Write the length.

1. 

\_\_\_\_\_

2. 

\_\_\_\_\_

3. 

\_\_\_\_\_

4. 

\_\_\_\_\_

Use an inch ruler. Draw a line for each length.

- 5. 7 inches
- 6. 5 inches
- 7. 2 inches
- 8. 1 inch

# Explore Customary Units of Length

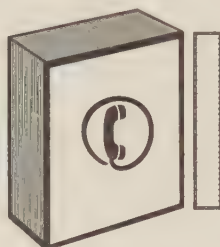
You can use a ruler or yardstick to measure lengths.

This is **1 inch (in.)**.



A **foot (ft)** is 12 inches.

A telephone book is about 1 foot long.

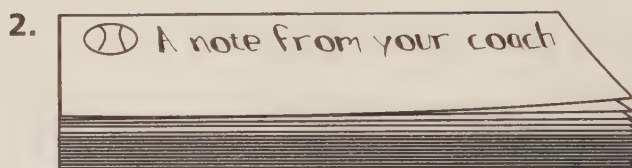


A **yard (yd)** is 3 feet, or 36 inches.

A doorknob is about 1 yard above the floor.



Use an inch ruler to measure each length.



Choose the best estimate.

4. about 8 in.  
a telephone  
a desk top

5. about 1 yd  
a baseball  
a baseball bat

6. about 1 ft  
a computer keyboard  
a computer mouse

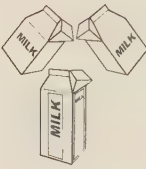
7. about 2 yd  
a door's height  
a baby's height

8. about 8 ft  
a room's height  
your height

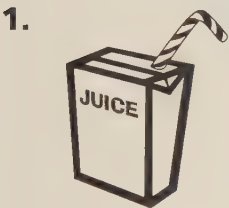
9. about 7 yd  
a parking sticker  
a parking space

# Customary Units of Capacity

**Capacity** tells how much an object can hold. You measure capacity in cups, pints, quarts, and gallons.

|                                                                                                    |                                                                                                            |                                                                                                                               |                                                                                                                  |
|----------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| <br><br>1 cup (c) | <br><br>2 c = 1 pint (pt) | <br><br>2 pt = 1 quart (qt)<br>or 4 c = 1 qt | <br><br>4 qt = 1 gallon (gal) |
|----------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|

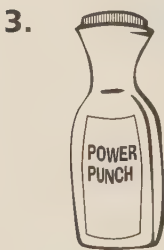
Ring the letter of the best estimate.



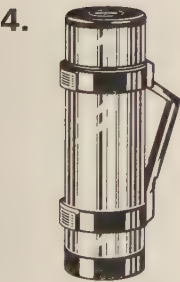
- A.** 1 c
- B.** 1 pt
- C.** 1 qt



- A.** 1 pt
- B.** 1 qt
- C.** 1 gal



- A.** 1 c
- B.** 1 qt
- C.** 1 gal



- A.** 10 c
- B.** 10 qt
- C.** 10 gal



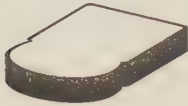
- A.** 1,000 c
- B.** 1,000 qt
- C.** 1,000 gal



- A.** 2 c
- B.** 2 qt
- C.** 2 gal

# Customary Units of Weight

**Weight** tells how heavy an object is. You measure weight in ounces and pounds.



1 **ounce (oz)**

Use ounces to weigh light objects.



5 oz



1 **pound (lb)**

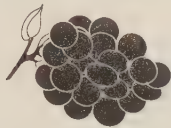
Use pounds to weigh heavier objects.



10 lb

Ring the letter of the better estimate.

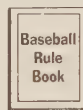
1.



**A.** 1 oz

**B.** 1 lb

2.



**A.** 6 oz

**B.** 6 lb

3.



**A.** 1 lb

**B.** 10 lb

4.



**A.** 3 oz

**B.** 30 oz

5.



**A.** 25 oz

**B.** 25 lb

6.



**A.** 4 oz

**B.** 4 lb

Estimate the weight of each object. Draw a line to match.

7. baseball coach

**A.** 1 lb

8. sweatsuit

**B.** 40 lb

9. pair of socks

**C.** 150 lb

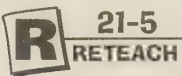
10. first grader

**D.** 10 lb

11. a cat

**E.** 2 oz

# Convert Customary Units



To change from smaller units to larger units, divide.

|                                      |                                     |                                      |                                        |
|--------------------------------------|-------------------------------------|--------------------------------------|----------------------------------------|
| $3 \text{ ft} = 1 \text{ yd}$        | $2 \text{ c} = 1 \text{ pt}$        | $2 \text{ pt} = 1 \text{ qt}$        | $4 \text{ qt} = 1 \text{ gal}$         |
| $6 \text{ ft} \div 3 = 2 \text{ yd}$ | $4 \text{ c} \div 2 = 2 \text{ pt}$ | $4 \text{ pt} \div 2 = 2 \text{ qt}$ | $8 \text{ qt} \div 4 = 2 \text{ gal}$  |
| $9 \text{ ft} \div 3 = 3 \text{ yd}$ | $6 \text{ c} \div 2 = 3 \text{ pt}$ | $6 \text{ pt} \div 2 = 3 \text{ qt}$ | $12 \text{ qt} \div 4 = 3 \text{ gal}$ |

To change from larger units to smaller units, multiply.

|                                           |                                       |                                          |                                          |
|-------------------------------------------|---------------------------------------|------------------------------------------|------------------------------------------|
| $1 \text{ ft} = 12 \text{ in.}$           | $1 \text{ pt} = 2 \text{ c}$          | $1 \text{ gal} = 4 \text{ qt}$           | $1 \text{ lb} = 16 \text{ oz}$           |
| $2 \text{ ft} \times 12 = 24 \text{ in.}$ | $2 \text{ pt} \times 2 = 4 \text{ c}$ | $2 \text{ gal} \times 4 = 8 \text{ qt}$  | $2 \text{ lb} \times 16 = 32 \text{ oz}$ |
| $3 \text{ ft} \times 12 = 36 \text{ in.}$ | $3 \text{ pt} \times 2 = 6 \text{ c}$ | $3 \text{ gal} \times 4 = 12 \text{ qt}$ | $3 \text{ lb} \times 16 = 48 \text{ oz}$ |

Circle the amount that makes each sentence true.

1.  $12 \text{ ft} = \underline{\hspace{1cm}}$     **A.** 2 yd    **B.** 3 yd    **C.** 4 yd
2.  $16 \text{ pt} = \underline{\hspace{1cm}}$     **A.** 1 lb    **B.** 8 qt    **C.** 32 qt
3.  $4 \text{ gal} = \underline{\hspace{1cm}}$     **A.** 1 qt    **B.** 16 qt    **C.** 2 qt
4.  $10 \text{ lb} = \underline{\hspace{1cm}}$     **A.** 26 oz    **B.** 160 lb    **C.** 160 oz
5.  $6 \text{ ft} = \underline{\hspace{1cm}}$     **A.** 72 in.    **B.** 3 yd    **C.** 18 in.

Write the number that makes each sentence true.

6.  $4 \text{ lb} = \underline{\hspace{1cm}} \text{ oz}$     7.  $5 \text{ ft} = \underline{\hspace{1cm}} \text{ in.}$     8.  $8 \text{ c} = \underline{\hspace{1cm}} \text{ pt}$
9.  $10 \text{ pt} = \underline{\hspace{1cm}} \text{ c}$     10.  $4 \text{ yd} = \underline{\hspace{1cm}} \text{ ft}$     11.  $6 \text{ qt} = \underline{\hspace{1cm}} \text{ pt}$
12.  $48 \text{ in.} = \underline{\hspace{1cm}} \text{ ft}$     13.  $32 \text{ oz} = \underline{\hspace{1cm}} \text{ lb}$     14.  $4 \text{ gal} = \underline{\hspace{1cm}} \text{ qt}$
15.  $12 \text{ c} = \underline{\hspace{1cm}} \text{ pt}$     16.  $12 \text{ ft} = \underline{\hspace{1cm}} \text{ yd}$     17.  $7 \text{ ft} = \underline{\hspace{1cm}} \text{ in.}$

## Problem Solving: Skill

### Check for Reasonableness

Ben jumps 49 inches. He says that he jumps more than 4 feet.  
Is this a reasonable statement?

**Step 1****Read**

**Make sure you understand the problem.**

- What do you know?  
Ben jumps \_\_\_\_\_ inches.
- What do you need to find?  
Is 49 inches more than \_\_\_\_\_ feet?

**Step 2****Plan**

**Make a plan.**

Use what you know about units of length to find out if Ben's statement is reasonable.  
Remember: 12 inches = 1 foot.

**Step 3****Solve**

**Carry out your plan.**

$4 \times 12 = 48$   
49 inches > 48 inches  
Ben's statement is reasonable.

**Step 4****Look Back**

**Check your answer.**

Make sure that you multiplied correctly.

Solve. Explain your answer.

1. Monica and Helen are on the basketball team. Monica is 5 feet tall. Helen is 55 inches tall. Helen says she is the taller than Monica. Is this a reasonable statement?

\_\_\_\_\_  
\_\_\_\_\_

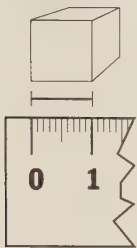
2. Alex jumps 3 feet. Paul jumps 1 yard. Alex says they both jumped the same distance. Is his statement reasonable?

\_\_\_\_\_  
\_\_\_\_\_

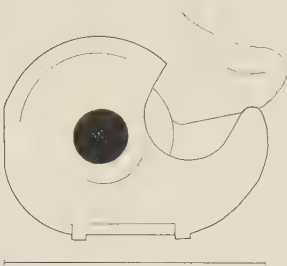
# Explore Metric Units of Length

In the metric system, you use centimeters (cm) to measure length.

This is 1 **centimeter (cm)**.      1 **decimeter (dm)** = 10 cm      1 **meter (m)** = 100 cm



A ones cube is  
1 cm wide.



A package of tape is  
about 1 dm wide.



A door is about  
2 m high.

Which unit would you use to measure each?

Write **cm** for centimeters, **dm** for decimeters, or **m** for meters.

1. a football cm or dm
2. a baseball field \_\_\_\_\_
3. a blade of grass \_\_\_\_\_
4. the height of a goalpost \_\_\_\_\_
5. the length of a running shoe \_\_\_\_\_
6. the distance you can throw a ball \_\_\_\_\_

Circle the best estimate.

- |                               |          |          |         |
|-------------------------------|----------|----------|---------|
| 7. a football player's height | A. 2 cm  | B. 2 dm  | C. 2 m  |
| 8. the length of a shoelace   | A. 4 cm  | B. 4 dm  | C. 4 m  |
| 9. the width of your hand     | A. 1 cm  | B. 1 dm  | C. 1 m  |
| 10. the width of a fingernail | A. 1 cm  | B. 1 dm  | C. 1 m  |
| 11. the height of a tree      | A. 30 cm | B. 30 dm | C. 30 m |

Choose the tool you would use to measure each.

12. length of a room  
\_\_\_\_\_
13. width of your book  
\_\_\_\_\_
14. length of a car  
\_\_\_\_\_

# Metric Units of Capacity

The metric system uses milliliters and liters to measure capacity.

1,000 milliliters (mL) = 1 liter (L)

This drop of water is 1 mL.

A drinking glass holds about 240 mL.

A bottle of water holds 1,000 mL, or 1 L.



Which unit would you use to measure the capacity of each?

Write *mL* for milliliters and *L* for liters.

1.



\_\_\_\_\_

2.



\_\_\_\_\_

3.



\_\_\_\_\_

Circle the best estimate to complete each sentence.

4. A juice box holds about \_\_\_\_\_ mL.

A. 8

B. 18

C. 180

5. A teaspoon holds \_\_\_\_\_ mL.

A. 10

B. 100

C. 1,000

6. A large pot holds about \_\_\_\_\_ L.

A. 1

B. 6

C. 60

7. An ice chest holds about \_\_\_\_\_ L.

A. 2

B. 20

C. 2,000

8. A can of soup holds about \_\_\_\_\_ mL.

A. 2

B. 24

C. 240

# Metric Units of Mass

**Mass** is the amount of matter in an object. In the metric system, units of mass are the gram and the kilogram.

1,000 grams (g) = 1 kilogram (kg)

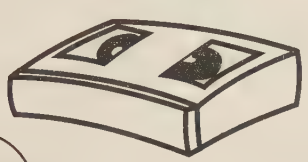
Use grams to find the mass of small things.



1 g

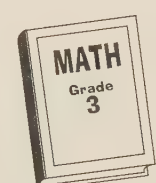


145 g



220 g

Use kilograms to find the mass of larger things.



1 kg



5 kg



2 kg

Estimate. Decide if the mass is greater than, less than, or about 1 kilogram.

1. a third grader \_\_\_\_\_

2. a juice box \_\_\_\_\_

3. a golf ball \_\_\_\_\_

4. a golf club \_\_\_\_\_

5. a whistle \_\_\_\_\_

6. a bag of apples \_\_\_\_\_

Draw a line to match each object and its mass.

7. a football helmet -----

8. a remote control

9. a car

10. a computer disk

11. a bag of groceries
- A. 1 kg

B. 10 kg

C. 1,200 kg

D. 22 g

E. 500 g

# Convert Metric Units

The metric system is based on tens, so you can use patterns to change from one unit to another.

To change from larger units to smaller units, multiply.

$$\text{meters} \times 100 = \text{centimeters}$$

$$\text{liters} \times 1,000 = \text{milliliters}$$

$$\text{kilograms} \times 1,000 = \text{grams}$$

To change from smaller units to larger units, divide.

$$\text{centimeters} \div 100 = \text{meters}$$

$$\text{grams} \div 1,000 = \text{kilograms}$$

$$\text{milliliters} \div 1,000 = \text{liters}$$

| m | cm  |
|---|-----|
| 1 | 100 |
| 2 | 200 |
| 3 | 300 |

| L | mL    |
|---|-------|
| 1 | 1,000 |
| 2 | 2,000 |
| 3 | 3,000 |

| kg | g     |
|----|-------|
| 1  | 1,000 |
| 2  | 2,000 |
| 3  | 3,000 |

Ring the amount that makes each sentence true.

1. 3 m = \_\_\_\_      A. 3 cm      B. 300 cm      C. 3,000 cm
2. 500 cm = \_\_\_\_      A. 5 m      B. 500 m      C. 5,000 m
3. 6,000 g = \_\_\_\_      A. 6 kg      B. 60 kg      C. 600 kg
4. 4 L = \_\_\_\_      A. 400 mL      B. 4,000 mL      C. 40,000 mL
5. 5,000 mL = \_\_\_\_      A. 5 L      B. 500 L      C. 5,000 L

Write the number that makes each sentence true.

6. 8 m = \_\_\_\_ cm      7. 4 kg = \_\_\_\_ g      8. 7 L = \_\_\_\_ mL
9. 400 cm = \_\_\_\_ m      10. 9,000 g = \_\_\_\_ kg      11. 6,000 mL = \_\_\_\_ L
12. 3 kg = \_\_\_\_ g      13. 500 cm = \_\_\_\_ m      14. 5 L = \_\_\_\_ mL
15. 9 m = \_\_\_\_ cm      16. 4,000 mL = \_\_\_\_ L      17. 1,000 g = \_\_\_\_ kg

# Problem Solving: Strategy

## Logical Reasoning

Page 483, Problem 2

Coach Betty wants 11 liters of water in a cooler. She has a 5-liter bottle and an 8-liter bottle. How can she use them to measure exactly 11 liters?

**Step 1**

**Read**

**Be sure you understand the problem.**

Read carefully.

What do you know?

- Coach Betty wants \_\_\_\_\_ liters of water in a cooler.
- Coach Betty has bottles that hold \_\_\_\_\_ liters and \_\_\_\_\_ liters.

What do you need to know?

- You need to find how to use the bottles to measure \_\_\_\_\_.

**Step 2**

**Plan**

- Logical Reasoning
- Draw a Picture or Diagram
- Make a Graph
- Act It Out
- Make a Table or List
- Find a Pattern
- Guess and Check
- Write an Equation
- Work Backward
- Solve a Simpler Problem

**Make a plan.**

Choose a strategy.

Use logical reasoning to solve the problem.

You can use the difference of the amount of water in the bottles to measure exactly 11 liters.

# Problem Solving: Strategy

## Logical Reasoning

**Step 3****Solve****Carry out your plan.**

Follow the steps.

**Steps**

- Fill the 8-L bottle.
- Fill the 5-L bottle from the 8-L bottle.
- Pour what is left in the 8-L bottle into the cooler.
- Refill the 8-L bottle
- Pour the water from the 8-L bottle into the cooler.
- Add.  $8 + 3 =$  \_\_\_\_\_. There are \_\_\_\_\_ liters in the water cooler.

**Step 4****Look Back****Is the solution reasonable?**

Reread the problem.

How can you check your answers?

\_\_\_\_\_

**Practice**

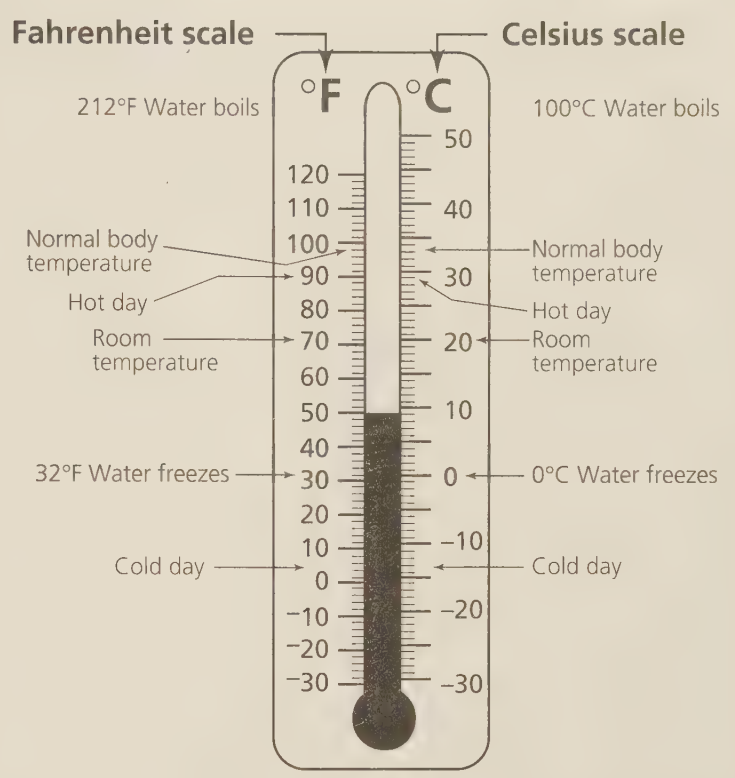
1. Ed has a 6-oz cup and an 8-oz cup. How can he use the cups to measure 10 ounces of water?  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
2. Cathy, Ted, and Ella eat lunch. One has ham, one has tuna, and one has cheese. Ted and Cathy do not eat meat. Cathy does not eat fish. What does Ella eat?  
\_\_\_\_\_

# Temperature

A thermometer is a tool to measure temperature. You can use **degrees Fahrenheit (°F)** or **degrees Celsius (°C)**.

On the Fahrenheit scale, water freezes at 32°F. Although water freezes at the same temperature, on the Celsius scale, it is recorded as 0°C.

If you look at the thermometer, you can see that 32°F is a cold day, but 32°C would be a hot day. The scale on which you read a temperature does make a difference.



Ring the more reasonable temperature.

- |                                      |                                       |
|--------------------------------------|---------------------------------------|
| 1. a day to ride your bike           | 2. a cold drink                       |
| A. 70°F                              | A. 5°F                                |
| B. 70°C                              | B. 5°C                                |
| 3. a day to ice skate on the pond    | 4. a day to swim in a pool            |
| A. 30°F                              | A. 32°F                               |
| B. 30°C                              | B. 32°C                               |
| 5. a comfortable temperature indoors | 6. water is nearing its boiling point |
| A. 22°F                              | A. 100°F                              |
| B. 22°C                              | B. 100°C                              |

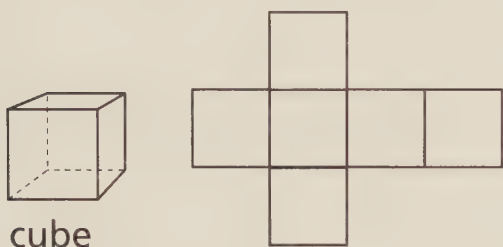
Decide which kind of clothing you should wear.  
Write T-shirt, sweatshirt, or heavy jacket.

- |         |         |         |         |
|---------|---------|---------|---------|
| 7. 50°F | 8. 90°F | 9. 30°C | 10. 2°C |
| _____   | _____   | _____   | _____   |

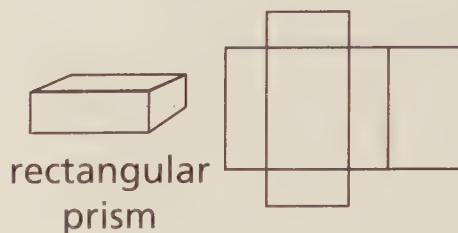
# 3-Dimensional Figures

The objects you see around you are 3-dimensional figures.  
A 3-dimensional figure is a figure that has length, width, and height.

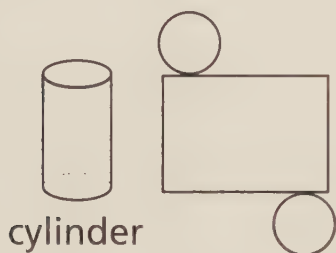
You can cut and fold paper to make 3-dimensional figures.  
The **nets** of some 3-dimensional figures are shown next to the figure.



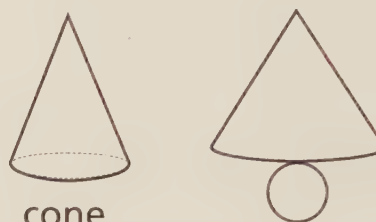
cube



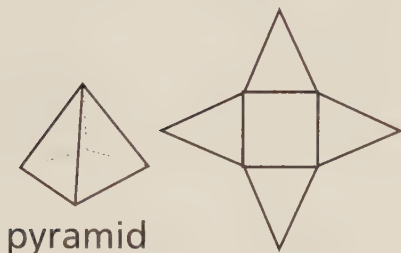
rectangular  
prism



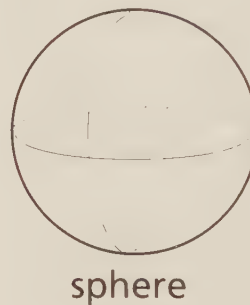
cylinder



cone

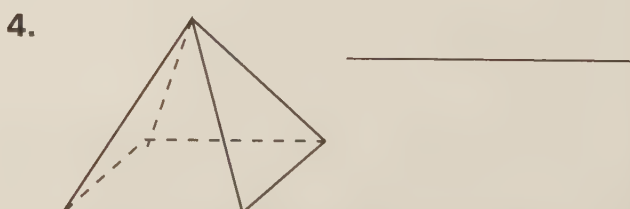
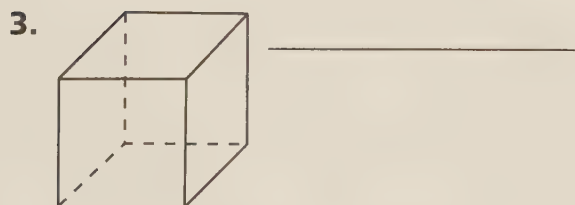
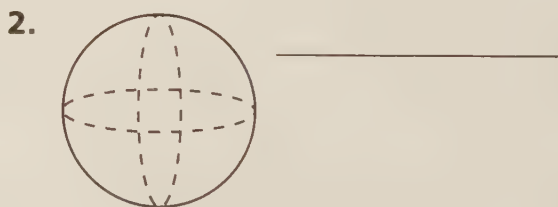


pyramid



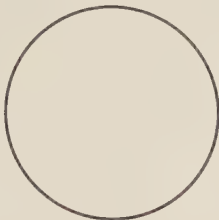
sphere

Identify the 3-dimensional figure.



# 2-Dimensional Figures

A 2-dimensional figure has only length and width. It is flat like this piece of paper. Here are some 2-dimensional figures.



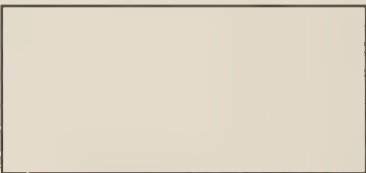
A circle has 0 sides and 0 angles.



A square has 4 sides and 4 angles.  
All 4 sides are equal in length.

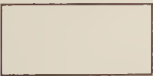


A triangle has 3 sides and 3 angles.



A rectangle has 4 sides and 4 angles.  
The 4 sides do not have to be equal in length.

Identify each 2-dimensional figure. Tell how many sides and angles it has.

| Figure                                                                                 | Name | Number of Sides | Number of Angles |
|----------------------------------------------------------------------------------------|------|-----------------|------------------|
| 1.  |      |                 |                  |
| 2.  |      |                 |                  |
| 3.  |      |                 |                  |
| 4.  |      |                 |                  |

# Lines, Line Segments, Rays, and Angles

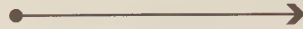
A **line** is straight. It goes in two directions and never ends.



A **line segment** is also straight, but it has two endpoints.



A **ray** has an endpoint at one end. It goes on without end in the other direction.



A **right angle** is an angle that forms a square corner.



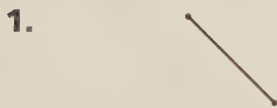
Some angles are greater than right angles.



Some angles are less than right angles.



Identify each figure.



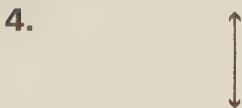
\_\_\_\_\_



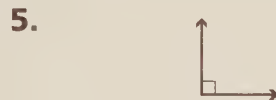
\_\_\_\_\_



\_\_\_\_\_



\_\_\_\_\_



\_\_\_\_\_

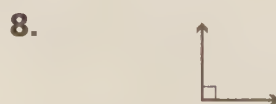


\_\_\_\_\_

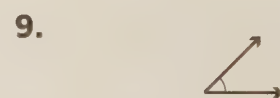
Decide whether the angle is less than, equal to, or greater than a right angle.



\_\_\_\_\_



\_\_\_\_\_



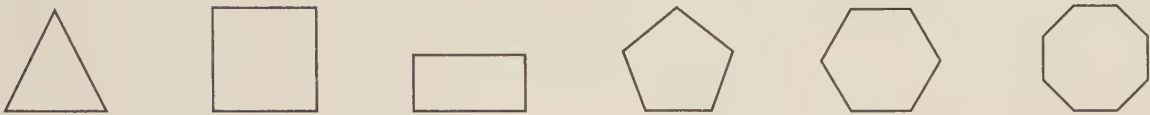
\_\_\_\_\_

# Polygons

A **polygon** is a closed figure with straight sides.

These are polygons.

## Closed figures

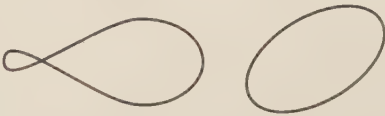


These are *not* polygons.

## Open figures



## Closed figures



Circle the polygons below.

1.



2.

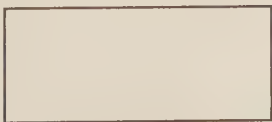


3.



Identify the polygon.

4.



5.



6.



7.



8.



9.



# Triangles

Triangles can be classified by the length of their sides.



In an **equilateral triangle**,  
3 sides are the same  
length.



In an **isosceles triangle**,  
2 sides are the same  
length.



In a **scalene triangle**,  
no sides are the same  
length.

Triangles can also be classified by the size of their angles.



In an **acute triangle**,  
each angle is less than  
a right angle.



In a **right triangle**,  
one angle is  
a right angle.



In an **obtuse triangle**,  
one angle is greater  
than a right angle.

Identify each triangle as equilateral, isosceles, or scalene:

1.



None of the sides of the triangle  
are the same length. It is a(n)  
\_\_\_\_\_ triangle.

2.



All of the sides of the triangle are  
the same length. It is a(n)  
\_\_\_\_\_ triangle.

3.



Two of the sides of the triangle are  
the same length. It is a(n)  
\_\_\_\_\_ triangle.

Identify each triangle as acute, right, or obtuse.

4.



The triangle has one right angle. It  
is a(n) \_\_\_\_\_ triangle.

5.



All of the triangle's angles are less  
than a right angle. It is a(n)  
\_\_\_\_\_ triangle.

6.



One of the triangle's angles is  
greater than a right angle. It is a(n)  
\_\_\_\_\_ triangle.

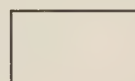
# Quadrilaterals

A **quadrilateral** can be classified by its sides and angles.

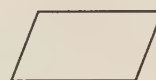
A **square** has 4 right angles and 4 equal sides.



A **rectangle** has 4 right angles. Its opposite sides are equal.



In a **parallelogram**, both pairs of opposite sides are parallel.



A **rhombus** has 4 equal sides.



A **trapezoid** has only 1 pair of parallel sides.



---

Identify each quadrilateral.

1.



It has 4 equal sides.

It is a \_\_\_\_\_.

2.



Only 1 pair of its sides is parallel.

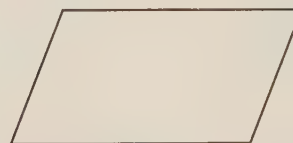
It is a \_\_\_\_\_.

3.



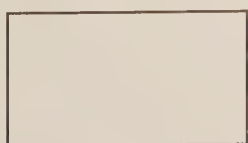
It has 4 right angles and 4 equal sides. It is a \_\_\_\_\_.

4.



Both pairs of its opposite sides are parallel. It is a \_\_\_\_\_.

5.



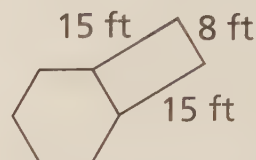
It has 4 right angles, and its opposite sides are equal.

It is a \_\_\_\_\_.

# Problem Solving: Skill

## Use a Diagram

The figure is made up of a hexagon and a rectangle.  
All the sides of the hexagon have the same length.  
What is the length of a side of the hexagon?



### Step 1

#### Read

#### Make sure you understand the problem.

What do you know?

- The lengths of the sides of the rectangle are \_\_\_\_\_ feet and \_\_\_\_\_ feet.

What do you need to find?

- What is the length of a side of the hexagon?

### Step 2

#### Plan

#### Make a plan.

Use what you know about rectangles. You know that the opposite sides are the same length.

### Step 3

#### Solve

#### Carry out your plan.

The opposite side of the rectangle is \_\_\_\_\_ feet.

The length of a side of the hexagon is \_\_\_\_\_ feet.

### Step 4

#### Look Back

#### Check your answer.

Use the diagram to make sure that your answer is reasonable.

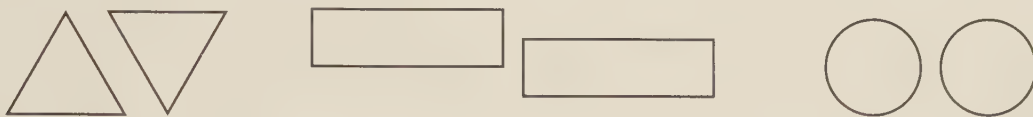
Solve. Use the data from the illustration.

- This figure is a rhombus. Suppose you draw a line segment from one corner of this figure to the opposite corner. Describe the two new figures that you made.



# Congruent and Similar Figures

**Congruent figures** have the same size and shape. One way to tell if figures are congruent is to put one on top of the other. If they fit, they are congruent.



**Similar figures** have the same shape, but may not have the same size.



The figures below are *not* similar or congruent.



Look at each figure. Then read the description. Write whether the figures are similar. Write whether the figures are congruent.

1.



The figures have the same shape but not the same size.

They are \_\_\_\_\_.

2.



The figures have the same shape and size. They are \_\_\_\_\_.

Write whether the figures are similar.  
Write whether the figures are congruent.

3.



4.



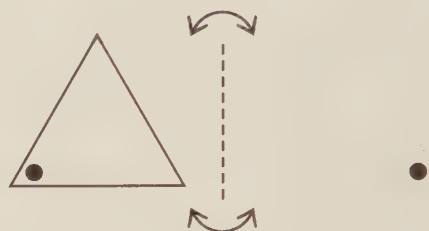
# Explore Translations, Reflections, and Rotations

You can use pattern blocks to help you move figures.  
Trace around a pattern block and slide, flip, or turn it.

You can slide a figure. This is called **translation**.



You can flip a figure. This is called **reflection**.



You can turn a figure. This is called **rotation**.



Find out how each figure was moved. Write *reflection*, *rotation*, or *translation*.

1.



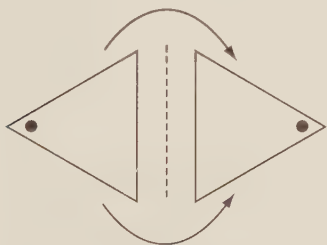
In this \_\_\_\_\_, the rectangle was slid.

2.



In this \_\_\_\_\_, the trapezoid was turned.

3.



In this \_\_\_\_\_, the triangle was flipped.

4.

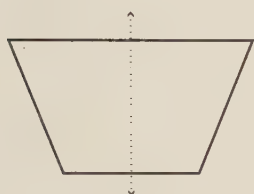


In this \_\_\_\_\_, the rhombus was turned.

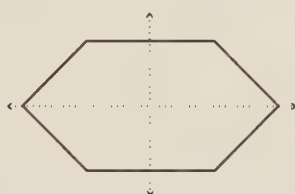
# Explore Symmetry

You can fold some figures along a **line of symmetry** so that the two parts match exactly. These figures are symmetrical. A figure can have more than 1 line of symmetry.

1 line of symmetry



more than 1 line of symmetry



no lines of symmetry



You can use pattern blocks to help you decide whether a figure is symmetrical. Trace the pattern block on a sheet of paper. Cut out the figure, and then fold it in half. Do the two sides match exactly?

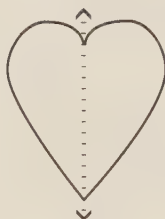
For problems 1–3, trace the figures on another sheet of paper. Cut out each figure. Fold along the line shown. Is it a line of symmetry? Write *yes* or *no* to tell if each line is a line of symmetry.

1.



\_\_\_\_\_

2.



\_\_\_\_\_

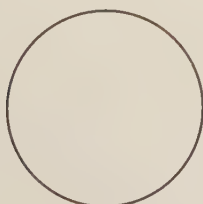
3.



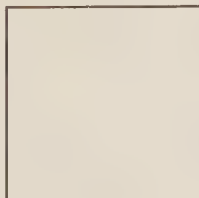
\_\_\_\_\_

For problems 4–6, trace the figures on another sheet of paper. Cut out each figure. Fold it in half. Mark the line of symmetry along the fold line.

4.



5.



6.



# Problem Solving: Strategy

## Find a Pattern

### Page 531, Problem 4

Tami is making a design out of beads. There are 3 beads in the first row, 6 beads in the second row, and 9 beads in the third row. If this pattern continues, how many beads will she use in the sixth row?

#### Step 1

##### Read

**Be sure you understand the problem.**

Read carefully.

What do you know?

- You know there are \_\_\_\_\_ beads in the first row, \_\_\_\_\_ beads in the second row, and \_\_\_\_\_ beads in the third row.

What do you need to know?

- You need to find \_\_\_\_\_.

#### Step 2

##### Plan

- Logical Reasoning
- Draw a Picture or Diagram
- Make a Graph
- Act It Out
- Make a Table or List
- Find a Pattern
- Guess and Check
- Write an Equation
- Solve a Simpler Problem

**Make a plan.**

Choose a strategy.

Finding a pattern will help you solve the problem.

You can use numbers to help you identify the pattern.

# Problem Solving: Strategy

## Find a Pattern

### Step 3

### Solve

#### Carry out your plan.

Use numbers to help you identify the pattern.

First row            3

Second row        6

Third row           9

There are \_\_\_\_\_ more beads in the second row than in the first row.

There are \_\_\_\_\_ more beads in the third row than in the second row.

The fourth row will have \_\_\_\_\_ beads.

The fifth row will have \_\_\_\_\_ beads.

The sixth row will have \_\_\_\_\_ beads.

### Step 4

### Look Back

#### Is the solution reasonable?

Reread the problem.

Did you answer the question?                      Yes    No

Did you find a pattern and continue it?        Yes    No

What other strategies could you use to solve the problem?

\_\_\_\_\_

## Practice

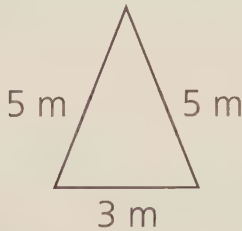
1. Wendy makes a pattern that repeats 2 squares and 3 triangles. What is the 12th shape in the pattern?  
\_\_\_\_\_
2. George makes a pattern that repeats 1 octagon and 5 circles. What is the 13th shape in the pattern?  
\_\_\_\_\_

# Perimeter

The **perimeter** is the distance around an object or a shape.

To find perimeter, add the lengths of the sides.

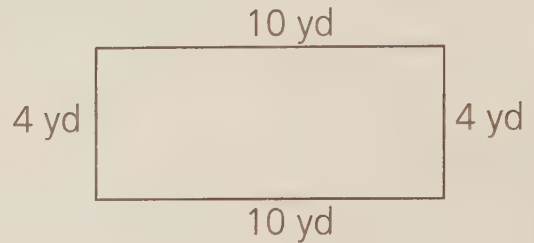
To find the perimeter of this triangle, add the lengths of the 3 sides.



$$5 + 5 + 3 = 13$$

The perimeter of the triangle is 13 m.

To find the perimeter of this rectangle, add the lengths of the 4 sides.

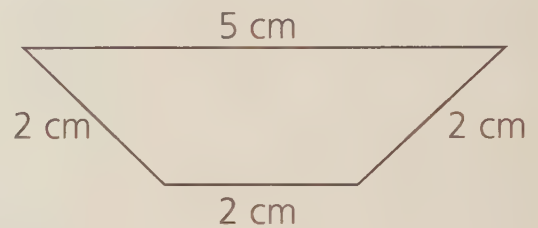


$$10 + 4 + 10 + 4 = 28$$

The perimeter of the rectangle is 28 yd.

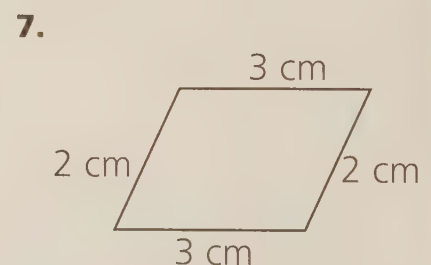
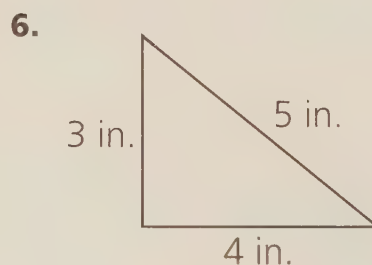
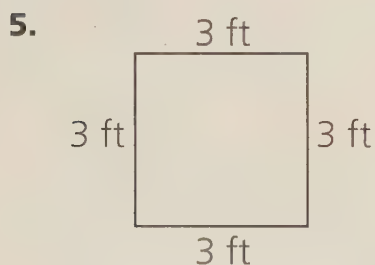
Complete the sentences.

1. The trapezoid has \_\_\_\_\_ sides.
2. To find the perimeter of the trapezoid, I must \_\_\_\_\_ the lengths of the sides.
3. The lengths of its sides are \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_.



4. Find the perimeter.  $2\text{ cm} + 2\text{ cm} + 2\text{ cm} + 5\text{ cm} = \underline{\hspace{2cm}}\text{ cm}$

Find the perimeter.



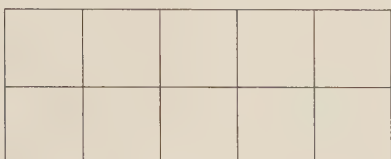
\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

# Area

The number of square units needed to cover a surface is called **area**. You can use graph paper to help you find the area of a figure.



Count the number of units.  
The area of this rectangle is  
10 square units.



Count the units.  
The area of this figure is  
8 square units.

Count the square units. Write the numbers in the squares.  
Then find the area of each figure.

1.



2.

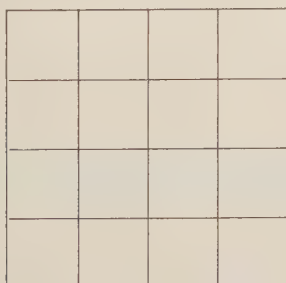


The rectangle has \_\_\_\_\_ square  
units. It has an area of  
\_\_\_\_\_ square units.

The figure has \_\_\_\_\_ square  
units. It has an area of  
\_\_\_\_\_ square units.

Find each area in square units.

3.



4.



5.



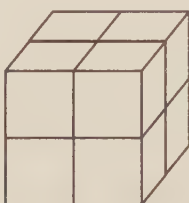
# Explore Volume

A **cubic unit** is a unit of volume. 

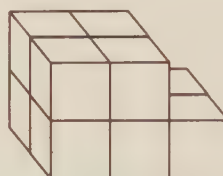
Cubic units measure the space that a 3-dimensional figure takes up. That space is called its **volume**.

You can use cubes to help you find volume.

The figure below has a volume of 8 cubic units.

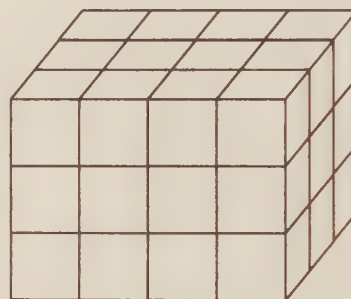


The figure below has a volume of 10 cubic units.



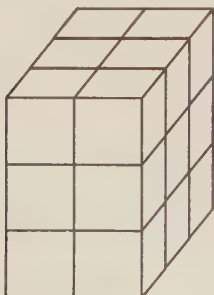
Use cubes to help you find the volume of the rectangular prism.

1. The bottom layer has \_\_\_\_\_ cubic units.
2. The middle layer has \_\_\_\_\_ cubic units.
3. The top layer has \_\_\_\_\_ cubic units.
4. How many cubes are there in all? \_\_\_\_\_
5. The volume is \_\_\_\_\_ cubic units.

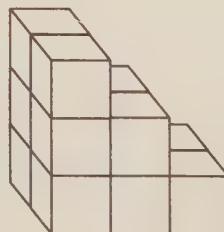


Use cubes to help you find each volume in cubic units.

6.

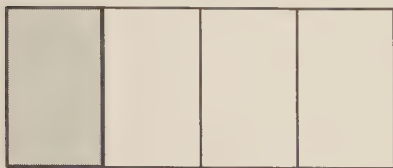


7.



# Parts of a Whole

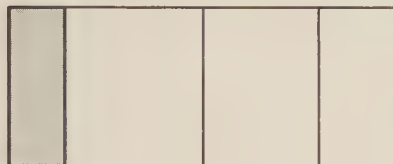
A fraction can name part of a whole. To write a fraction, each part of the whole must be the same size.



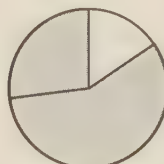
1 part shaded  
4 parts in all  
 $\frac{1}{4}$  is shaded.



2 parts shaded  
3 parts in all  
 $\frac{2}{3}$  is shaded.



4 unequal parts  
You cannot write a fraction.



3 unequal parts  
You cannot write a fraction.

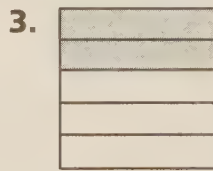
Complete.



\_\_\_\_\_ part shaded  
\_\_\_\_\_ parts in all  
fraction \_\_\_\_\_



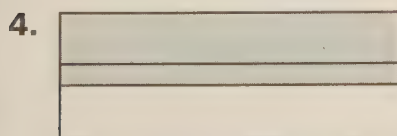
\_\_\_\_\_ parts shaded  
\_\_\_\_\_ parts in all  
fraction \_\_\_\_\_



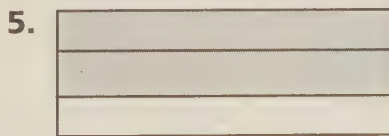
\_\_\_\_\_ parts shaded  
\_\_\_\_\_ parts in all  
fraction \_\_\_\_\_

Tell if the figure shows equal parts.

If yes, write a fraction for the part that is shaded.



\_\_\_\_\_



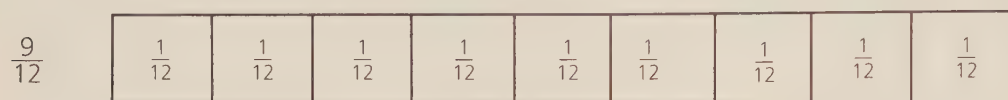
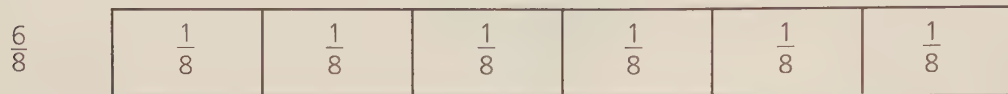
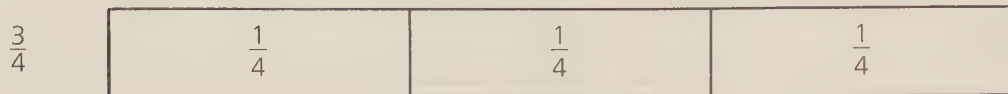
\_\_\_\_\_



\_\_\_\_\_

# Explore Equivalent Fractions

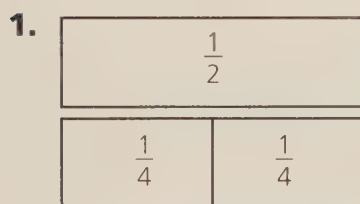
**Equivalent fractions** are different fractions that name the same amount.



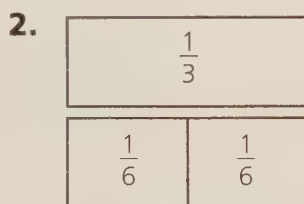
$\frac{3}{4}$ ,  $\frac{6}{8}$ , and  $\frac{9}{12}$  are equivalent fractions.

Complete to name the equivalent fraction.

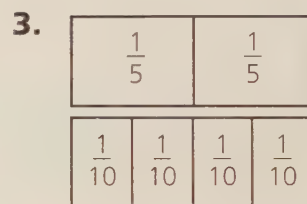
Use the models shown to help you.



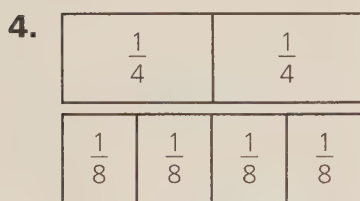
$$\frac{1}{2} = \frac{\boxed{\phantom{000}}}{4}$$



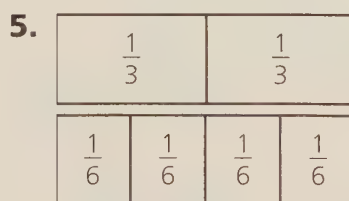
$$\frac{1}{3} = \frac{\boxed{\phantom{000}}}{6}$$



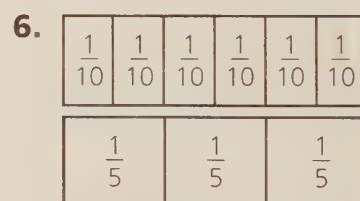
$$\frac{2}{5} = \frac{\boxed{\phantom{000}}}{10}$$



$$\frac{2}{4} = \frac{\boxed{\phantom{000}}}{8}$$



$$\frac{2}{3} = \frac{\boxed{\phantom{000}}}{6}$$



$$\frac{6}{10} = \frac{\boxed{\phantom{000}}}{5}$$

Complete to name the equivalent fraction.

Use fraction models to help you.

7.  $\frac{1}{4} = \frac{\boxed{\phantom{000}}}{8}$

8.  $\frac{3}{5} = \frac{\boxed{\phantom{000}}}{10}$

9.  $\frac{3}{6} = \frac{\boxed{\phantom{000}}}{12}$

10.  $\frac{3}{12} = \frac{\boxed{\phantom{000}}}{4}$

11.  $\frac{1}{2} = \frac{\boxed{\phantom{000}}}{12}$

12.  $\frac{4}{5} = \frac{\boxed{\phantom{000}}}{10}$

13.  $\frac{2}{8} = \frac{\boxed{\phantom{000}}}{4}$

14.  $\frac{8}{12} = \frac{\boxed{\phantom{000}}}{3}$

# Fractions in Simplest Form

Juan washed 6 out of the 9 windowpanes and Julie washed the other 3. How can you write  $\frac{6}{9}$  in simplest form?

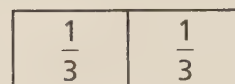
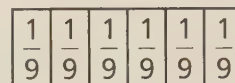


Show  $\frac{6}{9}$  using fraction models.

Find the largest fraction piece you can use to show  $\frac{6}{9}$ .

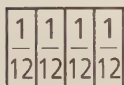
Two  $\frac{1}{3}$  fraction pieces are the same length as six  $\frac{1}{9}$  fraction pieces.

The simplest form of  $\frac{6}{9}$  is  $\frac{2}{3}$ .



Write each fraction in simplest form.

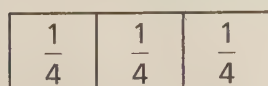
1.  $\frac{4}{12} = \frac{\square}{\square}$



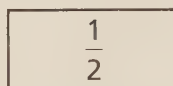
3.  $\frac{6}{10} = \frac{\square}{\square}$



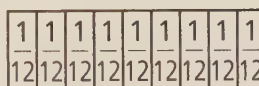
5.  $\frac{6}{8} = \frac{\square}{\square}$



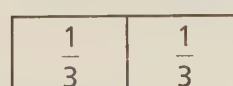
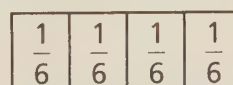
2.  $\frac{4}{8} = \frac{\square}{\square}$



4.  $\frac{9}{12} = \frac{\square}{\square}$



6.  $\frac{4}{6} = \frac{\square}{\square}$



# Compare and Order Fractions

You can use fraction models to compare fractions.

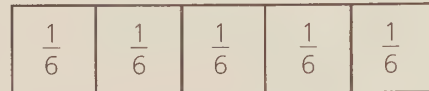
$\frac{1}{8}$  is less than  $\frac{3}{8}$ .



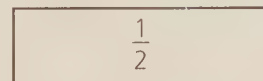
$\frac{1}{8} < \frac{3}{8}$



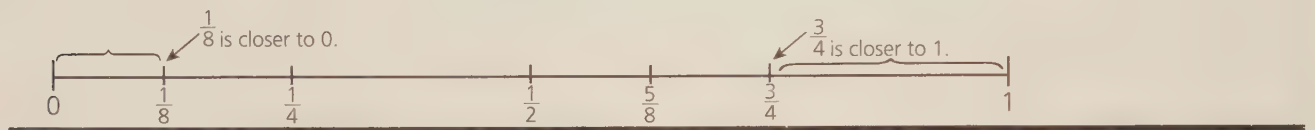
$\frac{5}{6}$  is greater than  $\frac{1}{2}$ .



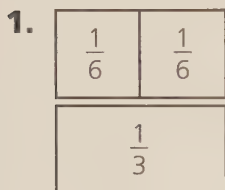
$\frac{5}{6} > \frac{1}{2}$



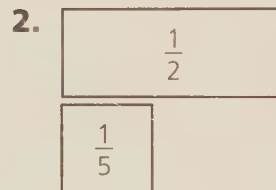
You can use a number line to tell if a fraction is closer to 0 or 1.



Compare. Write  $>$ ,  $<$ , or  $=$ .



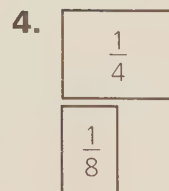
$\frac{2}{6} \bigcirc \frac{1}{3}$



$\frac{1}{2} \bigcirc \frac{1}{5}$



$\frac{4}{8} \bigcirc \frac{7}{8}$



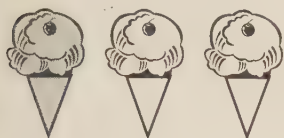
$\frac{1}{4} \bigcirc \frac{1}{8}$

5.  $\frac{3}{4} \bigcirc \frac{1}{2}$

6.  $\frac{3}{8} \bigcirc \frac{1}{4}$

# Parts of a Group

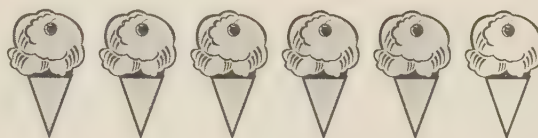
You can use a fraction to describe part of a group or set.



1 cone shaded

3 cones in all

$\frac{1}{3}$  are shaded.



5 cones shaded

6 cones in all

$\frac{5}{6}$  are shaded.

Complete to write a fraction for the part of each group that is shaded.



\_\_\_\_\_ slice of pie shaded

\_\_\_\_\_ slices of pie in all

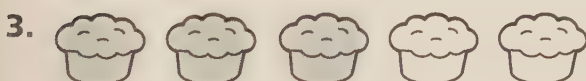
\_\_\_\_\_ are shaded.



\_\_\_\_\_ cherries shaded

\_\_\_\_\_ cherries in all

\_\_\_\_\_ are shaded.



\_\_\_\_\_ muffins shaded

\_\_\_\_\_ muffins in all

\_\_\_\_\_ are shaded.



\_\_\_\_\_ carrots shaded

\_\_\_\_\_ carrots in all

\_\_\_\_\_ are shaded.



\_\_\_\_\_ plant shaded

\_\_\_\_\_ plants in all

\_\_\_\_\_ are shaded.



\_\_\_\_\_ pears shaded

\_\_\_\_\_ pears in all

\_\_\_\_\_ are shaded.

# Explore Finding Parts of a Group

You can use counters to find parts of a group.

Find  $\frac{1}{3}$  of 6.

Use 6 counters. Make 3 equal groups.

Find how many counters are in 1 group.



There are **2** counters in 1 group.

$$\frac{1}{3} \text{ of } 6 = 2$$

Find  $\frac{2}{5}$  of 15.

Use 15 counters. Make 5 equal groups.

Find how many counters are in 2 groups.



There are **6** counters in 2 groups.

$$\frac{2}{5} \text{ of } 15 = 6$$

Complete. You may wish to use counters.



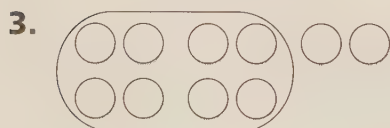
There are \_\_\_\_\_ counters in  
1 group.

$$\frac{1}{2} \text{ of } 6 = \underline{\hspace{2cm}}$$



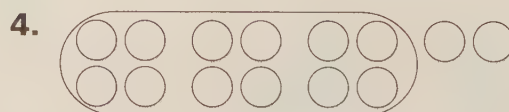
There are \_\_\_\_\_ counters in  
1 group.

$$\frac{1}{4} \text{ of } 8 = \underline{\hspace{2cm}}$$



There are \_\_\_\_\_ counters in  
4 groups.

$$\frac{4}{5} \text{ of } 10 = \underline{\hspace{2cm}}$$



There are \_\_\_\_\_ counters in  
6 groups.

$$\frac{6}{7} \text{ of } 14 = \underline{\hspace{2cm}}$$

# Problem Solving: Skill

## Check for Reasonableness



Mr. Samuels owns a chain of fast-food restaurants. He has restaurants in  $\frac{1}{5}$  of the 50 states. Tom says there are Mr. Samuels' restaurants in 15 states. Is Tom's statement reasonable?

Step 1

**Read**

**Be sure you understand the problem.**

What do you know?

There are restaurants in \_\_\_\_\_ of the 50 states.

What do you need to find?

Step 2

**Plan**

**Make a plan.**

Think about what you know about fractions.

You need to find \_\_\_\_\_ of 50.

Step 3

**Solve**

**Carry out your plan**

\_\_\_\_\_ groups of 10 = 50

There are restaurants in \_\_\_\_\_ states. 15 \_\_\_\_\_ 10

Tom's statement is not reasonable.

Step 4

**Look Back**

**Is your answer reasonable?**

Use counters to check.

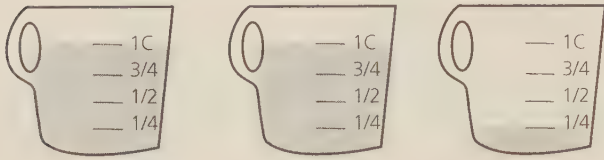
Solve. Check for reasonableness.

1. Ken makes 18 cupcakes for the bake sale. He sells  $\frac{2}{3}$  of the cupcakes. His brother says Ken has 6 cupcakes left. Is his brother's statement reasonable?

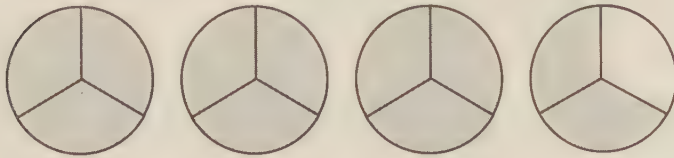
2. Maria bought 12 muffins. There are blueberries in  $\frac{1}{2}$  of the muffins. Are there 8 muffins with blueberries?

# Mixed Numbers

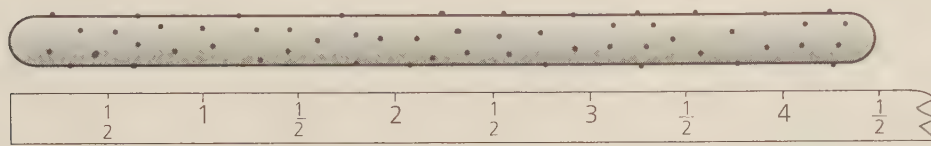
A **mixed number** has a whole number and a fraction.



2 whole cups filled  
 $\frac{1}{4}$  cup more  
 $2\frac{1}{4}$  cups filled

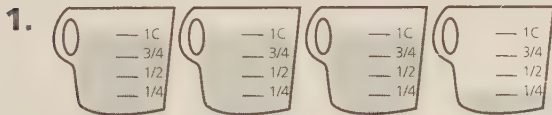


3 whole circles shaded  
 $\frac{2}{3}$  circle more  
 $3\frac{2}{3}$  circles shaded



4 whole inches  
 $\frac{1}{2}$  inch more  
 $4\frac{1}{2}$  inches long

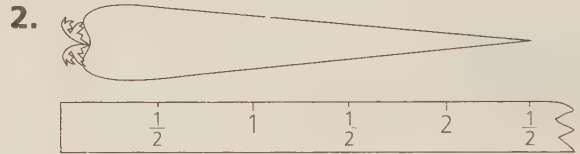
Complete to find the mixed number.



3 whole cups filled

$\frac{1}{4}$  cup more

\_\_\_\_\_ cups filled



2 whole inches

$\frac{1}{2}$  inch more

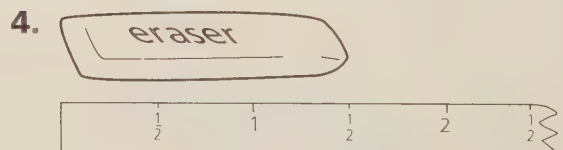
\_\_\_\_\_ inches long



\_\_\_\_\_ whole circle shaded

\_\_\_\_\_ circle more

\_\_\_\_\_ circles shaded



\_\_\_\_\_ whole inch

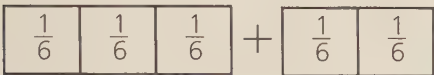
\_\_\_\_\_ inch more

\_\_\_\_\_ inches long

# Explore Adding Fractions

You can use fraction models to add fractions.

Find:  $\frac{3}{6} + \frac{2}{6}$



$$\frac{3}{6} + \frac{2}{6} = \frac{5}{6}$$

Use fraction models to add.

1. 

|               |
|---------------|
| $\frac{1}{4}$ |
|---------------|

 + 

|               |               |
|---------------|---------------|
| $\frac{1}{4}$ | $\frac{1}{4}$ |
|---------------|---------------|

$$\frac{1}{4} + \frac{2}{4} = \frac{3}{4}$$

2. 

|               |
|---------------|
| $\frac{1}{8}$ |
|---------------|

 + 

|               |               |               |               |
|---------------|---------------|---------------|---------------|
| $\frac{1}{8}$ | $\frac{1}{8}$ | $\frac{1}{8}$ | $\frac{1}{8}$ |
|---------------|---------------|---------------|---------------|

$$\frac{1}{8} + \frac{4}{8} = \underline{\hspace{2cm}}$$

3. 

|               |
|---------------|
| $\frac{1}{6}$ |
|---------------|

 + 

|               |               |               |               |
|---------------|---------------|---------------|---------------|
| $\frac{1}{6}$ | $\frac{1}{6}$ | $\frac{1}{6}$ | $\frac{1}{6}$ |
|---------------|---------------|---------------|---------------|

$$\frac{1}{6} + \frac{4}{6} = \underline{\hspace{2cm}}$$

4. 

|                |                |
|----------------|----------------|
| $\frac{1}{12}$ | $\frac{1}{12}$ |
|----------------|----------------|

 + 

|                |                |                |
|----------------|----------------|----------------|
| $\frac{1}{12}$ | $\frac{1}{12}$ | $\frac{1}{12}$ |
|----------------|----------------|----------------|

$$\frac{2}{12} + \frac{3}{12} = \underline{\hspace{2cm}}$$

5. 

|               |
|---------------|
| $\frac{1}{3}$ |
|---------------|

 + 

|               |
|---------------|
| $\frac{1}{3}$ |
|---------------|

$$\frac{1}{3} + \frac{1}{3} = \underline{\hspace{2cm}}$$

6. 

|                |                |                |
|----------------|----------------|----------------|
| $\frac{1}{10}$ | $\frac{1}{10}$ | $\frac{1}{10}$ |
|----------------|----------------|----------------|

 + 

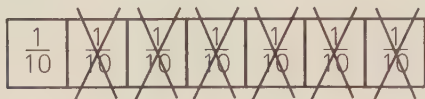
|                |                |                |                |
|----------------|----------------|----------------|----------------|
| $\frac{1}{10}$ | $\frac{1}{10}$ | $\frac{1}{10}$ | $\frac{1}{10}$ |
|----------------|----------------|----------------|----------------|

$$\frac{3}{10} + \frac{4}{10} = \underline{\hspace{2cm}}$$

# Explore Subtracting Fractions

You can use fraction models to subtract fractions.

Find:  $\frac{7}{10} - \frac{6}{10}$

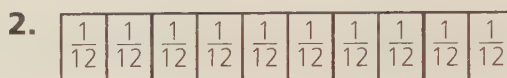


$$\frac{7}{10} - \frac{6}{10} = \frac{1}{10}$$

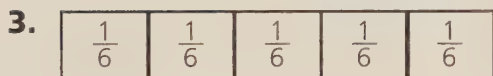
Use fraction models to subtract.



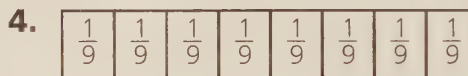
$$\frac{6}{8} - \frac{3}{8} = \underline{\hspace{2cm}}$$



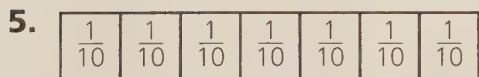
$$\frac{10}{12} - \frac{3}{12} = \underline{\hspace{2cm}}$$



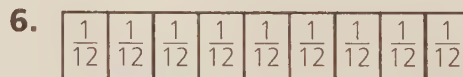
$$\frac{5}{6} - \frac{4}{6} = \underline{\hspace{2cm}}$$



$$\frac{8}{9} - \frac{6}{9} = \underline{\hspace{2cm}}$$



$$\frac{7}{10} - \frac{4}{10} = \underline{\hspace{2cm}}$$



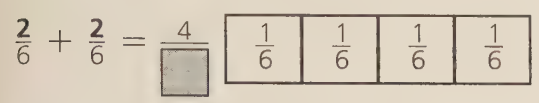
$$\frac{9}{12} - \frac{2}{12} = \underline{\hspace{2cm}}$$

# Add and Subtract Fractions

To add or subtract fractions with the same denominator, you can follow these steps.

Find  $\frac{2}{6} + \frac{2}{6}$ .

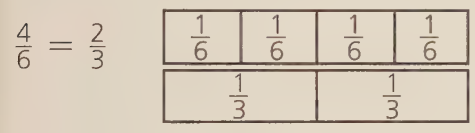
Add the numerators.



Write the sum of the numerators over the denominator.

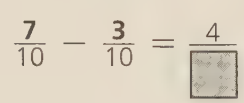
$\frac{2}{6} + \frac{2}{6} = \frac{4}{6}$

Write the sum in the simplest form.



Find  $\frac{7}{10} - \frac{3}{10}$ .

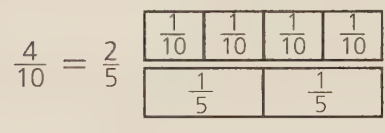
Subtract the numerators.



Write the difference of the numerators over the denominator.

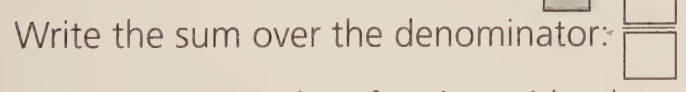
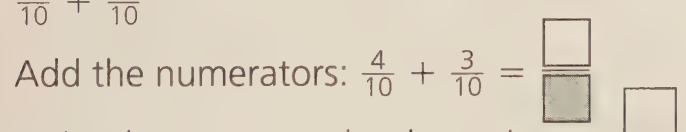
$\frac{7}{10} - \frac{3}{10} = \frac{4}{10}$

Write the difference in simplest form.



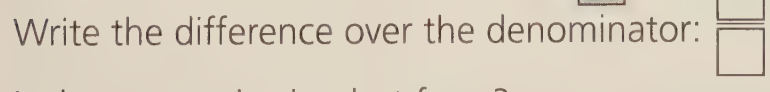
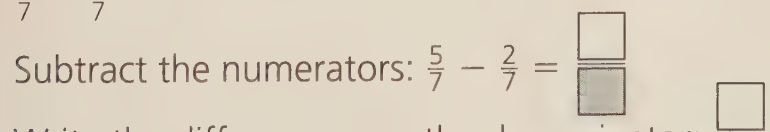
Add or subtract. You may use fraction models.

1.  $\frac{4}{10} + \frac{3}{10}$



Is there an equivalent fraction with a lesser denominator? \_\_\_\_\_

2.  $\frac{5}{7} - \frac{2}{7}$



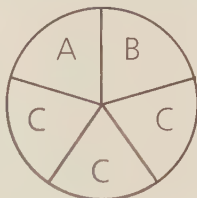
Is the answer in simplest form? \_\_\_\_\_

# Probability

Probability is the chance that an event will happen.

The spinner has 5 sections.

The spinner shows the letters A, B, and C.



If you spin the spinner:

It is *certain* that you will land on an A, B, or C.

These are the letters showing.

It is *impossible* that you will land on the letter D.

There is no letter D on the spinner.

It is *likely* that you will land on the letter C.

Most of the letters on the spinner are Cs.

It is *unlikely* that you will land on the letter A.

Only 1 of the 5 letters is an A.

It is *unlikely* that you will land on the letter B.

Only 1 of the 5 letters is a B.

Write *certain*, *likely*, *unlikely*, or *impossible* to describe the probability.

1. Land on a 4.

Think: Four of the 7 numbers are 4s.

The probability of landing on a 4 is \_\_\_\_\_.

2. Land on a 7.

Think: None of the numbers is a 7.

The probability of landing on a 7 is \_\_\_\_\_.

3. Land on a 3.

Think: Only 1 of the 7 numbers is a 3.

The probability of landing on a 3 is \_\_\_\_\_.

4. Land on a number.

Think: Every section of the spinner shows a number.

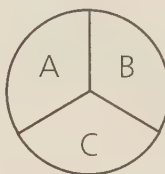
The probability of landing on a number is \_\_\_\_\_.



# Explore Finding Outcomes

When you do a probability experiment, the **possible outcomes** are any of the results that could happen.

If you spin this spinner, it will land on an A, B, or C.



So, the possible outcomes are: **A, B, C.**

If you toss a penny, it will land with either heads or tails showing.



So, the possible outcomes are: **heads, tails.**

List the possible outcomes for each. Then do the experiment. Record the results in a tally chart.

- Place 1 blue, 1 yellow, and 1 red cube in a paper bag. Take a cube from the bag, record it, then replace it in the bag. Repeat 10 times.

Possible outcomes: \_\_\_\_\_

Tally chart of results:

---



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- Spin the spinner 20 times.

Possible outcomes:



\_\_\_\_\_

Tally chart of results:

---



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# Problem Solving: Strategy

## Make an Organized List

**R** 26-7  
RETEACH

Page 591, Problem 2

You have a choice of a main dish and a drink. How many different combinations are possible?



### Step 1

#### Read

**Be sure you understand the problem.**

Read carefully.

What do you know?

- Main dishes are \_\_\_\_\_
- Drinks are \_\_\_\_\_

What do you need to find?

- You need to find how many \_\_\_\_\_

### Step 2

#### Plan

- Logical Reasoning
- Draw a Picture or Diagram
- Make a Graph
- Act It Out
- Make a Table or List
- Find a Pattern
- Guess and Check
- Write an Equation
- Work Backward
- Solve a Simpler Problem

**Make a plan.**

Choose a strategy.

An organized list can show you what you know and what you need to find.

# Problem Solving: Strategy

## Make an Organized List

**Step 3****Solve**

**Carry out your plan.** Solve.

List the possible choices. Complete.

1. eggs, \_\_\_\_\_
2. pancakes, \_\_\_\_\_
3. waffles, \_\_\_\_\_
4. \_\_\_\_\_, juice
5. \_\_\_\_\_, juice
6. \_\_\_\_\_, juice

There are \_\_\_\_\_ different combinations.

**Step 4****Look Back**

**Is the solution reasonable?**

Reread the problem.

How can you check to make sure your answer is correct?

\_\_\_\_\_

### Practice

Use an organized list to solve.

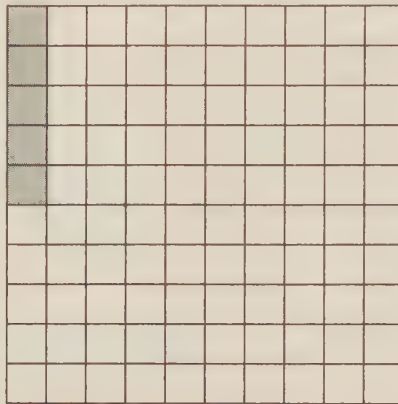
1. Karen packs jeans in blue, black, and white. She packs shirts in gray, green, and blue. How many different outfits can Karen wear?  
\_\_\_\_\_
2. The ski lodge offers packages for 3 days or 7 days. For each package, you can choose a deluxe room, a standard room, or a budget room. How many different packages are there?  
\_\_\_\_\_

# Explore Fractions and Decimals

You can use a fraction or a decimal to name parts of a whole.



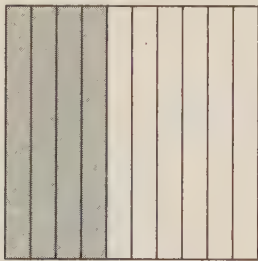
$10¢ = \frac{1}{10}$  of a dollar  
Read: one tenth  
Fraction:  $\frac{1}{10}$   
Decimal: 0.1 or \$0.10



$5¢ = \frac{5}{100}$  of a dollar  
Read: five hundredths  
Fraction:  $\frac{5}{100}$   
Decimal: 0.05 or \$0.05

Write a fraction and a decimal for each shaded part.

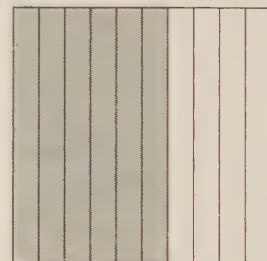
1. \_\_\_\_\_



2. \_\_\_\_\_

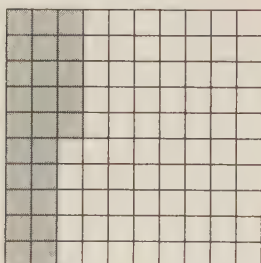


3. \_\_\_\_\_

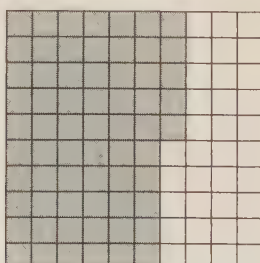


Write a fraction and a decimal for each shaded part.

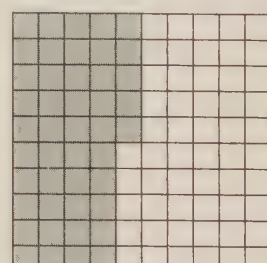
4. \_\_\_\_\_



5. \_\_\_\_\_



6. \_\_\_\_\_



# Fractions and Decimals

This whole is divided into 10 equal parts.  
Each part is one tenth.

one tenth



fraction  $\rightarrow \frac{1}{10} = 0.1 \leftarrow$  **decimal**

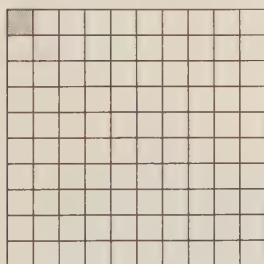
This model has  
six tenths shaded.

$$\frac{6}{10} = 0.6$$



This whole is divided into 100 equal parts.  
Each part is one hundredth.

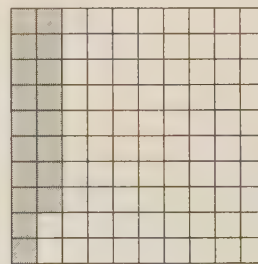
one hundredth



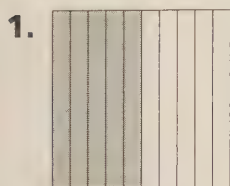
fraction  $\rightarrow \frac{1}{100} = 0.01 \leftarrow$  **decimal**

This model has  
18 hundredths shaded.

$$\frac{18}{100} = 0.18$$



Write a decimal for each.



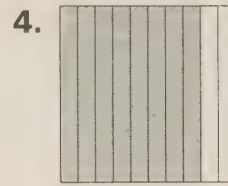
\_\_\_\_\_



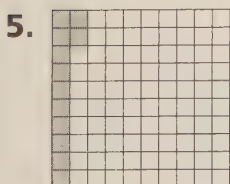
\_\_\_\_\_



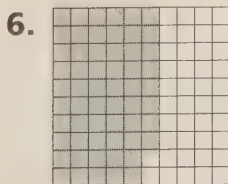
\_\_\_\_\_



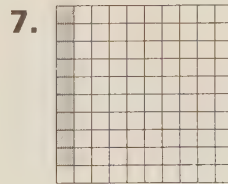
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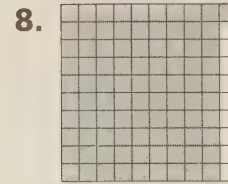
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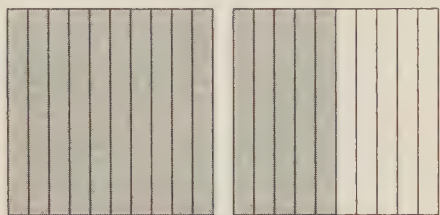
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\_\_\_\_\_

# Decimals Greater Than One

This model shows 1 whole and 5 tenths shaded.



1 whole and 5 tenths

$$1\frac{5}{10} = 1.5$$

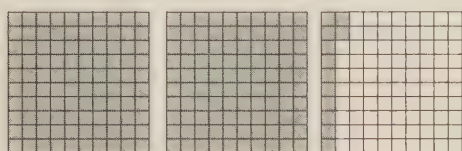
You can write  $1\frac{5}{10}$  as a decimal, 1.5.

Read: one and five tenths



Say "and" in place of the decimal point.

This model shows 2 wholes and 12 hundredths shaded.

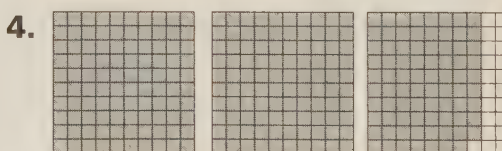
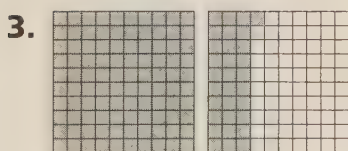


2 wholes and 12 hundredths =  $2\frac{12}{100}$

Decimal: 2.12

Read: two and twelve hundredths

Write each decimal.



5.  $6\frac{7}{10} =$  \_\_\_\_\_ 6.  $9\frac{3}{10} =$  \_\_\_\_\_ 7.  $4\frac{29}{100} =$  \_\_\_\_\_ 8.  $7\frac{15}{100} =$  \_\_\_\_\_

9.  $1\frac{8}{100} =$  \_\_\_\_\_ 10.  $4\frac{9}{10} =$  \_\_\_\_\_ 11.  $8\frac{64}{100} =$  \_\_\_\_\_ 12.  $1\frac{1}{100} =$  \_\_\_\_\_

# Compare and Order Decimals

You can use place value to **compare** decimals.

Compare 3.62 and 3.65.

Line up the decimal points.

| ones | tenths | hundredths |
|------|--------|------------|
| 3    | 6      | 2          |
| 3    | 6      | 5          |

↑      ↑  
same   same

Compare the greatest place first.  
Then compare the other places.

Ones are the same.

Tenths are the same.

Hundredths are **not** the same.

$5 > 2$ , so  $3.65 > 3.62$ .

You can use place value to **order** decimals.

| ones | tenths | hundredths |
|------|--------|------------|
| 3    | 6      | 2          |
| 3    | 6      | 5          |
| 4    | 2      | 3          |

↑  
not the same

Compare the greatest place first.  
Compare the other places.

Ones are **not** the same.

$4 > 3$ , so 4.23 is the **greatest**.

Now compare 3.62 and 3.65.

$3.65 > 3.62$

Greatest to least: 4.23      3.65      3.62

Compare. Circle the greater number.

1. 4.2

3.2

2. 2.4

0.9

3. 2.6

2.8

4. 1.5

1.2

5. 6.25

6.85

6. 2.59

2.62

7. 3.4

3.05

8. 2.70

2.73

Write in order from greatest to least.

9. 2.6   4.8   3.9

\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_

10. 3.1   2.9   3.3

\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_

11. 6.7   6.8   7.5

\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_

12. 0.43   0.45   0.41

\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_

13. 2.09   2.76   2.63

\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_

14. 4.60   4.55   4.75

\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_

# Problem Solving: Skill

## Choose an Operation

Laura sells a clay bowl for \$35.79. Harry sells a clay bowl for \$32.50. Who receives more money? How much more?

**Step 1****Read****Be sure you understand the problem.**

What do you know?

- Harry's bowl sold for \$32.50.
- Laura's bowl sold for \$35.79.

What do you need to find?

- Who receives more money?
- How much more money?

**Step 2****Plan****Make a plan.**

What operation will help you solve the problem?

- You can subtract to find the difference between the amounts.

**Step 3****Solve****Carry out your plan.**

Subtract.  $\$35.79 - \$32.50 = \$3.29$

Laura receives \$3.29 more than Harry.

**Step 4****Look Back****Check your answer.**

Is your answer reasonable?

**Solve.**

1. Marissa spent \$2.98 for a paintbrush. Holly spent \$1.96 more than Marissa. How much did Holly spend on a paintbrush?
- \_\_\_\_\_

2. Joel bought 4 packs of trading cards. Each pack cost \$1.25. How much did he spend altogether?
- \_\_\_\_\_

# Explore Adding Decimals

You can use models to add decimals.

Add  $0.5 + 0.7$ .

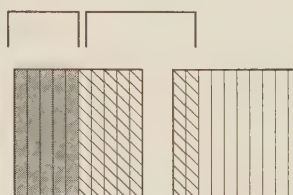
First, shade one addend.

Then shade the next addend.

Find the total.

So,  $0.5 + 0.7 = 1.2$ .

$$0.5 + 0.7 = 1.2$$



Start shading the second addend right after the first addend.

You can also add decimals greater than 1.

Add  $1.18 + 1.23$ .

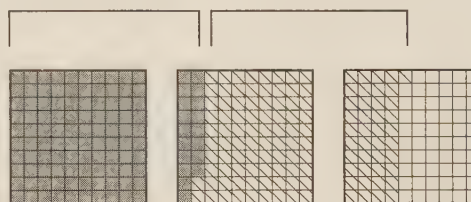
First, shade one addend.

Then shade the next addend.

Find the total.

So,  $1.18 + 1.23 = 2.41$ .

$$1.18 + 1.23 = 2.41$$

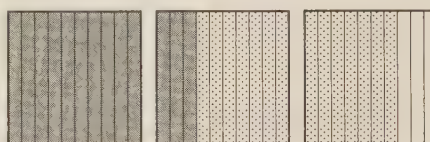


Add.

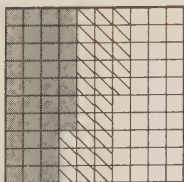
1.  $0.1 + 0.6 = \underline{\hspace{2cm}}$



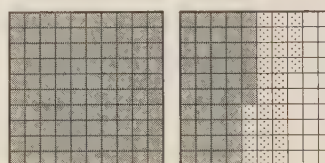
2.  $1.3 + 1.4 = \underline{\hspace{2cm}}$



3.  $0.37 + 0.28 = \underline{\hspace{2cm}}$



4.  $1.46 + 0.28 = \underline{\hspace{2cm}}$



Add. Use models if you wish.

5.  $0.2 + 0.7 = \underline{\hspace{2cm}}$       6.  $0.9 + 1.2 = \underline{\hspace{2cm}}$       7.  $1.6 + 1.2 = \underline{\hspace{2cm}}$

8.  $1.62 + 1.13 = \underline{\hspace{2cm}}$       9.  $1.45 + 0.51 = \underline{\hspace{2cm}}$       10.  $2.30 + 1.57 = \underline{\hspace{2cm}}$

# Add Decimals

You can add decimals with models or by using place value.

$$0.5 + 0.9 = 1.4$$



Line up the decimal points.

$$\begin{array}{r} 0.5 \\ + 0.9 \\ \hline \end{array}$$

$$1.4$$

Add the tenths first.

Regroup if you need to.

Add the ones next.

Write the decimal point in the sum.

$$0.5 + 0.9 = 1.4$$

Add.

1. 
$$\begin{array}{r} 0.9 \\ + 0.8 \\ \hline \end{array}$$

2. 
$$\begin{array}{r} 0.6 \\ + 0.9 \\ \hline \end{array}$$

3. 
$$\begin{array}{r} 0.6 \\ + 0.6 \\ \hline \end{array}$$

4. 
$$\begin{array}{r} 1.8 \\ + 1.6 \\ \hline \end{array}$$

5. 
$$\begin{array}{r} 2.5 \\ + 1.9 \\ \hline \end{array}$$

6. 
$$\begin{array}{r} 0.43 \\ + 0.48 \\ \hline \end{array}$$

7. 
$$\begin{array}{r} 0.26 \\ + 0.79 \\ \hline \end{array}$$

8. 
$$\begin{array}{r} \$2.33 \\ + 1.49 \\ \hline \end{array}$$

9. 
$$\begin{array}{r} \$4.05 \\ + 1.63 \\ \hline \end{array}$$

10. 
$$\begin{array}{r} 2.05 \\ + 2.79 \\ \hline \end{array}$$

11. 
$$\begin{array}{r} 3.3 \\ + 2.6 \\ \hline \end{array}$$

12. 
$$\begin{array}{r} 4.71 \\ + 3.59 \\ \hline \end{array}$$

13. 
$$\begin{array}{r} \$1.46 \\ + 1.77 \\ \hline \end{array}$$

14. 
$$\begin{array}{r} 0.4 \\ + 2.9 \\ \hline \end{array}$$

15. 
$$\begin{array}{r} 0.53 \\ + 1.58 \\ \hline \end{array}$$

16.  $2.1 + 2.9 = \underline{\hspace{2cm}}$

17.  $5.32 + 1.88 = \underline{\hspace{2cm}}$

18.  $6.03 + 2.91 = \underline{\hspace{2cm}}$

19.  $\$2.95 + \$1.75 = \underline{\hspace{2cm}}$

20.  $\$5.10 + \$0.95 = \underline{\hspace{2cm}}$

21.  $4.7 + 1.4 = \underline{\hspace{2cm}}$

22.  $\$1.98 + \$1.05 = \underline{\hspace{2cm}}$

23.  $7.60 + 0.53 = \underline{\hspace{2cm}}$

24.  $1.8 + 1.8 = \underline{\hspace{2cm}}$

25.  $\$0.86 + \$0.47 = \underline{\hspace{2cm}}$

# Problem Solving: Strategy

## Solve a Simpler Problem

Page 631, Problem 3

A family of 2 adults and 3 children each order a sandwich and a drink in the museum cafeteria. Sandwiches cost \$3.65 and drinks are \$0.95. How much does lunch cost in all?

**Step 1****Read****Be sure you understand the problem.**

Read carefully.

What do you know?

- There are \_\_\_\_\_ people in the family.
- They buy \_\_\_\_\_ sandwiches for \_\_\_\_\_ each and \_\_\_\_\_ drinks for \_\_\_\_\_ each.

What do you need to know?

- You need to find how much \_\_\_\_\_.

**Step 2****Plan**

- Logical Reasoning
- Draw a Picture or Diagram
- Make a Graph
- Act It Out
- Make a Table or List
- Find a Pattern
- Guess and Check
- Write an Equation
- Work Backward
- Solve a Simpler Problem

**Make a plan.**

Choose a strategy.

Make up a problem similar to the one you need to solve, but use simpler or easier numbers. Then solve the real problem the same way.

# Problem Solving: Strategy

## Solve a Simpler Problem

### Step 3

### Solve

**Carry out your plan.**

Solve this simpler problem.

5 sandwiches cost  $5 \times$  \_\_\_\_\_ or \_\_\_\_\_.

5 drinks cost  $5 \times$  \_\_\_\_\_ or \_\_\_\_\_.

The total amount is \_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_.

Now solve the real problem the same way.

5 lunches cost  $5 \times$  \_\_\_\_\_ or \_\_\_\_\_.

5 drinks cost  $5 \times$  \_\_\_\_\_ or \_\_\_\_\_.

The total amount is \_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_.

### Step 4

### Look Back

**Is the solution reasonable?**

Reread the problem.

Does your answer make sense?      Yes      No

Did you answer the question?      Yes      No

What other strategies could you use to solve the problem?

\_\_\_\_\_

### Practice

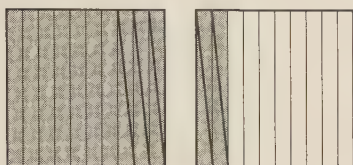
1. The Wilsons buy 2 adult's tickets for \$5.75 each and 3 children's tickets for \$2.95 each. How much money do they spend in all?  
\_\_\_\_\_
2. Virginia buys 3 model airplanes for \$6.89 each, 2 tubes of paint for \$3.25 each, and 2 tubes of glue for \$1.99 each. How much money does she spend in all?  
\_\_\_\_\_

# Explore Subtracting Decimals

You can use models to subtract decimals.

Find  $1.2 - 0.5$ .

First, shade 1.2.



Then take away 0.5.

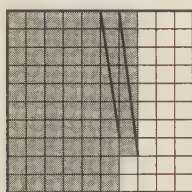
Find how many tenths are left.

$$1.2 - 0.5 = 0.7$$

You can also subtract decimals with hundredths.

Find  $0.68 - 0.15$ .

First, shade 0.68.



Then take away 0.15.

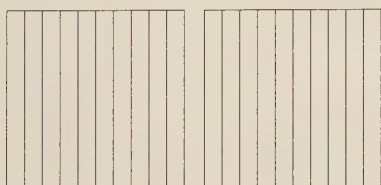
Find how many hundredths are left.

$$0.68 - 0.15 = 0.53$$

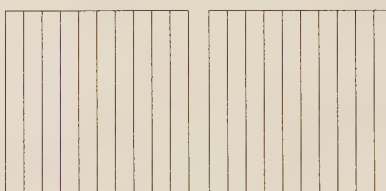
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Subtract. Use models if you wish.

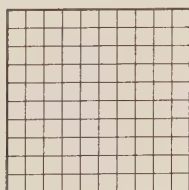
1.  $1.5 - 0.6 = \underline{\hspace{2cm}}$



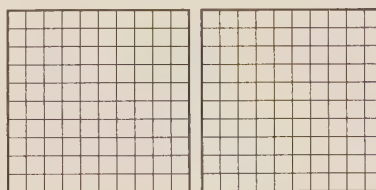
2.  $1.3 - 1.1 = \underline{\hspace{2cm}}$



3.  $0.24 - 0.15 = \underline{\hspace{2cm}}$



4.  $1.16 - 0.28 = \underline{\hspace{2cm}}$



Subtract. Use models if you wish.

5.  $0.9 - 0.6 = \underline{\hspace{2cm}}$

6.  $1.1 - 0.2 = \underline{\hspace{2cm}}$

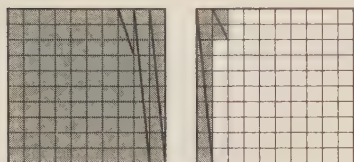
7.  $0.80 - 0.16 = \underline{\hspace{2cm}}$

8.  $1.15 - 0.80 = \underline{\hspace{2cm}}$

# Subtract Decimals

You can subtract decimals with models or by using place value.

$$1.12 - 0.35 = 0.77$$



Line up the decimal points.

$$\begin{array}{r} \phantom{0}10 \\ 0 \cancel{.1}2 \\ - \cancel{1}.\cancel{1}\cancel{2} \\ \hline \end{array}$$

$$\begin{array}{r} - 0.35 \\ \hline \end{array}$$

$$\begin{array}{r} 0.77 \\ \hline \end{array}$$

Subtract the hundredths first.

Regroup if needed.

Subtract the tenths next.

Regroup if needed.

Subtract the ones.

Place the decimal point.

Subtract.

$$\begin{array}{r} 1. \quad 1.5 \\ - 0.7 \\ \hline \end{array}$$

$$\begin{array}{r} 2. \quad 3.6 \\ - 2.9 \\ \hline \end{array}$$

$$\begin{array}{r} 3. \quad 0.8 \\ - 0.3 \\ \hline \end{array}$$

$$\begin{array}{r} 4. \quad 2.1 \\ - 1.5 \\ \hline \end{array}$$

$$\begin{array}{r} 5. \quad 9.3 \\ - 4.6 \\ \hline \end{array}$$

$$\begin{array}{r} 6. \quad 2.76 \\ - 1.43 \\ \hline \end{array}$$

$$\begin{array}{r} 7. \quad 1.35 \\ - 1.19 \\ \hline \end{array}$$

$$\begin{array}{r} 8. \quad \$2.18 \\ - 1.99 \\ \hline \end{array}$$

$$\begin{array}{r} 9. \quad 3.60 \\ - 1.29 \\ \hline \end{array}$$

$$\begin{array}{r} 10. \quad 6.30 \\ - 4.87 \\ \hline \end{array}$$

$$\begin{array}{r} 11. \quad 4.02 \\ - 1.29 \\ \hline \end{array}$$

$$\begin{array}{r} 12. \quad 1.04 \\ - 0.77 \\ \hline \end{array}$$

$$\begin{array}{r} 13. \quad 2.63 \\ - 1.59 \\ \hline \end{array}$$

$$\begin{array}{r} 14. \quad \$4.00 \\ - 1.25 \\ \hline \end{array}$$

$$\begin{array}{r} 15. \quad 5.0 \\ - 1.4 \\ \hline \end{array}$$

$$\begin{array}{r} 16. \quad 4.7 \\ - 2.9 \\ \hline \end{array}$$

$$\begin{array}{r} 17. \quad 6.20 \\ - 1.45 \\ \hline \end{array}$$

$$\begin{array}{r} 18. \quad \$6.98 \\ - 4.39 \\ \hline \end{array}$$

$$\begin{array}{r} 19. \quad 6.11 \\ - 1.60 \\ \hline \end{array}$$

$$\begin{array}{r} 20. \quad \$9.00 \\ - 1.37 \\ \hline \end{array}$$











3

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