When looking for a pattern, see how the next number changes.

+2

2, 4, 6, 8. What is the pattern? Add 2.

+3

3, 6, 9, 12, 15. What is the pattern? Add 3.

Identify the pattern. Then find the missing numbers.

1. 5, _____, 15, _____, 25, _____

2. 10, 20, _____, 40, _____, _____

3. 100, 90, _____, 70, _____, _____

4. 322, _____, _____, 325, _____

5. 25, 125, _____, 325, _____, _____

6. Each student in the class has a hat collection. If the pattern continues, how many hats will Erik and Alissa have?

Thomas  
Kristen
Ryan
Collette
Erik
Alissa
The Four-Step Plan

Kayla’s game piece is on box 40 of a gameboard. She moves it ahead 20 boxes two times. Where is her game piece now?

<table>
<thead>
<tr>
<th>Step 1 Understand</th>
<th>What facts do you know?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>What do you know? Kayla starts on ______. She moves her game piece ahead ______ boxes ______ times.</td>
</tr>
<tr>
<td>Step 2 Plan</td>
<td>To find out where Kayla’s game piece is, start with 40 and add 20 two times.</td>
</tr>
<tr>
<td>Step 3 Solve</td>
<td>Use your plan to solve the problem.</td>
</tr>
<tr>
<td></td>
<td>Start at 40.</td>
</tr>
<tr>
<td></td>
<td>Add 20.</td>
</tr>
<tr>
<td></td>
<td>(40 + 20 = 60)</td>
</tr>
<tr>
<td></td>
<td>Add 20.</td>
</tr>
<tr>
<td></td>
<td>(60 + 20 = 80)</td>
</tr>
<tr>
<td></td>
<td>Kayla’s game piece is on box ______.</td>
</tr>
<tr>
<td>Step 4 Check</td>
<td>Check your solution to make sure it is reasonable.</td>
</tr>
<tr>
<td></td>
<td>Explain why your answer is reasonable.</td>
</tr>
</tbody>
</table>

___________________________
___________________________
Reteach

Problem-Solving Skill: The Four Step Plan (continued)

Solve. Use the four-step plan.

1. Pablo started a game with 650 points. He lost 300 points. How many points did he have at the end of the game?
   What facts do you know? ________________________________
   __________________________________________________________________________
   Plan what you will do and in what order. ______________
   __________________________________________________________________________
   Use your plan to solve the problem. ______________
   Check your solution to make sure it is reasonable.
   __________________________________________________________________________

2. Rosa ends a game with 600 points. Tyler has 200 more points than Rosa. How many points does Tyler have?
   What facts do you know? ________________________________
   __________________________________________________________________________
   Plan what you will do and in what order. ______________
   __________________________________________________________________________
   Use your plan to solve the problem. ______________
   Check your solution to make sure it is reasonable. ______
   __________________________________________________________________________
Reteach

Place Value through 1,000

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

The models show 1,225.

<table>
<thead>
<tr>
<th>Expanded Form:</th>
<th>1,000 + 200 + 20 + 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Form:</td>
<td>1,225</td>
</tr>
<tr>
<td>Word Form:</td>
<td>one thousand, two hundred twenty-five</td>
</tr>
</tbody>
</table>

Look at the model. Write the number in the three forms.

1. Expanding model:  
   - Expanded form: ___________  
   - Standard form: ___________  
   - Word form: _____________

2. Expanding model:  
   - Expanded form: ___________  
   - Standard form: ___________  
   - Word form: _____________

3. Expanding model:  
   - Expanded form: ___________  
   - Standard form: ___________  
   - Word form: _____________
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.

```
<table>
<thead>
<tr>
<th>Ten Thousands</th>
<th>Thousands</th>
<th>Hundreds</th>
<th>Tens</th>
<th>Ones</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>8</td>
<td>6</td>
<td>3</td>
<td>5</td>
</tr>
</tbody>
</table>
```

**Expanded Form:**

\[ 70,000 + 8,000 + 600 + 30 + 5 \]

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

**Standard Form:** 78,635

Write the number 57,981 in the place value chart. Then write the number in expanded form.

1. 

```
<table>
<thead>
<tr>
<th>Ten Thousands</th>
<th>Thousands</th>
<th>Hundreds</th>
<th>Tens</th>
<th>Ones</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
```

**Expanded Form:**

[Blank space for the expanded form of 57,981]

Now, write the value of each underlined digit.

2. 32,897

3. 32,897

4. 32,897

5. 32,897

6. 32,897

*Hint: Think about the expanded form of 32,897.*
**Reteach**

**Problem-Solving Investigation: The Four-Step Plan**

**Use the *Four-Step Plan***

Tammy baked 32 muffins for her class picnic. Her dog ate some of them, and now Tammy only has 24 muffins left. How many did her dog eat?

<table>
<thead>
<tr>
<th>Step 1</th>
<th>Understand</th>
<th>Make sure you understand the problem.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>What do you know? Tammy baked _____ muffins. She has _____ muffins left.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>What do you need to find? ______________</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step 2</th>
<th>Plan</th>
<th>Make a plan.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>You know Tammy baked 32 muffins. You know she has 24 muffins left.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>You can demonstrate this by drawing the number of muffins and putting an x through one muffin at a time until you are left with 24.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The number of x marks tells you how many muffins the dog ate.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step 3</th>
<th>Solve</th>
<th>Carry out your plan.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Draw 32 muffins.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Put an x through one muffin at a time until you are left with 24.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Count the x marks. There are 8. So, the dog ate 8 muffins.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step 4</th>
<th>Check</th>
<th>Is the solution reasonable?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Reread the problem.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>How can you check your answer? _____________</td>
</tr>
</tbody>
</table>
Reteach

Problem-Solving Investigation (continued)

Solve using the four-step plan.

1. Tanya bought a book for her father’s birthday that cost $14. She paid the cashier with a $20 bill. How much change did Tanya receive?

2. Will found a plate of orange slices in the kitchen. He ate 4 of them. When he counted the slices, there were 18 left. How many orange slices were on the plate to start with?

3. Pablo started a game with 65 points. He lost 20 points. How many points did he have at the end of the game?

4. Meg ends a game with 60 points. Ted has 30 points more than Meg. How many points does Ted have?

5. Sean and his brothers ate a whole pizza pie. The pizza was divided into 12 slices and each brother had 3 slices. How many brothers does Sean have?

6. Lindsey saw 3 movies at the theater with her friend Emma. If another friend joined them for one movie, how many tickets were bought altogether?
Chapter Resources

Name ____________________________ Date __________________

1–6 Reteach

Compare Numbers

Which number is less, 341 or 314?
Look at the model for each number.

Compare the models.

Hundreds: 3 (The same for each model)
Tens: 1 (Different for each model)

1 ten is less than 4 tens.
Say: 314 is less than 341.
Write: 314 < 341.

Compare. Write >, <, or =.

1. 754 □ 745
   2. 80 □ 80

3. 347 □ 744
   4. 735 □ 753

5. 301 □ 310
   6. 679 □ 697

7. 518 □ 581
   8. 919 □ 991

9. 880 □ 808
   10. 445 □ 454
Reteach

Order Numbers

Bag A has 285 marbles. Bag B has 346 marbles. Bag C has 279 marbles. Which bag has the most? Which bag has the least?

To compare amounts of marble, first compare the hundreds and then the tens.

<table>
<thead>
<tr>
<th>Step 1</th>
<th>Step 2</th>
<th>Step 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compare the hundreds.</td>
<td>Compare the tens.</td>
<td>Put the amounts in order from greatest to least.</td>
</tr>
<tr>
<td>279</td>
<td>279</td>
<td>346</td>
</tr>
<tr>
<td>346</td>
<td>285 ← more tens</td>
<td>285</td>
</tr>
<tr>
<td>285</td>
<td>85 &gt; 79</td>
<td>279</td>
</tr>
</tbody>
</table>

Order the numbers from least to the greatest.

1. 3,456 3,565 3,446
2. 1,606 1,609 1,669
3. 8,009 8,909 8,099

Order the numbers from greatest to the least.

4. 6,589 6,879 6,599
5. 5,668 5,887 5,688
6. 3,033 3,003 3,330
Reteach

Round to the Nearest ten and Hundred

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 a 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 _____

6. 478
   ten _____   hundred _____
Use a place-value chart to help you round numbers.

Round 7,485 to the nearest thousand.

<table>
<thead>
<tr>
<th>Thousands</th>
<th>Hundreds</th>
<th>Tens</th>
<th>Ones</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>4</td>
<td>8</td>
<td>5</td>
</tr>
</tbody>
</table>

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. 

2. 

3. 

4. 

5. 2,466

6. 2,335

7. 1,290

8. 7,022

9. 6,690

10. 7,988

11. 4,703

12. 5,824

13. 3,915

14. 9,152

15. 8,619

16. 6,397
Reteach
Value of Coins and Bills

In the United States, money includes coins and bills.

<table>
<thead>
<tr>
<th>Coin</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Penny</td>
<td>1¢ or $0.01</td>
</tr>
<tr>
<td>Nickel</td>
<td>5¢ or $0.05</td>
</tr>
<tr>
<td>Dime</td>
<td>10¢ or $0.10</td>
</tr>
<tr>
<td>Quarter</td>
<td>25¢ or $0.25</td>
</tr>
<tr>
<td>Half-Dollar</td>
<td>50¢ or $0.50</td>
</tr>
</tbody>
</table>

Coins have different values, colors, and designs. The unit is cent (¢).

Bills are paper money. Bills have different colors, designs and values. The unit is dollar ($).

Determine the value of coins.

1. [Image of coins]

2. [Image of coins]

Determine the value of bills and coins.

3. [Image of coins and bills]

4. [Image of coins and bills]
You can use different strategies to help you add.

<table>
<thead>
<tr>
<th>Commutative Property</th>
</tr>
</thead>
<tbody>
<tr>
<td>You can change the order of the addends, but the sum is always the same.</td>
</tr>
<tr>
<td>$4 + 5 = 9$</td>
</tr>
<tr>
<td>$5 + 4 = 9$</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Identity Property</th>
</tr>
</thead>
<tbody>
<tr>
<td>When you add 0 to a number, the sum is always that number.</td>
</tr>
<tr>
<td>$6 + 0 = 6$</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Associative Property</th>
</tr>
</thead>
<tbody>
<tr>
<td>You can group the addends and keep the sum the same.</td>
</tr>
<tr>
<td>$(2 + 4) + 6 = 2 + (4 + 6)$</td>
</tr>
<tr>
<td>$6 + 6 = 2 + 10$</td>
</tr>
<tr>
<td>$12 = 12$</td>
</tr>
</tbody>
</table>

**Fill in the blank.**

1. If you know $3 + 6 = _____$, then you know $_____ + 3 = _____.$
2. If you know $8 + 0 = _____$, then you know $_____ + 8 = _____.$
3. If you know $(5 + 6) + 4 = _____$, then you know $5 + (_____ + 4) = _____.$

**Find each sum.**

4. $4 + 7 = _____
5. $9 + 2 = _____
6. $7 + 5 = _____
7. $3 + 9 = _____
8. $12 + 5 = _____
9. $0 + 4 = _____
**Problem-Solving Skill: Estimate of Exact Answer**

**Estimate or Exact Answer**

Sometimes when you solve a problem you need an exact answer. Other times you need an estimate. Deciding if you need an exact answer or an estimate will help you solve the problem. Let’s try an example.

In an hour’s time, Leah can make 12 greeting cards. Steven can make 9 cards in the same amount of time. Together, about how many cards can they make?

<table>
<thead>
<tr>
<th>Step 1</th>
<th>Understand</th>
<th>What facts do you know?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>• Leah makes 12 cards in an hour.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Steven makes 9 cards in an hour.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step 2</th>
<th>Plan</th>
<th>Do you need an exact answer to this question?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>No. When you see about, you know that an estimated answer is needed.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step 3</th>
<th>Solve</th>
<th>First, round each number.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Leah</td>
<td>12 cards → 10 cards</td>
</tr>
<tr>
<td></td>
<td>Steven</td>
<td>9 cards → 10 cards</td>
</tr>
</tbody>
</table>

Now, add both of your rounded numbers. This will give you a final estimate.

\[10 + 10 = 20\]

So, Leah and Steven can make about 20 greeting cards in an hour.

| Step 4 | Check | Look back at the problem. Since it says “about how many,” you know that making an estimate is the correct plan. Notice that since \(12 + 9 = 21\), your estimate is very close to the exact answer! |
Tell whether an estimate or an exact answer is needed. Then solve.

1. On Saturday, Zachary’s sister worked in the garden and planted 24 flowers. On Sunday, she planted 15 flowers. How many flowers did she plant in all?

2. The Littleton Public Library gets 37 new magazines and books every week. In 3 weeks, about how many books and magazines will be received?

3. There are enough seats for 55 students on the bus. Can all 35 boys and 28 girls ride the bus?

4. Raul cut 3 pieces of fabric. One piece was 12 inches long. Another piece was 41 inches long, and the other piece was 30 inches long. Will Raul have enough fabric for a project that needs 67 inches of fabric? Explain.

5. About how many minutes did Katie practice her flute last week?

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday</td>
<td>24 minutes</td>
</tr>
<tr>
<td>Wednesday</td>
<td>17 minutes</td>
</tr>
<tr>
<td>Friday</td>
<td>12 minutes</td>
</tr>
</tbody>
</table>
Estimation can be a very useful tool. If the Corner News Stand sold 122 newspapers on Monday, 94 newspapers on Tuesday, and 170 newspapers on Wednesday, about how many newspapers were sold in all? Rounding will help you find the answer to this problem.

<table>
<thead>
<tr>
<th>Corner News Stand</th>
<th>Actual amount</th>
<th>Round to the nearest 100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday</td>
<td>122</td>
<td>100</td>
</tr>
<tr>
<td>Tuesday</td>
<td>94</td>
<td>100</td>
</tr>
<tr>
<td>Wednesday</td>
<td>170</td>
<td>200</td>
</tr>
<tr>
<td>Estimated Total</td>
<td></td>
<td>400</td>
</tr>
</tbody>
</table>

About 400 newspapers were sold on these three days.

Compatible numbers is another way to find an approximate sum. At the community center, 36 people are swimming, 54 people are playing golf, and 27 people are at the snack bar. About how many people are there in all?

Numbers ending in 0 or 5 are easy to add.

\[
36 \rightarrow 35 \quad 54 \rightarrow 55 \quad 27 \rightarrow 30
\]

\[
35 + 55 + 20 = 120
\]

So, there are about 120 people at the community center.

Estimate each sum using rounding.

1. \(49\text{¢} + 73\text{¢}\) 
2. \(595 + 153\)

Estimate each sum using compatible numbers.

3. \(77 + 66\) 
4. \(126 + 559\)

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The left side of a two-digit number tells us how many tens we have, while the digit on the right shows how many ones we have.

For example, if you have 34 marbles, you have 3 groups of ten marbles and 4 marbles.

If a friend gives you 7 more marbles, you can add 6 of them to your group of 4 marbles (4 + 6 = 10) to make another ten-marble group. Since (7 − 6 = 1), you will have one marble left over. Using your pencil, add the marbles to the chart above.

Looking at the chart, it is easy to see that you now have 41 marbles.

Add. Check for reasonableness.

1. 37 + 2 =
2. 18 + 36 =
3. 41 + 6 =
4. 33 + 16 =
5. 12 + 19 =
6. 50 + 8 =
7. 52 + 9 =
8. 66 + 6 =
9. 43 + 9 =
10. 77 + 3 =
11. 34 + 7 =
12. 51 + 11 =
When you add cents, it is just like adding one- or two-digit numbers, except that you put a cent sign (¢) after each number. Adding dollars is just the same, but a dollar sign ($) is written before each number.

A. Samantha opened her piggy bank and found 75¢ inside. If she has 8¢ in her pocket, how much money does she have?

Add 75¢ and 8¢.

\[
\begin{array}{c}
75\text{¢} \\
\underline{+ 8\text{¢}} \\
83\text{¢}
\end{array}
\]

B. Samantha bought a book for $10, a book cover for $3, and a package of pencils for $2. How much money did she spend in all?

Add $10, $3, and $2.

\[
\begin{array}{c}
$10 \\
\underline{+ $3} \\
\underline{+ $2} \\
$15
\end{array}
\]

Samantha spent $15.

Add. Use estimation to check for reasonableness.

1. \[12\text{¢} + 77\text{¢} = 89\text{¢}\]
2. \[45\text{¢} + 27\text{¢} = 72\text{¢}\]
3. \[01\text{¢} + 49\text{¢} = 50\text{¢}\]
4. \[\$65 + \$16 = \$81\]
5. \[\$15 + \$23 = \$38\]
6. \[\$28 + \$31 = \$59\]
7. \[\$76 + \$15 = \$91\]
8. \[35\text{¢} + 48\text{¢} = 83\text{¢}\]
9. \[\$26 + \$53 = \$79\]
Reteach

Problem-Solving Investigation: The Four-Step Plan

The bookshelf at Sarah’s house has 3 shelves. Each shelf can hold 15 books. Sarah has 17 books. Ed has 19 books. Jen has 10 books. Will all of their books fit on the bookshelf?

There is a lot to organize and understand in this problem. Use the four-step plan.

Step 1
Understand
You know how many books each of the 3 shelves will hold, and how many books each person has.

Step 2
Plan
There is a lot of information, so make a table.

Step 3
Solve

<table>
<thead>
<tr>
<th>Shelf</th>
<th>Books on Shelf</th>
<th>Books left over?</th>
<th>Space on shelf?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shelf 1 (Sarah)</td>
<td>15</td>
<td>2</td>
<td>no</td>
</tr>
<tr>
<td>Shelf 2 (Ed)</td>
<td>15</td>
<td>4</td>
<td>no</td>
</tr>
<tr>
<td>Shelf 3 (Jen)</td>
<td>10</td>
<td>0</td>
<td>yes—for 5 books</td>
</tr>
</tbody>
</table>

Sarah has 2 books left over and Ed has 4 books left over.

\[2 + 4 = 6\]

There is room for 5 books on Jen’s shelf. Since 6 is greater than 5, all of their books will not fit.
Reteach

Problem-Solving Investigation  (continued)

Step 4
Check
Look back at the problem.

15 + 15 + 15 = ______, so ______ books can fit on the bookshelf.

17 + 19 + 10 = ______. Since 46 > 45, one book will be left over.

Solve. Then tell whether you used an estimate or an exact answer.

1. If Kiki buys a digital camera that costs $73 and a book that costs $12, about how much will she pay?

2. Michelle has saved $19 from her allowance, and her sister Maria has saved $5. They want to buy their mother a $30.00 pair of earrings for Mothers’ Day. Together, do they have enough money?

3. Filipa wants to learn karate. One month of classes costs $55, and a karate suit costs $35. How much will she pay?

4. 312 people went to the chorus concert. 273 people went to the band concert. About how many people went to both concerts?
You can use models to add.

**Find 267 + 46.**

**Step 1**
Add the ones. Regroup if necessary.

1
267
Think: 13 ones = 1 ten, 3 ones
+ 46

**Step 2**
Add the tens. Regroup if necessary.

11
267
Think: 11 tens = 1 hundred, 1 ten
+ 46

**Step 3**
Add the hundreds. Regroup if necessary.

11
267
Think: 1 hundred + 2 hundreds = 3 hundreds
+ 46

---

**Find each sum. Use models to help.**

1. 146
   + 29

2. 473
   + 55

3. 245
   + 128

4. 182
   + 275
Adding two- and three-digit numbers is just like adding two-digit numbers.

Read the problem.
One mile is equal to 5,280 feet. Hunter went on a nature hike. First, he hiked one mile, and then he hiked another 1,323 feet. How many feet did he hike?
One way to find the sum is by regrouping. First, estimate to the nearest thousand.

\[
\begin{align*}
5,280 & \rightarrow 5,000 \\
+1,323 & \rightarrow 1,000 \\
\hline &= 6,200 \\
\end{align*}
\]

Now, find the exact answer.

\[
\begin{align*}
\text{Step 1} & \quad \text{Step 2} & \quad \text{Step 3} & \quad \text{Step 4} \\
\text{Add the ones.} & \quad \text{Add the tens.} & \quad \text{Add the hundreds.} & \quad \text{Add the thousands} \\
0 + 3 & = 3 & 8 + 2 = 10 & [1] + 2 + 3 = 6 \\
\text{Regroup as a hundred.} & \quad & & 5 + 1 = 6 \\
\end{align*}
\]

So, Hunter hiked 6,200 feet on the nature hike.

Find each sum. Use estimation to check for reasonableness.

1. \(349 + 1,223 \) 
2. \( \$4,828 + \$3,184 \)
3. At Cliffside Park, there are 121 maple trees, 109 beech trees, and 382 oak trees. How many trees are in the park?
When you want to compare numbers, you subtract.

Find $16 - 3$.

**Step 1** Model 16.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>Subtract the <strong>ones</strong>.</td>
</tr>
<tr>
<td></td>
<td>6 ones $- 3$ ones $= 3$ ones</td>
</tr>
</tbody>
</table>

**Step 2** Subtract the **tens**.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>1 tens $- 0$ tens $= 1$ ten.</td>
</tr>
<tr>
<td>13</td>
<td>So, $16 - 3 = 13$.</td>
</tr>
</tbody>
</table>

When there are not enough ones to subtract from, you need to regroup.

Find $14 - 8$.

**Step 1** Model 14.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>Subtract the <strong>ones</strong>.</td>
</tr>
<tr>
<td></td>
<td>8 ones $&gt; 4$ ones, so regroup.</td>
</tr>
</tbody>
</table>

**Step 2** Regroup 1 tens into 10 ones.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>10 ones $+ 4$ ones $= 14$ ones</td>
</tr>
<tr>
<td></td>
<td>Subtract. $14$ ones $- 8$ ones $= 6$ ones</td>
</tr>
<tr>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

**Step 3** Subtract the **tens**.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>0 tens $- 0$ tens $= 0$ tens</td>
</tr>
<tr>
<td></td>
<td>Subtract.</td>
</tr>
<tr>
<td>8</td>
<td>06 So, $14 - 8 = 6$.</td>
</tr>
</tbody>
</table>

Subtract. Use models if needed. Check your answer.

1. $37 - 3$  
2. $49 - 7$  
3. $82 - 9$  
4. $31 - 6$

5. $77 - 8$  
6. $63 - 9$  
7. $54 - 3$  
8. $22 - 1$
Reteach

Estimate Differences

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

<table>
<thead>
<tr>
<th>Round to the nearest ten.</th>
<th>Round to the nearest hundred.</th>
<th>Round to the nearest thousand.</th>
</tr>
</thead>
<tbody>
<tr>
<td>51 - 27</td>
<td>913 - 496</td>
<td>2,634 - 1,807</td>
</tr>
<tr>
<td>↓  ↓</td>
<td>↓  ↓</td>
<td>↓  ↓</td>
</tr>
<tr>
<td>50 - 30 = 20</td>
<td>900 - 500 = 400</td>
<td>3,000 - 2,000 = 1,000</td>
</tr>
</tbody>
</table>

Estimate each difference. Show how you rounded.

1. 91 - 38
   ↓  ↓
   _____ - _____ = _____

2. 685 - 193
   ↓  ↓
   _____ - _____ = _____

3. 809 - 485
   ↓  ↓
   _____ - _____ = _____

4. 1,886 - 1,050
   ↓  ↓
   _____ - _____ = _____

5. 7,801 - 4,118
   ↓  ↓
   _____ - _____ = _____

6. 9,111 - 5,138
   ↓  ↓
   _____ - _____ = _____

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 _____
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.

**Find the difference by counting up.**

1. **Cost:** 87¢  
   **Amount given:** $1  
   **Count up:**  
   The change is ________¢.

2. **Cost:** 35¢  
   **Amount given:** 75¢  
   **Count up:**  
   The change is ________¢.

3. **Cost:** $2  
   **Amount given:** $10  
   **Count up:**  
   The change is ________¢.
After you solve a problem, it is important to check if your answer makes sense. One way to check if your answer is reasonable is to use estimates.

Use this exercise to learn more about checking whether an answer is reasonable.

Jorge has 243 baseball cards, and 198 cards are infielders. Jorge thinks he has about 50 outfielder cards. Is this reasonable?

| Understand | You know there are 243 cards.  
|            | You know that 198 cards are infielder cards.  
|            | You need to find out if 50 outfielder cards is a reasonable answer. |
| Plan       | Choose a strategy. You are finding part of a group.  
|            | You will estimate and subtract to find about how many cards are left.  
|            | You will also subtract to find the exact answer. |
| Solve      | First, estimate by rounding to the nearest 10.  
|            | 243 - 198 turns into 240 - 200 = 40  
|            | Then subtract. 243 - 198 = 45 |
| Check      | Look back at the problem. Jorge’s guess was that he had 50 outfielder cards. That is close to the estimate of 40. Jorge’s guess is reasonable.  
|            | Also check your answer by working the problem backwards:  
|            | 45 + 198 = 243  
|            | Since 243 is the number you started your subtraction with, your answer is correct. |
Solve. Check for reasonableness.

1. Angel’s family is having dinner. The pizza delivery will cost $9. Angel has one $20 bill to pay for the pizza. Is it reasonable for Angel to expect about $10 in change from the delivery person? ______
   Explain.
   ________________________________

2. Vanessa kicked the soccer ball at the goal 117 times yesterday. She kicked the ball 112 times today. Is it reasonable for Vanessa to say that she kicked the ball about 300 times? ______
   Explain.
   ________________________________

3. Adrian estimates that he will need to bring 90 cookies for the third-grade picnic. There are 32 students in room 1, 31 students in room 2, and 31 students in room 3. Is 90 cookies a reasonable estimate? ______
   Explain.
   ________________________________

4. Holly wants to buy her 3 favorite songs. They cost $2, $1, and $3. She estimates that she will need $5 to buy the 3 songs. Is this a reasonable estimate? ______
   Explain.
   ________________________________

5. Greg read 10 books last week and 12 books this week. Is it a reasonable estimate to say that he read 20 books? ______
   Explain.
   ________________________________

6. Jacqueline wants to buy a book and a CD. The book is $4. The CD is $12. She estimates $15 will be enough money. Is this a reasonable estimate? ______
   Explain.
   ________________________________
Reteach

Subtract Three-Digit Numbers with Regrouping

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

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 = ______

Subtract. Check your answer.

7. 962 − 722 = ______

8. 681 − 361 = ______

9. 750 − 136 = ______

10. 435 − 219 = ______

11. 865 − 839 = ______

12. 942 − 927 = ______
Sometimes you can solve a problem using more than one strategy. You must choose the strategy that works best for you when solving the problem.

Use this exercise to learn more about choosing a strategy to solve a problem.

Tristan has $43. If he buys a basket ball for $21, how much money does he have left?

<table>
<thead>
<tr>
<th>Understand</th>
<th>What do you know?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• You know Tristan has $43.</td>
</tr>
<tr>
<td></td>
<td>• You know Tristan spent $21.</td>
</tr>
</tbody>
</table>

**What do you need to find?**

• You need to find out how much money Tristan has left.

<table>
<thead>
<tr>
<th>Plan</th>
<th>A four-step plan is a good way to solve many problems.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>When you read the problem to find out what information you know, circle key facts or words and underline what you need to find out.</td>
</tr>
<tr>
<td></td>
<td>Since you need to find how much money is left, subtract.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Solve</th>
<th>First take the money Tristan started with: $43</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Subtract what he spent: $21</td>
</tr>
<tr>
<td></td>
<td>To find what is left: $43 − $21 = $22</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Check</th>
<th>Prove your answer:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Look at the problem again. Work backward to check:</td>
</tr>
<tr>
<td></td>
<td>$22 + $21 = $43</td>
</tr>
</tbody>
</table>
Practice

Use any strategy shown below to solve. Tell what strategy you used.

• Estimate or an exact answer  • Reasonable answer  • Work backward

1. The animal shelter rescued 57 animals after the storm.
   Now there are 862 animals at the shelter.
   How many animals were there before the storm? ________________
   What strategy did you use? ______________________________________

2. Mrs. Connolly hid 115 prizes around the school. She gave her students clues to solve. Her students found 82 prizes. About how many prizes are still missing? ________________
   What strategy did you use? ______________________________________

3. 12 jars of paint come in a box. Trevor saw a sign that says each jar of paint costs $2. How much will the box of paints cost? ________________
   What strategy did you use? ______________________________________

4. Natalie started the day with 178 bags of trail mix.
   Now she has 50 bags of trail mix left. Is it reasonable to say she gave away about 130 bags of trail mix? ________________
   What strategy did you use? ______________________________________

5. Connor’s grandfather gave him 87 baseball cards. Now he has 576 cards. How many cards did he have before his grandfather gave him more cards? ________________
   What strategy did you use? ______________________________________

6. Sabrina has 83¢. She spent 67¢ at the store.
   How much money does she have left? ________________
   What strategy did you use? ______________________________________
Reteach
Subtract Greater Numbers

Find \(6,426 - 3,278\).

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.

Subtract. Check each answer.

1. \(4,685 - 1,279\)  
2. \($9,354 - $1953\)  
3. \(6,527 - 432\)  
4. \(8,711 - 7,338\)  
5. \(6,005 - 5,732\)  
6. \($8,832 - $448\)  
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. \($6,229 - $5,337\)  
13. \(8,674 - 482\)  
14. \($1,373 - $998\)  
15. \(7,147 - 2,639\)  
16. \(9,521 - 3,587\)  
17. \(5,010 - 1,999\)  
18. \(6,000 - 2,730\)  
19. \($8,315 - $798\)  
20. \(7,040 - 655\)  
21. \(4,000 - 1,432\)  
22. \($3,208 - $625\)
You can use place-value charts to help you regroup across zeros.

Find \(305 - 176\).

**Step 1**
Subtract the ones.
No tens to regroup.
Regroup the hundreds.

**Step 2**
Regroup the tens.

**Step 3**
Subtract the ones, tens, and hundreds.

<table>
<thead>
<tr>
<th>Hundreds</th>
<th>Tens</th>
<th>Ones</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>1</td>
<td>7</td>
<td>6</td>
</tr>
</tbody>
</table>

Subtract. Check your answer.

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. \(500 - 418\)  12. \(206 - 138\)
13. \(801 - 482\)  14. \(100 - 33\)
15. \(607 - 527\)  16. \(700 - 19\)
17. \(902 - 863\)  18. \(400 - 189\)
How do you decide if you should add or subtract? Looking for key words in a problem can help you decide.

The following words help you know that you should **add:**
- in all
- altogether
- total
- sum

The following words help you know that you should **subtract:**
- how many more
- difference
- how many left

The classroom has 27 desks. There are 23 students sitting at the desks. **How many desks are left?**

The words **how many left** tell you that you should subtract: $27 - 23 = 4$.
There are 4 desks left.

**Underline the words that tell you if you should add or subtract. Select addition or subtraction to solve.**

1. Dustin read 23 pages. There are 91 pages in the book. How many more pages must Dustin read to finish the book?

2. Gina has 315 stickers. Tara has 219. How many stickers do Gina and Tara have altogether?

3. Austin walked his dog for 17 minutes in the morning and 19 minutes in the evening. How many total minutes did he walk his dog?
Reteach
Arrays and Multiplication

Find \(2 \times 3\) and \(3 \times 2\).

Using Models
Make 2 rows of 3 counters to show \(2 \times 3\).

Make 3 rows of 2 counters to show \(3 \times 2\).

Using Paper and Pencil

<table>
<thead>
<tr>
<th>Number of rows</th>
<th>Number in each row</th>
<th>Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>6</td>
</tr>
</tbody>
</table>

Draw lines to match the multiplication sentence with an array. Then use the Commutative Property to write a different multiplication sentence.

1. \(5 \times 3 = 15\)
2. \(3 \times 6 = 18\)
3. \(5 \times 4 = 20\)
Reteach

Multiply by 2

You can skip count on the number line to help you multiply two numbers.

Find $6 \times 2$.  Think: 6 groups of 2 or 6 jumps of 2 spaces

$$02 14 36 58 70 11 21 41 61 82 09 11 31 51 71 9$$

Find $3 \times 2$.  Think: 3 groups of 2 or 3 jumps of 2 spaces

$$01 23 46 79 85$$

Multiply. You may want to use a number line.

1. $4 \times 2 = \underline{8}$
2. $7 \times 2 = \underline{14}$
3. $2 \times 9 = \underline{18}$
4. $5 \times 2 = \underline{10}$
5. $2 \times 6 = \underline{12}$
6. $2 \times 3 = \underline{6}$
7. $2 \times 2 = \underline{4}$
8. $2 \times 4 = \underline{8}$
9. $9 \times 2 = \underline{18}$
10. $1 \times 2 = \underline{2}$
11. $8 \times 2 = \underline{16}$
12. $6 \times 2 = \underline{12}$
13. $2 \times 7 = \underline{14}$
14. $3 \times 2 = \underline{6}$
15. $2 \times 5 = \underline{10}$
16. $2 \times 8 = \underline{16}$
Reteach

Multiply by 4

Find 4 × 5.

Using Models

Using Pencil and Paper

<table>
<thead>
<tr>
<th>Number of rows</th>
<th>Number in each row</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>5</td>
<td>20</td>
</tr>
</tbody>
</table>

Use the picture to find the product.


4 × 6 = _____ 4 × 5 = _____ 4 × 9 = _____

Use models or draw a picture to multiply.

4. 4 × 7 = _____ 5. 4 × 4 = _____ 6. 4 × 3 = _____
7. 3 × 4 = _____ 8. 4 × 2 = _____ 9. 4 × 1 = _____
10. 4 × 6 = _____ 11. 9 × 4 = _____ 12. 4 × 8 = _____
13. 7 × 4 = _____ 14. 4 × 9 = _____ 15. 2 × 4 = _____
16. 5 × 4 = _____ 17. 6 × 4 = _____ 18. 1 × 4 = _____
19. 4 × 5 = _____ 20. 2 × 4 = _____ 21. 4 × 4 = _____
Reteach

Problem-Solving Skill: Extra or Missing Information

Extra or 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?

<table>
<thead>
<tr>
<th>Step 1 Understand</th>
<th>Make sure you understand the problem.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>What do you need to find? How long is art class?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step 2 Plan</th>
<th>Make a plan</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Find out when art class begins and ends.</td>
</tr>
<tr>
<td></td>
<td>Find the necessary information.</td>
</tr>
<tr>
<td></td>
<td>Math starts at 10:00.</td>
</tr>
<tr>
<td></td>
<td>It lasts for 55 minutes.</td>
</tr>
<tr>
<td></td>
<td>Art starts 5 minutes later.</td>
</tr>
<tr>
<td></td>
<td>Art class ends at 11:45.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step 3 Solve</th>
<th>Carry out your plan.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Find when math class ends.  [10:00 \rightarrow 55 \text{ minutes later} \rightarrow 10:55]</td>
</tr>
<tr>
<td></td>
<td>Art starts 5 minutes later.  [10:55 \rightarrow 5 \text{ minutes later} \rightarrow 11:00]</td>
</tr>
<tr>
<td></td>
<td>How long is art class?  [11:00 \rightarrow 11:45 = 45 \text{ minutes}]</td>
</tr>
<tr>
<td></td>
<td>Art class is 45 minutes long.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step 4 Check</th>
<th>Check your answer.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Make sure you used the correct information.</td>
</tr>
</tbody>
</table>
Reteach
Problem-Solving Skill  (continued)

Solve. If there is missing information, tell what facts you need to solve the problem.

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?

3. Samantha ate 4 servings of fruit every day for 7 days. Sometimes she ate strawberries, sometimes she ate peaches, and sometimes she drank orange juice. How many servings of fruit did Samantha eat?

4. Marcy is 3 inches taller than her sister. Her sister is 8 years old. How much taller is Marcy than her sister?

5. Elena has $20 to spend at the fair. She already knows that she wants to buy an item that costs $10. She also has to spend $4 total on travel to and from the fair. How much money will she have left to spend after she pays for these things?
4-5

Reteach

Multiply by 5

You can skip count on the number line to multiply by 5.

**Find 4 × 5.** Think: 4 groups of 5 or 4 jumps of 5

\[ 4 \times 5 = 20 \]

**Find 3 × 5.** Think: 3 groups of 5 or 3 jumps of 5

\[ 3 \times 5 = 15 \]

Multiply. You may want to use a number line.

1. \(2 \times 5 = \) 
2. \(4 \times 5 = \) 
3. \(7 \times 5 = \) 
4. \(5 \times 5 = \) 
5. \(5 \times 9 = \) 
6. \(1 \times 5 = \) 
7. \(6 \times 5 = \) 
8. \(5 \times 2 = \) 
9. \(5 \times 8 = \) 
10. \(5 \times 6 = \) 
11. \(3 \times 5 = \) 
12. \(5 \times 1 = \) 
13. \(5 \times 7 = \) 
14. \(4 \times 5 = \) 
15. \(6 \times 5 = \) 
16. \(5 \times 3 = \) 
17. \(8 \times 5 = \) 
18. \(5 \times 8 = \) 
19. \(9 \times 5 = \) 
20. \(5 \times 7 = \) 
21. \(5 \times 9 = \) 
22. \(5 \times 4 = \) 
23. \(3 \times 5 = \) 
24. \(5 \times 5 = \)
Reteach

Multiply by 10

You can use models to help you multiply by tens.

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 \times 10 = 10</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 \times 10 = 20</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 \times 10 = 30</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4 \times 10 = 40</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5 \times 10 = 50</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6 \times 10 = 60</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7 \times 10 = 70</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8 \times 10 = 80</td>
<td></td>
</tr>
<tr>
<td></td>
<td>9 \times 10 = 90</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10 \times 10 = 100</td>
<td></td>
</tr>
</tbody>
</table>

Use patterns or models to multiply.

1. 10 \times 2 = ______
2. 10 \times 7 = ______
3. 10 \times 8 = ______
4. 10 \times 4 = ______
5. 10 \times 9 = ______

6. 10 \times 3 = ______
7. 10 \times 1 = ______
8. 10 \times 7 = ______

9. 10 \times 10 = ______
10. 10 \times 6 = ______
11. 10 \times 5 = ______
Problem-Solving Investigation: Choose a Strategy

George picked 24 ears of corn for a crab feast dinner. Penny pulled 39 crabs out of the trap to cook. There will be 16 family members having dinner. How many ears of corn are left if each family member eats one ear?

Step 1
Understand

Be sure you understand the problem.
What do you know
• George picked _____ ears of corn.
• There are _____ people eating ears of corn.
• Penny pulled _____ crabs out to cook.
• You need to find out how many _____.

Step 2
Plan

Make a plan
Choose a strategy.

You can draw a picture. Decide what facts you know. Plan what you will do and in what order. Use your plan to solve the problem. Then check your solution to make sure it makes sense.
Reteach

Problem-Solving Investigation (continued)

<table>
<thead>
<tr>
<th>Step 3 Solve</th>
<th>Carry out your plan.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Plan 1</strong> Cross off the extra information you do not need from the problem.</td>
</tr>
<tr>
<td></td>
<td>You know that you need to find out how many ears of corn are left.</td>
</tr>
<tr>
<td></td>
<td>You do not need to know how many crabs Penny is going to cook.</td>
</tr>
<tr>
<td></td>
<td>⊗ ⊗ ⊗ ⊗ ⊗ ⊗ ⊗ ⊗ ⊗ ⊗ ⊗ ⊗ ⊗ ⊗ ⊗ ⊗</td>
</tr>
<tr>
<td></td>
<td><strong>Plan 2</strong> Find the exact answer. Write a subtraction sentence.</td>
</tr>
<tr>
<td></td>
<td>24 − 16 = ______</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step 4 Check</th>
<th>Is the solution reasonable?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Reread the problem.</td>
</tr>
<tr>
<td></td>
<td>How can you check your answer? ________________</td>
</tr>
</tbody>
</table>

Use any strategy shown below to solve. Tell what strategy you used.

**PROBLEM-SOLVING STRATEGIES**

- Act it out
- Draw a picture
- Look for a pattern

1. Patrick bought 5 books. Each book costs $5. How much change will he have left from a $50 bill?

2. Dave caught 7 fish. One fish broke the line and got away. Three fish were too small and he released them. How many fish did he bring home?
Multiply.

Using Models

Using Pencil and Paper

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.

Multiply.

1. \(1 \times 0 = \) _____
2. \(5 \times 1 = \) _____
3. \(1 \times 8 = \) _____
4. \(0 \times 3 = \) _____
5. \(1 \times 7 = \) _____
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. \(3 \times 1 = \) _____
22. \(1 \times 1 = \) _____
23. \(1 \times 9 = \) _____
24. \(0 \times 4 = \) _____
25. \(7 \times 0 = \) _____
26. \(8 \times 1 = \) _____
27. \(8 \times 0 = \) _____
Reteach

Multiply by 3

There are different ways to find answers for multiplication problems. One way is to use models to represent the problem.

Find 3 × 4.

Using Models | Using Paper and Pencil
--- | ---
[Image of models] | Number of Groups | Number in Each Group | Total
3 | × | 4 | = 12

3 groups of 4 cubes

factor | factor | product

Use models or draw a picture to multiply.

1. 3 groups of 5 = _____
   3 × 5 = _____

2. 4 groups of 3 = _____
   4 × 3 = _____

3. 4 groups of 4 = _____
   4 × 4 = _____

4. 3 groups of 7 = _____
   3 × 7 = _____

5. 3 × 6 = _____

6. 8 × 3 = _____
Reteach

Multiply by 6

You can use facts that you already know to help you multiply by 6.

**Find 7 × 6 by doubling 7 × 3.**

```
\[
\begin{align*}
\text{7 groups of 6} &= \text{7 groups of 3} \text{ plus 7 groups of 3} \\
7 \times 6 &= 7 \times 3 + 7 \times 3 \\
&= 21 + 21 = 42
\end{align*}
\]
```

**Write a multiplication sentence for the picture.**

1. 

2. 

3. 

**Multiply.**

4. 6 × 3 = 

5. 6 × 5 = 

6. 6 × 6 = 

7. 6 × 8 = 

8. 6 × 1 = 

9. 6 × 2 = 

10. 9 × 6 = 

11. 6 × 7 = 

12. 6 × 4 = 

13. 3 × 9 = 

14. 3 × 3 = 

15. 7 × 3 = 

16. 3 × 5 = 

17. 3 × 8 = 

18. 6 × 3 = 
Reteach

Problem-Solving Strategy: Look for a Pattern

Liz created a castle with pink towers and blue flags. On the first tower, she has 2 flags. The second tower has 4 flags, and the third tower has 8. If she keeps the pattern up, how many flags are on the fourth tower?

**Step 1 Understand**

**What do you know?**
There are 2 flags on the first tower.
There are 4 flags on the second tower.
There are 8 flags on the third tower.

**What do you need to find out?**
How many flags will be on the fourth tower?

**Step 2 Plan**

Organize the data in a table.

**What are your columns?** The towers

**What is in the row under each column?** The number of flags

<table>
<thead>
<tr>
<th>Tower 1</th>
<th>Tower 2</th>
<th>Tower 3</th>
<th>Tower 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>?</td>
</tr>
</tbody>
</table>

**Step 3 Solve**

Think: What is added, subtracted or multiplied?

What is done to 2 to get 4? 2 was added to get 4 OR 2 was multiplied to get 4.

What was done to 4 to get 8? 4 was multiplied by 2.

What was done to both the first and the second number? They were both multiplied by 2.

Repeat the steps for tower 3 to check your rule. Then repeat for the fourth tower. Multiply 8 by 2. 16 flags will be on the fourth tower.

**Step 4 Check**

Look back at your answer.
Is it reasonable? Why?
Practice by following the steps.

Fred is putting pictures in a scrapbook. He uses a pattern of groups of space and sports pictures. Each group has 1 space picture and 3 sports pictures. If the pattern continues, how many sports pictures will he use in all if there are a total of 24 pictures?

<table>
<thead>
<tr>
<th>Step 1</th>
<th>You know: There is 1 space picture in each group. There are 3 sports pictures in each group.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 2</td>
<td>Organize the data in a table. What are your columns? The groups. There are 4 pictures in each group and 24 pictures in all. $4 \times _____ = 24$. You need _____ columns.</td>
</tr>
<tr>
<td>Step 3</td>
<td>Look for the pattern. Since the same group repeats, __________________ the number of sports pictures by 6.</td>
</tr>
<tr>
<td>Step 4</td>
<td>Multiply 3 by 6. 6 groups of 3 sports pictures equal _____ sports pictures.</td>
</tr>
</tbody>
</table>
Reteach

Multiply by 7

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

Find $7 \times 3$ by finding $(6 \times 3) + (1 \times 3)$.

$$7 \text{ groups of } 3 = 6 \text{ groups of } 3 \quad \text{plus} \quad 1 \text{ group of } 3$$

$$7 \times 3 = 6 \times 3 + 1 \times 3$$

$$= 6 \times 3 + 3$$

$$= 18 + 3$$

$$= 21$$

Write a multiplication sentence for the picture.

1.  
2.  
3.  

Use models to multiply.

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

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

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

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

8. $7 \times 6 = \underline{\hspace{2cm}}$

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

10. $9 \times 7 = \underline{\hspace{2cm}}$

11. $4 \times 7 = \underline{\hspace{2cm}}$

12. $7 \times 1 = \underline{\hspace{2cm}}$

13. $6 \times 7 = \underline{\hspace{2cm}}$

14. $3 \times 7 = \underline{\hspace{2cm}}$

15. $7 \times 1 = \underline{\hspace{2cm}}$

16. $7 \times 4 = \underline{\hspace{2cm}}$

17. $1 \times 7 = \underline{\hspace{2cm}}$

18. $2 \times 7 = \underline{\hspace{2cm}}$
Multiply by 8

You can use facts that you already know to help you multiply by 8.

Find $8 \times 6$ by doubling $8 \times 3$.

\[ \begin{array}{c}
\begin{array}{c}
\text{6 groups of 8} \\
\end{array} \\
\begin{array}{c}
\text{6} \times 8 \\
\end{array}
\end{array} = \begin{array}{c}
\begin{array}{c}
\text{6 groups of 4} \\
\end{array} \\
\begin{array}{c}
\text{6} \times 4 \\
\end{array}
\end{array} + \begin{array}{c}
\begin{array}{c}
\text{6 groups of 4} \\
\end{array} \\
\begin{array}{c}
\text{6} \times 4 \\
\end{array}
\end{array} = 24 + 24 = 48
\]

Write a multiplication sentence for each picture.

1. \begin{array}{c}
\star \star \star \star \star \star \star \star \star \star \\
\end{array}

2. \begin{array}{c}
\hat{\text{h}} \hat{\text{h}} \hat{\text{h}} \hat{\text{h}} \hat{\text{h}} \hat{\text{h}} \hat{\text{h}} \hat{\text{h}} \\
\hat{\text{h}} \hat{\text{h}} \hat{\text{h}} \hat{\text{h}} \hat{\text{h}} \hat{\text{h}} \hat{\text{h}} \hat{\text{h}}
\end{array}

3. Use models or known facts to multiply.

3. $2 \times 8 = \underline{16}$

4. $0 \times 8 = \underline{0}$

5. $8 \times 5 = \underline{40}$

6. $8 \times 6 = \underline{48}$

7. $8 \times 1 = \underline{8}$

8. $8 \times 7 = \underline{56}$

9. $5 \times 8 = \underline{40}$

10. $8 \times 4 = \underline{32}$

11. $3 \times 8 = \underline{24}$

12. $8 \times 8 = \underline{64}$

13. $6 \times 8 = \underline{48}$

14. $9 \times 8 = \underline{72}$
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 \(9 \times 7\).

\[
\begin{align*}
9 \text{ groups of } 7 &= 10 \text{ groups of } 7 - 1 \text{ group of } 7 \\
9 \times 7 &= 10 \times 7 - 1 \\
&= 70 - 7 \\
&= 63
\end{align*}
\]

Use models or patterns to multiply.

1. \(9 \times 4\)  
2. \(9 \times 5\)  
3. \(3 \times 9\)  
4. \(9 \times 7\)  
5. \(9 \times 8\)  
6. \(6 \times 9\)

7. \(9 \times 2 = \underline{\hspace{1cm}}\)  
8. \(5 \times 9 = \underline{\hspace{1cm}}\)  
9. \(9 \times 4 = \underline{\hspace{1cm}}\)

10. \(6 \times 9 = \underline{\hspace{1cm}}\)  
11. \(9 \times 3 = \underline{\hspace{1cm}}\)  
12. \(9 \times 1 = \underline{\hspace{1cm}}\)

13. \(9 \times 9 = \underline{\hspace{1cm}}\)  
14. \(9 \times 0 = \underline{\hspace{1cm}}\)  
15. \(9 \times 8 = \underline{\hspace{1cm}}\)

16. \(2 \times 9 = \underline{\hspace{1cm}}\)  
17. \(8 \times 9 = \underline{\hspace{1cm}}\)  
18. \(3 \times 9 = \underline{\hspace{1cm}}\)
**Problem-Solving Investigation: Choose a Strategy**

If Juan cuts a 144-inch-long piece of wood into 8-inch pieces, how many pieces will he have?

<table>
<thead>
<tr>
<th><strong>Step 1</strong> Understand</th>
<th><strong>Be sure you understand the problem.</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 2</strong> Plan</td>
<td><strong>Make a plan.</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Choose a strategy.</strong></td>
</tr>
<tr>
<td></td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>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.</td>
</tr>
</tbody>
</table>
## Reteach

### Problem-Solving Investigation (continued)

### Step 3: Solve

<table>
<thead>
<tr>
<th>Plan 1</th>
<th>Carry out your plan.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Draw a diagram. Count up groups of 8</td>
<td></td>
</tr>
<tr>
<td>8 16 24 32 40 48 56 64 72 80 88 96 104 112 120 128 136 144</td>
<td></td>
</tr>
</tbody>
</table>

**Plan 2**

- Count. There are ______ pieces of wood in all.
- Write a division sentence. ______ ÷ ______ = ______
- He will have ______ pieces of wood.

### Step 4: Check

**Is the solution reasonable?**

- Reread the problem.
- How can you check your answer?

### 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?
Reteach

Multiply by 11 and 12

You can use facts and strategies you already know to help you multiply by 11 and 12.

Find $11 \times 4$ by adding $10 \times 4$ and $1 \times 4$.

You know that $10 \times 4 = 40$, and $1 \times 4 = 4$. When you add the sums together, you see that $11 \times 4 = 44$.

Use models or patterns to multiply.

1. $12 \times 3 = \underline{ \hspace{2cm} }$
2. $11 \times 5 = \underline{ \hspace{2cm} }$

3. $6 \times 11 = \underline{ \hspace{2cm} }$
4. $4 \times 12 = \underline{ \hspace{2cm} }$
5. $11 \times 11 = \underline{ \hspace{2cm} }$
6. $2 \times 12 = \underline{ \hspace{2cm} }$
7. $7 \times 11 = \underline{ \hspace{2cm} }$
8. $3 \times 12 = \underline{ \hspace{2cm} }$
9. $2 \times 11 = \underline{ \hspace{2cm} }$
10. $6 \times 12 = \underline{ \hspace{2cm} }$
11. $3 \times 11 = \underline{ \hspace{2cm} }$
You can use the properties of multiplication to multiply 3 numbers.

Find $3 \times 2 \times 5$.

<table>
<thead>
<tr>
<th>The Commutative Property of Multiplication</th>
<th>The Associative Property of Multiplication</th>
</tr>
</thead>
<tbody>
<tr>
<td>When multiplying, the order of the factors does not change the product.</td>
<td>When multiplying, the grouping of the factors does not change the product.</td>
</tr>
<tr>
<td>$3 \times 2 \times 5 = 30$ You can use the Commutative Property to switch the order of the numbers 3, 2, and 5.</td>
<td>$3 \times 2 \times 5 = 30$ You can use the Associative Property to group two factors.</td>
</tr>
<tr>
<td>$2 \times 5 \times 3 = 30$</td>
<td>$3 \times (2 \times 5) = 30$</td>
</tr>
<tr>
<td>$5 \times 2 \times 3 = 30$</td>
<td>$3 \times (5 \times 2) = 30$</td>
</tr>
</tbody>
</table>

Find each product.

1. $5 \times 3 \times 2 = \underline{30}$
2. $2 \times 2 \times 6 = \underline{24}$
3. $7 \times 4 \times 1 = \underline{28}$
4. $3 \times 2 \times 3 = \underline{18}$
5. $5 \times 6 \times 2 = \underline{60}$
6. $7 \times 8 \times 0 = \underline{0}$
7. $2 \times 7 \times 2 = \underline{28}$
8. $3 \times 6 \times 2 = \underline{36}$
9. $8 \times 7 \times 1 = \underline{56}$
10. $3 \times 4 \times 2 = \underline{24}$
11. $6 \times 3 \times 3 = \underline{54}$
12. $6 \times 2 \times 3 = \underline{36}$
13. $8 \times 12 \times 0 = \underline{0}$
14. $8 \times 12 \times 0 = \underline{0}$
15. $9 \times 2 \times 5 = \underline{90}$

Find each missing number.

16. $5 \times 2 \times \underline{8} = 80$
17. $\underline{4} \times 2 \times 6 = 24$
18. $1 \times 11 \times 3 = \underline{33}$
19. $\underline{4} \times 2 \times 5 = 20$
Relate Division to Subtraction

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.

Use repeated subtraction to divide.

1. $12 \div 4 = \underline{}$
   
   12
   
   $\underline{- 4}$
   
   $\underline{- 4}$
   
   $\underline{- 4}$

2. $20 \div 5 = \underline{}$
   
   20
   
   $\underline{- 5}$
   
   $\underline{- 5}$
   
   $\underline{- 5}$

3. $21 \div 7 = \underline{}$
   
   21
   
   $\underline{- 7}$
   
   $\underline{- 7}$
   
   $\underline{- 7}$

Write how many times you need to subtract.

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

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

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

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

Use repeated subtraction on a number line or paper and pencil to divide.

8. $18 \div 3 = \underline{6}$

9. $24 \div 6 = \underline{4}$

10. $28 \div 7 = \underline{4}$

11. $30 \div 6 = \underline{5}$

12. $8 \div 8 = \underline{1}$

13. $18 \div 3 = \underline{6}$
Reteach
Relate Division to Multiplication

Use the array to complete each number sentence.

1. 3 groups
   4 in each group
   ______ in all
   $3 \times 4 = _____$
   $12 \div 3 = _____$

2. ______ groups
   ______ in each group
   ______ in all
   ______ $\times$ ______ = ______
   ______ $\div$ ______ = ______

3. ______ $\times$ ______ = ______
   ______ $\div$ ______ = ______

4. ______ $\times$ ______ = ______
   ______ $\div$ ______ = ______
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?

<table>
<thead>
<tr>
<th>Step 1</th>
<th>Understand</th>
<th>Make sure you understand the problem. What do you need to find? You need to find how many groups of _____ there are in _____.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 2</td>
<td>Plan</td>
<td>Choose the operation. You can use division. You can separate the rubber balls into equal groups.</td>
</tr>
</tbody>
</table>
| Step 3 | Solve      | Carry out your plan. Write a division sentence.  
\[ ____ \div ____ = ____ \] |
| Step 4 | Check      | Check your answer. You can use repeated subtraction. |

Solve. Use the choose an operation strategy.

Name the operation you choose.

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?
Solve. Use the *choose an operation* strategy.

Name the operation you choose.

3. 12 friends are split into 3 groups of the same size. How many are in each group?

4. Jordan’s class has 32 students. He wants to make enough brownies for each student to have two brownies each. If Jordan’s baking pan will make 16 brownies at a time, how many batches of brownies will he have to make?

5. Jerome and Katie have collected 7 seashells each. How many do they have in all?

6. If Dennis needs to collect 40 bottle caps in 5 days to win a prize, how many must he collect each day?

7. Mrs. Davis brought in 24 bananas to split evenly among the after-school art club. There are 8 people in the group including Mrs. Davis. How many bananas can they each eat?

8. A family of five purchased tickets to a play. If the total cost of the tickets was $60, how much did each ticket cost?
Reteach

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 $2 \overline{)10}$.

Complete.

1. 
   \[
   \begin{array}{c}
   \hline
   3 \times 2 = \\
   6 \div 2 = \\
   \hline
   \end{array}
   \]

2. 
   \[
   \begin{array}{c}
   \hline
   9 \times 2 = \\
   18 \div 2 = \\
   \hline
   \end{array}
   \]

Divide. Write a related multiplication fact.

3. $16 \div 2 = $

4. $14 \div 2 = $

5. $8 \div 2 = $

6. $6 \div 2 = $

7. $12 \div 2 = $

8. $4 \div 2 = $
Reteach

Divide by 5

Think of a related multiplication fact to divide by 5.

<table>
<thead>
<tr>
<th>4 space shuttles</th>
<th>20 astronauts in all</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 astronauts on each shuttle</td>
<td>5 astronauts on each shuttle</td>
</tr>
<tr>
<td>20 astronauts in all</td>
<td>4 space shuttles</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number of groups</th>
<th>Number in each group</th>
<th>Number in all</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>× 5</td>
<td>= 20</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number in all</th>
<th>Number in each group</th>
<th>Number of groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>÷ 5</td>
<td>= 4</td>
</tr>
</tbody>
</table>

Use models or related facts to divide.

1. \[15 \div 5 = \] 

2. \[10 \div 5 = \] 

3. \[5 \div 5 = \] 

4. \[25 \div 5 = \] 

5. \[30 \div 5 = \] 

6. \[35 \div 5 = \] 

7. \[20 \div 5 = \] 

8. \[25 \div 5 \] 

9. \[45 \div 5 \] 

10. \[40 \div 5 \] 

11. \[35 \div 5 \] 

12. \[20 \div 5 \]
### Chaz’s Book Problem

Chaz is putting away his books. He has 5 mysteries, 6 novels, 3 picture books, and 2 dictionaries. He wants to put the same number of books on each shelf. His bookcase has 4 shelves. How many books should Chaz put on each shelf?

#### Problem-Solving Investigation: Choose a Strategy

<table>
<thead>
<tr>
<th>Step 1</th>
<th><strong>Understand</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>You know:</strong></td>
<td>Chaz has 5 mysteries, 6 novels, 3 picture books, and 2 dictionaries. He wants to put away the same number on each of 4 shelves.</td>
</tr>
<tr>
<td><strong>You need to find out:</strong></td>
<td>How many books Chaz should put on each shelf.</td>
</tr>
</tbody>
</table>

#### Step 2

**Plan:** You need to look at how to arrange items. So, the *draw a picture* strategy is a good choice.

#### Step 3

**Solve:**

| MMN | MNNP | MNND | MNPD |

#### Step 4

**Check:**

Look back at the problem. The total number of books is 16. Since $16 ÷ 4 = 4$, you know the answer is correct.
Use any strategy shown below to solve. Tell what strategy you used.

- Act it out  
- Draw a picture  
- Look for a pattern

1. There are 25 people riding on a bus. If there were 5 stops and an equal number of people got on at each stop, how many people got on the bus at each stop?

2. If 6 people got on the bus at each stop for 3 stops, how many people in all are on the bus?

3. The first bus of the day brought 25 people to their destinations. The second bus of the day brought 18 people to their destinations. How many more people rode on the first bus than the second bus?

4. 14 children played the first game, 10 children played the second game, and 6 played the third. If this pattern continues, how many children played the fourth game?

5. Jan taught everyone the bunny hop dance. She said you take 3 hops forward, 4 hops back, 3 hops to the right, and 2 hops to the left. Lynne and Heather tried it out. If Lynne and Heather both did the dance, how many total hops did the two girls take?
Find 40 ÷ 10. You can use models to divide.

Show 40 ones using models. | Count the number of groups of ten. | 
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>There are 4 groups of 10 in 40.</td>
<td></td>
</tr>
<tr>
<td>So, 40 ÷ 10 = 4.</td>
<td></td>
</tr>
</tbody>
</table>

Use models to divide.

1. 

30 ÷ 10 = _____

2. 

70 ÷ 10 = _____

3. 20 ÷ 10 = _____

4. 40 ÷ 10 = _____

5. 60 ÷ 10 = _____

6. 90 ÷ 10 = _____

7. 70 ÷ 10 = _____

8. 80 ÷ 10 = _____

9. 50 ÷ 10 = _____

10. 10 ÷ 10 = _____

11. 30 ÷ 10 = _____

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}
Reteach

*Divide by 0 and 1*

<table>
<thead>
<tr>
<th>When you divide any number (except 0) by itself, the quotient is 1.</th>
<th>When you divide any number by 1, the quotient is the original number.</th>
<th>When you divide 0 by any number (except 0), the quotient is 0.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kelly has 5 model rockets in 5 different boxes. How many model rockets are in each box?</td>
<td>Kelly wants to put 1 model rocket on each shelf. She has 5 model rockets. How many shelves does she need?</td>
<td>Kelly has 3 boxes and no model rockets. How many rockets are in each box?</td>
</tr>
<tr>
<td>$5 \div 5 = 1$</td>
<td>$5 \div 1 = 5$</td>
<td>$0 \div 3 = 0$</td>
</tr>
<tr>
<td>There is 1 rocket in each box.</td>
<td>She needs 5 shelves.</td>
<td>There are no rockets in any of the boxes.</td>
</tr>
</tbody>
</table>

*Remember:* You cannot divide a number by 0.

**Use models to divide.**

1. ![Model 1](image1)
   
   $4 \div 1 = 4$

2. ![Model 2](image2)
   
   $4 \div 4 = 1$

3. ![Model 3](image3)
   
   $0 \div 5 = 0$

4. ![Model 4](image4)
   
   $9 \div 1 = 9$

5. $3 \div 1 = 3$

6. $6 \div 6 = 1$

7. $0 \div 8 = 0$

8. $7 \div 7 = 1$

9. $6 \div 1 = 6$

10. $0 \div 3 = 0$
### Reteach

**Divide by 3**

You can use models to divide.

Find $18 \div 3$.
There are 18 stars in all. Make 3 groups with 6 stars in each group.

$18 \div 3 = 6$

### Use models or related facts to divide.

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>2.</td>
<td>3.</td>
</tr>
<tr>
<td>[5 stars]</td>
<td>[5 stars]</td>
<td>[5 stars]</td>
</tr>
<tr>
<td>[5 stars]</td>
<td>[5 stars]</td>
<td>[5 stars]</td>
</tr>
<tr>
<td>[5 stars]</td>
<td>[5 stars]</td>
<td>[5 stars]</td>
</tr>
</tbody>
</table>

$12 \div 3 = \underline{4}$

$15 \div 3 = \underline{5}$

$24 \div 3 = \underline{8}$

<table>
<thead>
<tr>
<th>4.</th>
<th>5.</th>
<th>6.</th>
</tr>
</thead>
<tbody>
<tr>
<td>[3 stars]</td>
<td>[5 stars]</td>
<td>[1 star]</td>
</tr>
<tr>
<td>[3 stars]</td>
<td>[5 stars]</td>
<td>[1 star]</td>
</tr>
<tr>
<td>[3 stars]</td>
<td>[5 stars]</td>
<td>[1 star]</td>
</tr>
</tbody>
</table>

$9 \div 3 = \underline{3}$

$27 \div 3 = \underline{9}$

$3 \div 3 = \underline{1}$

<table>
<thead>
<tr>
<th>7.</th>
<th>8.</th>
<th>9.</th>
</tr>
</thead>
<tbody>
<tr>
<td>$21 \div 3 = \underline{7}$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$15 \div 3 = \underline{5}$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$24 \div 3 = \underline{8}$</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>10.</th>
<th>11.</th>
<th>12.</th>
</tr>
</thead>
<tbody>
<tr>
<td>$6 \div 3 = \underline{2}$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$27 \div 3 = \underline{9}$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$3 \div 3 = \underline{1}$</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>$3 \div 18 = \underline{6}$</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$3 \div 21 = \underline{7}$</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$3 \div 12 = \underline{4}$</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$3 \div 27 = \underline{9}$</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$3 \div 24 = \underline{8}$</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Divide by 4

To divide the total number of objects, you make equal groups. There are 20 astronauts. Divide the number of astronauts by 4. To divide by 4, make equal groups of 4.

20 ÷ 4 = 5

Use models or related facts to divide.

1. 12 ÷ 4 = _____

2. 24 ÷ 4 = _____

3. 16 ÷ 4 = _____

4. 32 ÷ 4 = _____

5. 8 ÷ 4 = _____  
6. 16 ÷ 4 = _____  
7. 12 ÷ 4 = _____

8. 28 ÷ 4 = _____  
9. 36 ÷ 4 = _____  
10. 4 ÷ 4 = _____

11. 4)24  
12. 4)28  
13. 4)16  
14. 4)36  
15. 4)32

16. 4)4  
17. 4)20  
18. 4)8  
19. 4)40  
20. 4)12
Which day had the most sign-ups?

### Sign Up: After-School Games

<table>
<thead>
<tr>
<th>Day</th>
<th>Names</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday</td>
<td>Jim, Barry, Chris, Seth, Eli, Taylor, Ron, Tiffany, Josh, Donna, Bryan</td>
</tr>
<tr>
<td>Tuesday</td>
<td>Ann, Steve, Tara, Pete, Lily, Aiko, Warren, Ian, Craig, Sereka</td>
</tr>
<tr>
<td>Wednesday</td>
<td>Tod, Bailey, Carly, Sudi, Donna, Jani, Beth</td>
</tr>
</tbody>
</table>

**Step 1**

**Understand**

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

**Step 2**

**Plan**

Make a plan.

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

[Image -1x685 to 156x788]

[598x600]Chapter Resources

Name ___________________________ Date __________________

7–3

Reteach

Problem-Solving Strategy: Make a Table (continued)

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.

<table>
<thead>
<tr>
<th>Sign-Up: After-School Games</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day</td>
</tr>
<tr>
<td>------</td>
</tr>
<tr>
<td>Monday</td>
</tr>
<tr>
<td>Tuesday</td>
</tr>
<tr>
<td>Wednesday</td>
</tr>
</tbody>
</table>

There are ______ sign-ups for Monday, ______ sign-ups for Tuesday, and ______ sign-ups for Wednesday.

___________ had the most sign-ups.

Step 4
Check

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?

__________________________

Solve. Use the make a table strategy.

1. Donna is making a sign that says “Greetings, Chess Masters!” Which letter does she use the most?

__________________________

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?

__________________________
Reteach

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?

<table>
<thead>
<tr>
<th>Number in All</th>
<th>Number of Groups</th>
<th>Number in Each Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>28</td>
<td>7</td>
<td>4</td>
</tr>
</tbody>
</table>

So, \(28 \div 7 = 4\).

Complete the division sentence for each picture.

1. \(\underline{\text{30}} \div \text{6} = \underline{\text{5}}\)
2. \(\underline{\text{35}} \div \text{7} = \underline{\text{5}}\)

Use models or repeated subtraction to divide.

3. \(54 \div 6 = \underline{\text{9}}\)
4. \(48 \div 6 = \underline{\text{8}}\)
5. \(56 \div 7 = \underline{\text{8}}\)
6. \(42 \div 6 = \underline{\text{7}}\)
7. \(28 \div 7 = \underline{\text{4}}\)
8. \(18 \div 3 = \underline{\text{6}}\)
9. \(30 \div 6 = \underline{\text{5}}\)
10. \(12 \div 6 = \underline{\text{2}}\)
11. \(42 \div 7 = \underline{\text{6}}\)
12. \(6)\underline{24}\)
13. \(7)\underline{21}\)
14. \(7)\underline{63}\)
15. \(7)\underline{35}\)
16. \(6)\underline{36}\)
17. \(7)\underline{49}\)
Reteach

Divide by 8 and 9

Find 40 ÷ 8.
Skip count to divide. Make 5 jumps of 8. So, 40 ÷ 8 = 5.

Find 45 ÷ 9. You make jumps of 9 each time.

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 ÷ 8 = _____

2. 36 ÷ 9 = _____

Use related facts or repeated subtraction to divide.

3. 48 ÷ 8 = _____
4. 27 ÷ 9 = _____
5. 56 ÷ 8 = _____
6. 54 ÷ 9 = _____
7. 81 ÷ 9 = _____
8. 9 ÷ 9 = _____
9. 72 ÷ 8 = _____
10. 63 ÷ 9 = _____
11. 45 ÷ 9 = _____
Reteach

Divide by 11 and 12

You can use models to divide.

Find 48 ÷ 12.

Show 48 ones using models.

Count the number of groups of 12.

There are 4 groups of 12 in 48. So, 48 ÷ 12 = 4.

Use models to divide.

1. 

36 ÷ 12 = ________

2. 66 ÷ 11 = ________
3. 60 ÷ 12 = ________
4. 11 ÷ 11 = ________
5. 24 ÷ 12 = ________
6. 88 ÷ 11 = ________
7. 96 ÷ 12 = ________
8. 22 ÷ 11 = ________
9. 72 ÷ 12 = ________
10. 77 ÷ 11 = ________

11. 11)99
12. 11)44
13. 11)66
14. 11)110
15. 12)48
16. 12)120
17. 12)144
18. 12)84
19. 11)33
20. 12)108
21. 11)121
22. 12)72
Alicia wants to mail 12 letters and 5 postcards but she needs stamps. A page of 6 stamps to mail letters costs $2, and a page of 5 stamps to mail postcards costs $1. Alicia has a $10-bill. How much change will she get after paying for the stamps?

**Step 1**
Understand

What do you know? You know that Alicia has 12 letters and 5 postcards to mail.
You know she needs to buy stamps.
You also know that it costs $2 for 6 letter stamps and $1 for 5 postcard stamps.
Alicia will pay with a $10-bill.

What do you need to find? How much change Alicia will get after paying for the stamps.

**Step 2**
Plan

Choose a strategy.

Making a table will help organize the facts. The table will have two columns, one for letter stamps and one for postcard stamps. The cost will be listed in the rows.

Then, total the cost and subtract it from $10 to find the amount Alicia will get back in change.

<table>
<thead>
<tr>
<th>Step 3</th>
<th>Solve</th>
</tr>
</thead>
<tbody>
<tr>
<td>Letter Stamps</td>
<td>Postcard Stamps</td>
</tr>
<tr>
<td>$2 for 6</td>
<td>$1 for 5</td>
</tr>
<tr>
<td>$2 for 6</td>
<td></td>
</tr>
</tbody>
</table>

**Total:** $4 for 12 letter stamps + $1 for 5 postcard stamps = $5

$10 − $5 = $5

So, Alicia will get $5 in change.
Reteach

Problem-Solving Investigation: Choose a Strategy
(continued)

Step 4

Check

Look back at your answer. Does it make reasonable?
Use division to check.
Alicia will need 2 pages of letter stamps because
12 ÷ 6 = 2. She will need 1 page of postcard stamps
because 5 ÷ 1 = 1.
The cost for 2 pages of letter stamps and 1 page of
postcard stamps is $2 + $2 + $1 = $5. The change for
$5 from $10 is $5.
So, the answer is correct.

Use any strategy shown below to solve. Tell what strategy
you used.

• Act it out
• Draw a picture
• Look for a pattern
• Make a table

1. What is the next number in the pattern?

53, 58, 63, 68, ____________________________

2. Margie and Jill have 35 bottles of juice. Margie drinks
2 bottles a day, and Jill drinks 3.

How many days will the juice last?

______________________________

3. Juan planted 20 seeds. For every 5 seeds he planted,
4 grew into plants. How many plants did Juan have?

______________________________
Reteach

Model and Write Number Sentences

A number sentence contains an equal sign. The equal sign separates numbers. One way to show a number sentence is to model it. To model something is to explain something by using pictures and words.

Example

There are 6 bottles and 5 are clear. How many bottles are not clear?

Pictures

[Diagram of 6 bottles, 5 shaded]

Words

After subtracting 5 bottles from 6 bottles there is 1 bottle left.

Number Sentence

\[ 6 - 5 = 1 \]

So, \( 6 - 5 = 1 \) shows the number of bottles that are not clear.

Model each problem. Use a number sentence.

1. 62 kids ride the bus in the morning. 60 kids ride the bus in the afternoon. How many kids ride the bus in one day?

   ________________

2. Jose ate 12 almonds, 7 peanuts, 20 pecans, and 3 cashews. How many total nuts did he eat? ________________

Model each number sentence. Use pictures and words.

3. \( 7 + 3 = \) ___

4. \( 9 + 3 + 14 = \) ___

5. \( 17 + 2 + 4 = \) ___

6. \( 27 - \) ___ = 22
Expressions and Number Sentences

An expression uses numbers and symbols to make a math statement. Here are some examples of expressions:

\[ 6 + 8 \quad 5 - 2 + 10 \quad 12 - 5 \]

A number sentence uses an equals sign to show that two expressions are equal. Here are some examples of true number sentences:

\[ 7 + 8 = 15 \quad 5 + 2 + 1 = 8 \quad 15 - 5 = 10 \]

Write an expression and a number sentence for each problem. Use models if needed.

1. 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?
   What is the expression?
   
   _______________________________

   What is the number sentence?
   
   _______________________________

   The Douglas fir is ________ meters taller than the Ponderosa pine.

2. 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?
   
   _______________________________

3. A tree farm has 248 balsam fir trees and 96 Douglas fir trees. How many more balsam firs are there than Douglas firs?
   
   _______________________________
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?

<table>
<thead>
<tr>
<th>Step 1</th>
<th>Be sure you understand the problem. Read carefully.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Understand</td>
<td>What do you know?</td>
</tr>
<tr>
<td></td>
<td>• Coach Betty wants _____ liters of water in a cooler.</td>
</tr>
<tr>
<td></td>
<td>• Coach Betty has bottles that hold _____ liters and _____ liters.</td>
</tr>
<tr>
<td></td>
<td>What do you need to know?</td>
</tr>
<tr>
<td></td>
<td>• You need to find how to use the bottles to measure _____ liters.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step 2</th>
<th>Make a plan.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plan</td>
<td>Choose a strategy.</td>
</tr>
<tr>
<td></td>
<td>Use the act it out strategy to solve the problem.</td>
</tr>
<tr>
<td></td>
<td>You can use the difference of the amount of water in the bottles to measure exactly 11 liters.</td>
</tr>
</tbody>
</table>
### Solve. Use the *act it out* strategy.

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 a ham sandwich, one has a tuna sandwich, and one has a cheese sandwich. Ted and Cathy do not eat meat. Cathy does not eat fish. What does Ella eat?
Reteach

Make a Table to Find a Rule

A rule tells you what to do. This works in math too.

To build a boxcar, Bob needs to put 4 wheels on the corners of a wooden box. If he wanted to build 4 boxcars, how many wheels would he need?

**Step 1** Find a pattern.

You know that 1 boxcar = 4 wheels.

So, 2 boxcars = 8 wheels.

The pattern or rule is to multiply by 4.

**Step 2** Extend the pattern.

3 boxcars = 3 × 4 or 12 wheels.

3 × 4 = 12

4 boxcars = 4 × 4 = 16 wheels

So Bob needs 16 wheels.

Practice.

1. For every 2 wheels that Bob bought, the man in the store gave him 1 free wheel. When Bob bought 16 wheels, how many did he get free?

2. Write the rule for each table. Then, complete the table.

<table>
<thead>
<tr>
<th>Input</th>
<th>Output</th>
<th>Rule: _____</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>18</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Input</th>
<th>Output</th>
<th>Rule: _____</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>12</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>24</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Input</th>
<th>Output</th>
<th>Rule: _____</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>25</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>40</td>
<td></td>
</tr>
</tbody>
</table>
You can use a function table to represent relationships between numbers.

Look at the following function table.

<table>
<thead>
<tr>
<th>Rule: add 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input (△)</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>4</td>
</tr>
<tr>
<td>5</td>
</tr>
</tbody>
</table>

The rule for this table is add 4. In every row of the table, 4 is added to the input number to get the output number. For instance, in the first column 2 + 4 = 6.

How would you complete the following table?

<table>
<thead>
<tr>
<th>Rule: subtract 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input (△)</td>
</tr>
<tr>
<td>14</td>
</tr>
<tr>
<td>15</td>
</tr>
<tr>
<td>16</td>
</tr>
<tr>
<td>17</td>
</tr>
</tbody>
</table>

Since the rule is to subtract 3, you would subtract 3 from each of the input numbers. The missing numbers are 13 and 14.

Complete each function table.

1. | Rule: subtract 5 |
   | Input (△) | Output (□) |
   | 20       | 15          |
   | 22       | 17          |
   | 24       |             |
   | 26       |             |

2. | Rule: add 10 |
   | Input (△) | Output (□) |
   | 5         | 15          |
   | 10        | 20          |
   | 15        |             |
   | 20        |             |
**Problem-Solving Investigation: Choose a Strategy**

**Choose a strategy**

Antonio picked 24 apples to make applesauce. It will take 12 apples for each batch of sauce. How many batches of sauce can Antonio make?

<table>
<thead>
<tr>
<th>Step 1</th>
<th>Be sure you understand the problem.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Understand</td>
<td>What do you know?</td>
</tr>
<tr>
<td></td>
<td>• Antonio picked _____ apples.</td>
</tr>
<tr>
<td></td>
<td>• It will take _____ apples to make a batch of applesauce.</td>
</tr>
<tr>
<td></td>
<td>• You need to find how many batches of _____ Antonio can make.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step 2</th>
<th>Make a plan.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plan</td>
<td>Choose a strategy.</td>
</tr>
<tr>
<td>• Guess and check</td>
<td></td>
</tr>
<tr>
<td>• Work a simpler problem</td>
<td></td>
</tr>
<tr>
<td>• Make an organized list</td>
<td></td>
</tr>
<tr>
<td>• Draw a picture</td>
<td></td>
</tr>
<tr>
<td>• Act it out</td>
<td></td>
</tr>
</tbody>
</table>

You can draw a picture. Decide what facts you know. Plan what you will do and in what order. Use your plan to solve the problem. Then check your solution to make sure it is reasonable.
Step 3
Solve

Carry out your plan.
You know that you need to find out how many batches of applesauce Antonio can make with 24 apples.

Draw 24 circles to represent the apples. Circle groups of 12. Write a division sentence.

\[ 24 \div 12 = \underline{2} \]

Step 4
Check

Is the solution reasonable?
Reread the problem.

How can you check your answer

Use any strategy shown below to solve.

- Guess and check
- Draw a picture
- Work a simpler problem
- Act it out
- Make an organized list

1. Carolina has 25 peanuts and she wants to share them with 5 friends. If each friend gets the same amount of peanuts, how many will each one get?

2. Becky went to the park with 6 friends. Two of them left early and 1 got hurt. How many are left to play with Becky?
Reteach

Make Function Tables (×, ÷)

A function table is used to represent relationships between numbers. These relationships can also involve multiplication and division.

<table>
<thead>
<tr>
<th>Rule: Δ × 2</th>
<th>Input (Δ)</th>
<th>Output (□)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

The rule for this table is multiply by 2. The input value is multiplied by 2 to get the output number.

<table>
<thead>
<tr>
<th>Rule: Δ ÷ 3</th>
<th>Input (Δ)</th>
<th>Output (□)</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>

The rule for this table is divide by 3. The input value is divided by 3 to get the output number.

Complete each function table.

1. | Rule: Δ ÷ 3 | Input (Δ) | Output (□) |
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. | Rule: Δ × 5 | Input (Δ) | Output (□) |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Identify the rule of each function table.

3. | Rule:  | Input (Δ) | Output (□) |
   |      |-----------|------------|
   | 28   | 4         |
   | 35   | 5         |
   | 42   | 6         |
   | 49   | 7         |

4. | Rule:  | Input (Δ) | Output (□) |
   |      |-----------|------------|
   | 3    | 18        |
   | 5    | 30        |
   | 7    | 42        |
   | 9    | 54        |
Reteach

Length to the Nearest Half Inch

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
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.

<table>
<thead>
<tr>
<th>Use an inch ruler to measure each length.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
</tr>
<tr>
<td>2.</td>
</tr>
<tr>
<td>3.</td>
</tr>
</tbody>
</table>

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
Reteach

Problem-Solving Strategy: Work Backward

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

<table>
<thead>
<tr>
<th>Step 1</th>
<th>Understand</th>
</tr>
</thead>
<tbody>
<tr>
<td>Make sure you understand the problem.</td>
<td></td>
</tr>
<tr>
<td>• What do you know? Joan buys 6 tickets. Each ticket costs $3.</td>
<td></td>
</tr>
<tr>
<td>• What do you need to find? How much money Joan will spend in all on the tickets.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step 2</th>
<th>Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Make a plan.</td>
<td></td>
</tr>
<tr>
<td>You can add or multiply to find the total.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step 3</th>
<th>Solve</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carry out your plan.</td>
<td></td>
</tr>
<tr>
<td>$3 + $3 + $3 + $3 + $3 + $3 = $18</td>
<td></td>
</tr>
<tr>
<td>$6 \times $3 = $18</td>
<td></td>
</tr>
<tr>
<td>Multiplication is the better choice.</td>
<td></td>
</tr>
<tr>
<td>Joan spends $18 on tickets.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step 4</th>
<th>Check</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check your answer.</td>
<td></td>
</tr>
<tr>
<td>Is it reasonable?</td>
<td></td>
</tr>
</tbody>
</table>

Solve. Use the work backward strategy.

1. There are 3 times as many jazz students as there are rock students in a music class. If there are 12 students altogether, how many rock students are there?

2. There are 3 jugglers on the stage. Each juggler is juggling 4 oranges. How many oranges are there in all?
3. Derrick buys 5 CDs every week for 4 weeks. How many CDs does he buy during that time?

4. There were 15 scouts at this week’s scout meeting. Last week, there were twice as many scouts minus 5. How many scouts were at last week’s meeting?

5. Erin asks each member of her class what his or her favorite color is. The results are red, blue, green, green, blue, blue, blue, red, yellow, red, and blue. What is the most common favorite color among Erin’s classmates?

6. A family of four spent $50 at an amusement park. If food cost $10, and each ticket cost the same amount, how much was the cost of each admission ticket?

7. Hakeem spends $100 of his money from his summer job on clothes and supplies for school. If he has $25 leftover, how much money did he have originally?

8. If Mrs. Kang can bake 2 loaves of bread in an hour, how many loaves can she bake in 4 hours?
Reteach

**Metric Units of Length**

In the metric system, you use centimeters (cm) to measure length.

This is 1 centimeter (cm). \(1 \text{ meter (m)} = 100 \text{ cm}\)

A ones cube is 1 cm wide.  
A door is about 1 m wide and 2 m high.

Choose the most appropriate unit to measure each length.  
*Write millimeter, centimeter, meter, or kilometer.*

1. a football __________
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 an eyelash  
   F. 9 cm  
   G. 9 mm  
   H. 9 m

9. the height of a tree  
   A. 30 cm  
   B. 30 mm  
   C. 30 m
Reteach

Measure Perimeters

The perimeter is the distance around the outside of a figure or 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 m
3 m
5 m
5 + 5 + 3 = 13
The perimeter is 13 m.

To find the perimeter of this rectangle, add the lengths of the 4 sides.

10 yd
4 yd
4 yd
10 yd
10 + 4 + 10 + 4 = 28
The perimeter 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 cm + 2 cm + 2 cm + 5 cm = ____ cm

Find the perimeter of each figure.

5. 3 ft
   3 ft
   3 ft
   3 ft

6. 3 in.
   5 in.
   4 in.

7. 2 cm
   3 cm
   2 cm
   2 cm

28
Reteach

Measure Areas

The number of square units needed to cover a figure without overlapping is called area. You can use grid paper to help you find the area of a figure.

1 2 3 4 5

6 7 8 9 10

Count the units.
The area of this rectangle is 10 square units.

1 2 3

4 5

6 7 8

Count the units.
The area of this figure is 8 square units.

Find the area of each figure.

1. The rectangle has _____ square units. It has an area of _____ square units.

2. The shaded figure has _____ square units. It has an area of _____ square units.

Find the area of each figure.

3. 

4. 

5. 

The rectangle has _____ square units. It has an area of _____ square units.

The shaded figure has _____ square units. It has an area of _____ square units.
Claire made a quilt. The quilt has a length of 7 feet and a width of 5 feet. Each patch is a square with an area of 1 square foot. How many patches are in the quilt?

**Understand**

You know the length of the quilt is 7 feet and the width of the quilt is 5 feet.

You know the area of each patch is 1 square foot.

You need to find how many patches are in the quilt.

**Plan**

You can draw a picture to help solve the problem.

**Solve**

Draw a picture of the quilt. The width should be 5 units and the length should be 7 units. Each unit equals one square foot.

Each patch has an area of 1 square foot. So, each square represents a patch. Count the squares in your drawing. Claire’s quilt has 35 patches.

**Check**

Look back at the problem. You can find the area of the quilt by multiplying the length times the width.

\[7 \times 5 = 35\]

The answer checks. There are 35 patches in Claire’s quilt.
Use any Problem-Solving strategy shown below to solve.

- Choose an operation
- Guess and check
- Make a table
- Solve a simpler problem

1. Maria’s class had a bake sale. They sold cupcakes and cups of milk. For every dozen cupcakes they sold, they poured a half a gallon of milk. If the class sold 24 dozen cupcakes, how many gallons of milk did they pour?

2. Pablo went golfing. On the first 9 holes, he took four strokes on each hole. On the second 9, he only took 3 strokes on each hole. How many strokes did Pablo’s take in all?

3. Juanita collects marbles. For every 4 small marbles Juanita has, she has one large marble. If Juanita has 36 small marbles, how many large marbles does she have?

4. Toby swims laps every day. Shawna swims twice as many laps each day as Toby. If Shawna swims 14 laps a day, how many does Toby swim?
Temperature is a measure that tells how hot or cold something is in degrees. Temperature is measured with a tool called a thermometer. The thermometers used in this lesson are labeled in degrees Fahrenheit.

Water freezes at 32°F. Is the temperature shown on the thermometer warmer or colder than 32°F?

The temperature on the thermometer reads 70°F. 70°F is warmer than 32°F.

Tell which temperature is warmer.
85°F or 60°F

85 is greater than 60, so 85°F is warmer than 60°F.

Write the temperature in degrees Fahrenheit (°F)

1. 90°F
2. 80°F
3. 70°F
4. 50°F
Capacity tells how much an object can hold. You can measure capacity in cups, pints, quarts, and gallons.

<table>
<thead>
<tr>
<th></th>
<th>1 cup (c)</th>
<th>2 c = 1 pint (pt)</th>
<th>2 pt = 1 quart (qt) or 4 c = 1 qt</th>
<th>4 qt = 1 gallon (gal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MILK</td>
<td>MILK</td>
<td>MILK</td>
<td>MILK</td>
<td>MILK</td>
</tr>
<tr>
<td></td>
<td>MILK</td>
<td>MILK</td>
<td>MILK</td>
<td>MILK</td>
</tr>
</tbody>
</table>

Choose the best estimate.

1. [Image of juice]
   - A. 1 c
   - B. 1 pt
   - C. 1 qt

2. [Image of bucket]
   - A. 1 pt
   - B. 1 qt
   - C. 1 gal

3. [Image of power punch]
   - A. 1 c
   - B. 1 qt
   - C. 1 gal

4. [Image of water bottle]
   - A. 10 c
   - B. 10 qt
   - C. 10 gal

5. [Image of water spill]
   - A. 1,000 c
   - B. 1,000 qt
   - C. 1,000 gal

6. [Image of water bottle]
   - A. 2 c
   - B. 2 qt
   - C. 2 gal
If you want to solve a problem, it is important to have a plan. You can use the guess and check strategy to solve problems.

Alicia is making bookmarks for the school fair. She needs 10 centimeters of ribbon for each bookmark. There is a meter of ribbon on each spool. How many bookmarks can she make out of one spool of ribbon? (Hint: Remember there are 100 centimeters in a meter.)

<table>
<thead>
<tr>
<th>Understand</th>
<th>What facts do you know?</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Each bookmark uses 10 centimeters of ribbon.</td>
<td></td>
</tr>
<tr>
<td>• There is a meter of ribbon on each spool.</td>
<td></td>
</tr>
</tbody>
</table>

| What do you need to find? |
| • How many bookmarks can be made from a spool of ribbon? |

| Plan | You can use the guess and check strategy. Guess how many bookmarks you can make and check the answer with division. |

| Solve | Each bookmark is 10 centimeters. Each spool holds 1 meter of ribbon. Since 1 meter = 100 centimeters, we can guess that we can make 10 bookmarks. Check: 100 ÷ 10 = 10 |
|       | So, Alicia can make 10 bookmarks. |

| Check | Look back at the problem. One way to check the answer is work it backward. Check your division with multiplication. |
|       | 10 × 10 = 100 |
|       | So, the answer is correct. |
Solve. Use the guess and check strategy.

1. Ben is swimming in a 50 meter race on Saturday. He needs to measure the length of the swim, but he only has lengths of string 10 centimeters long. How many lengths of string will he need to equal 50 meters?

2. Irene’s foot is about 10 cm long. How many foot lengths will it take Irene to walk about 3 meters?

3. Mario is growing fresh carrots. Each week he measures his plants. If his plants grow 5 mm each week, how long will it take for his plants to reach 3 cm?

4. Marta has a stack of books 1 meter high. If Marta sorts her books into 10 equal stacks, how high will each stack be?

5. Brady has 4 coins that total 45¢. Name the coins Brady has.
Reteach

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.
   F. 10  G. 100  H. 1,000

6. A large pot holds about ______ L.
   A. 1  B. 6  C. 60
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
Understand

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

Make a plan.

Choose a strategy.

Use draw a picture to solve the problem.

You can use the difference of the amount of water in the bottles to measure exactly 11 liters.

<table>
<thead>
<tr>
<th>Step 2</th>
<th>Make a plan.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plan</td>
<td>Choose a strategy.</td>
</tr>
<tr>
<td>• Draw a picture or diagram</td>
<td></td>
</tr>
<tr>
<td>• Make a graph</td>
<td></td>
</tr>
<tr>
<td>• Look for a pattern</td>
<td></td>
</tr>
<tr>
<td>• Choose an operation</td>
<td></td>
</tr>
<tr>
<td>• Make a table</td>
<td></td>
</tr>
<tr>
<td>• Work backward</td>
<td></td>
</tr>
<tr>
<td>• Guess and check</td>
<td></td>
</tr>
</tbody>
</table>
Reteach

Problem-Solving Investigation (continued)

Step 3 Solve

**Carry out your plan.**

Follow the 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 Check

**Look back. Is the solution reasonable?**

Reread the problem.

How can you check your answers?

______________________________

______________________________

Use any strategy to solve. Tell what strategy you used.

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 a ham sandwich, one has a tuna sandwich, and one has a cheese sandwich. Ted and Cathy do not eat ham. Cathy does not eat fish. What does Ella eat?

______________________________
Weight tells how heavy an object is. You can measure weight in ounces and pounds.

16 ounces = 1 pound

Use ounces to weigh light objects.

Use pounds to weigh heavier objects.

Circle the letter of the better estimate.

1. A. 1 oz  
   B. 1 lb

2. A. 1 lb  
   B. 10 lb

3. A. 1 lb  
   B. 10 lb

4. F. 3 oz  
   G. 30 oz

5. A. 25 oz  
   B. 25 lb

6. F. 4 oz  
   G. 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
**Reteach**

*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**.

\[ 1,000 \text{ grams (g)} = 1 \text{ kilogram (kg)} \]

Use grams to find the mass of small things.

<table>
<thead>
<tr>
<th>1 g</th>
<th>145 g</th>
<th>220 g</th>
</tr>
</thead>
</table>

Use kilograms to find the mass of larger things.

<table>
<thead>
<tr>
<th>1 kg</th>
<th>5 kg</th>
<th>2 kg</th>
</tr>
</thead>
</table>

Choose the most appropriate unit to measure each mass. Write **gram** or **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
A cubic unit is a unit of volume.  

Volume is the number of cubic units a solid figure holds.

You can use cubes to help you find volume. Count the cubes.

This figure has a volume of 8 cubic units.  

This figure has a volume of 10 cubic units.

Remember to count the blocks in the back that you cannot see.

Use the figure at the right to answer 1–5.

1. The top layer has _____ cubic units.
2. The middle layer has _____ cubic units.
3. The bottom layer has _____ cubic units.
4. How many cubes are there in all? _____
5. The volume is _____ cubic units.

Find the volume of each figure.

6.  

7.  

The clock below is a digital clock. A digital clock shows the time in numbers.

Read: four twenty eight
Write: 4:28

The digits before the colon (:) show the hour.
The digits after the colon (:) show the minutes.

The clock below is an analog clock. An analog clock has an hour hand and a minute hand.

Read: eight thirty
Write: 8:30

To find the hour: Look at the shorter hand. It has passed the 8, so the hour is 8.
To find the minute: Look at the longer hand. Start at the 12 and count by 5s. At the 6, the minute hand shows 30 minutes.

Circle the letter of the correct time.

1. 
   A. 1:15  B. 1:45

2. 
   A. 11:45  B. 10:15

3. 
   A. 12:50  B. 1:50
Three-Dimensional Figures

The objects you see around you are solid figures. A solid, or three-dimensional figure, is a figure that has length, width, and depth.

- cube
- pyramid
- rectangular prism
- cylinder
- sphere
- cone

Identify each three-dimensional figure.

1. __________
2. __________
3. __________
4. __________
Two-Dimensional Figures

A polygon is a closed two-dimensional figure with straight sides.

These are polygons.

These are not polygons.

Circle the polygons below.

1.  
2.  
3.  

Identify each two-dimensional figure.

4.  
5.  
6.  
A family of 2 adults and 3 children each order a sandwich and a drink in the museum cafeteria. Sandwiches cost $4 each and drinks are $1. How much does lunch cost in all?

<table>
<thead>
<tr>
<th>Step 1</th>
<th>Understand</th>
<th>Be sure you understand the problem.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Read carefully.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>What do you know?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• There are _____ people in the family.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• They buy _____ sandwiches for _____ each and _____ drinks for _____ each.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>What do you need to know?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• You need to find how much</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step 2</th>
<th>Plan</th>
<th>Make a plan.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Choose a strategy.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>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.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step 3</th>
<th>Solve</th>
<th>Carry out your plan.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Solve this simpler problem.</td>
</tr>
</tbody>
</table>
|         |               | 5 sandwiches cost $4 \times _____ or _____.
|         |               | 5 drinks cost $1 \times _____ or ____. |
Reteach
Problem-Solving Strategy (continued)

The total amount is _____ + _____ = _____.

Now solve the real problem the same way.

5 sandwiches cost 5 × _____ or _____.

5 drinks cost 5 × _____ or _____.

The total amount is _____ + _____ = _____.

Step 4
Check

Is the solution reasonable?
Reread the problem.

Is your answer make reasonable? Yes No
Did you answer the question? Yes No

What other strategies could you use to solve
the problem?

Solve. Use the solve a simpler problem strategy.

1. The Wilsons buy 2 adult’s tickets for $5 each and
3 children’s tickets for $3 each. How much money do
they spend in all?

2. Virginia buys 3 model airplanes for $7 each, 2 tubes of paint
for $3 each, and 2 tubes of glue for $2 each. How much
money does she spend in all?
Reteach

Identify and Extend Geometric Patterns

The squares on a checkerboard repeat a pattern: black, red, black, red, black, red. You might also find patterns on flooring, clothing material, or art.

If you saw the following repeating pattern, what would you expect the next shape to be?

Step 1: Identify the shapes in the pattern.

The shapes are: square, rectangle, pentagon, and parallelogram.

Step 2: This is the pattern unit.

There are four shapes, so the fifth shape will be a repeat of the very first shape.

So, the next shape in the pattern will be a square.

If you saw a pattern unit that repeats 2 circles and 1 triangle, what would the sixth shape be?

The sixth shape would be a triangle.

Identify and extend each pattern.

1. How many triangles will be used if this pattern repeats 4 times? _________

2. You see a pattern that repeats the following: red circle, blue circle, red circle, green circle. There are 26 circles total. How many red circles are used? _________

3. How many rectangles will be used if this pattern continues until there are a total of 23 polygons? _________
Reteach

Identify Congruent Figures

Figures are congruent if they have the same shape and the same size. The following is an example of a pair of congruent figures.

The following figures are not congruent.

These figures are not congruent even though are the same shape. They do not have the same size.

Tell whether each pair of figures is congruent. Write yes or no.

1. 

2. 

3. 

Reteach

Problem Solving Investigation: Choose a Strategy

Sabrina has collected trading cards for 5 years. She now has 125 trading cards. In the second year, she collected 34 more cards than she did the first year. She only collected 12 cards her third and fourth years. In her fifth year she collected 9 cards. How many did she collect the in the fifth year?

Understand

Be sure you understand the problem.

What do you know?

- You know Sabrina has 125 trading cards.
- You know she collected 34 more cards in the second year than in the first year.

What do you need to find?

- You need to find how many cards Sabrina collected in the first year.

Plan

Make a plan.

Choose a strategy.

Organize the data into a table to help you solve the problem.

Solve

First, fill in what you know.

<table>
<thead>
<tr>
<th>Year</th>
<th>Cards Collection</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>5</td>
<td>9</td>
</tr>
</tbody>
</table>

You know Sabrina now has 125 cards. 125 – 12 – 12 – 9 = 92 cards

You know Sabrina collected 34 more cards in the second year than in the first year. So, 92 – 34 = 58

Divide 58 ÷ 2 = 2

Sabrina collected 29 cards in the first year.

29 + 34 = 63

Sabrina collected 63 cards in the second year.
Use any strategy to solve. Tell what strategy you used.

- Draw a picture or diagram
- Find a pattern
- Guess and check
- Use logical reasoning

1. Spencer biked two miles to get to his Aunt’s house. Then he hiked twice as far to the park. How many miles was the total trip?

2. The department store is having a sale on sports equipment. All of the equipment is on sale at half the original price. Heather purchases 3 soccer balls, 4 water bottles, and 1 pair of running shoes. How much money did she spend?

<table>
<thead>
<tr>
<th>Item</th>
<th>Original Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseball</td>
<td>$6</td>
</tr>
<tr>
<td>Soccer ball</td>
<td>$12</td>
</tr>
<tr>
<td>Running shoes</td>
<td>$40</td>
</tr>
<tr>
<td>Water bottle</td>
<td>$4</td>
</tr>
<tr>
<td>Basketball hoop</td>
<td>$150</td>
</tr>
</tbody>
</table>

3. What two numbers are missing in the pattern below?
4, 8, 12, 16, 20, [ ] 28, [ ]

4. James walked his dog 3 blocks to his friend’s house. On the way home, they walked twice as long. How many blocks was the trip?

5. The class has 20 students. Each student has 2 erasers at their desk. How many erasers are there altogether?

6. Annie gave cards to her friends and family. 20 cards were for her classmates, 1 card was for her teacher and 4 cards were for other people. How many total cards did she give out?
A figure has symmetry if it can be cut in half and the two halves are exact matches. You could fold the figure along a line of symmetry and the two sides would be mirror images.

The following figure has line symmetry.

The two halves formed by the lines are exact matches.

The following figure does not have line symmetry.

Tell whether each figure has line symmetry. Write yes or no. If yes, tell how many lines of symmetry the figure has.

1. ______
2. ______
3. ______
Reteach

Whole Numbers on a Number Line

Points on a number line represent numbers. The following number line represents years.

Where would you put a point on the number line to represent 1985?

Step 1 Find the interval between the lines.

The interval between lines is 5 years.

Step 2 Place the point between the appropriate numbers.

The point for 1985 should go on the line between 1980 and 1990.

Tell what point represents each number on the number line.

1. 44

2. 130

3. 256
Ordered Pairs

Just as on number lines, points on a grid represent numbers.

A point such as (3, 5) names a specific place on the grid.

Write the points for the location of the library.

**Step 1** Find the first number. Start at (0, 0). Move right until you are directly below the location of the library.

The first number is 3.

**Step 2** Find the second number.

Move up until you reach the library. The second number is 6.

The point is (3, 6).

**Write the ordered pair for the location of each item on the grid.**

1. Tucker  
2. Sarah  
3. Ahmad  
4. Brendan  
5. Kate

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Debbie is selling magazine subscriptions to raise money for her school. She wants to find out what kind of magazines people like to read, so she takes a survey of her neighbors. She shows the results in a chart. Then, Debbie uses the chart to make a pictograph.

A **tally chart** is a table that organizes data using tally marks. Data displayed in a tally chart can also be displayed in a pictograph.

A **pictograph** is a graph that uses one picture or symbol to display or show data.

<table>
<thead>
<tr>
<th>Favorite Magazine</th>
<th>Number of People</th>
</tr>
</thead>
<tbody>
<tr>
<td>News</td>
<td>★★★★</td>
</tr>
<tr>
<td>Sports</td>
<td>★★★★★</td>
</tr>
<tr>
<td>Music</td>
<td>★★★</td>
</tr>
<tr>
<td>Fashion</td>
<td>★★</td>
</tr>
</tbody>
</table>

**Use the data in the pictograph to answer the questions.**

1. How many people like Fashion magazines?

2. How many more people like News magazines than Music magazines?

3. Which type of magazine is the most popular?

4. How many people took part in the survey?

5. Do more or less than 5 people like News magazines?

6. Which two types of magazines do people like the least?
You have learned how to collect and display data in pictographs. Now you will read and interpret data from a pictograph.

**Bushels of Apples Picked**

<table>
<thead>
<tr>
<th>Name</th>
<th>Bushels of Apples</th>
<th>Key: ☺ = 2 bushels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zachary</td>
<td>☺ ☺</td>
<td></td>
</tr>
<tr>
<td>Cara</td>
<td>☺ ☺ ☺ ☺ ☺</td>
<td></td>
</tr>
<tr>
<td>Grace</td>
<td>☺ ☺ ☺ ☺</td>
<td></td>
</tr>
<tr>
<td>Izzy</td>
<td>☺ ☺ ☺ ☺ ☺ ☺</td>
<td></td>
</tr>
<tr>
<td>Richard</td>
<td>☺ ☺</td>
<td></td>
</tr>
</tbody>
</table>

Angela and her class took a trip to an apple orchard. She asked her friends how many bushels of apples they picked. The pictograph above shows the results.

Use the pictograph. Who picked two more bushels of apples than Grace?

The key shows that each ☺ means 2 bushels.

The pictograph shows that Grace has picked 6 bushels.

\[☺ + ☺ + ☺ + ☺ + ☺ + ☺ = 6\]

To add two more bushels, show one more ☺ symbol.

\[☺ + ☺ + ☺ + ☺ + ☺ + ☺ + ☺ + ☺ = 8\]

The pictograph shows that Cara has picked 8 bushels.

So, Cara picked two more bushels than Grace at the apple orchard.

1. How many bushels did Izzy pick? __________

2. How many symbols are needed to show 10 bushels? __________
For the special today, you have a choice of a main dish and a drink. How many different combinations are possible?

Step 1
Understand

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

Make a plan.
Choose a strategy.

Making a list can help you solve the problem.
Step 3
Solve

Carry out your plan.
List the possible choices.

1. eggs, ____________
2. pancakes, ____________
3. waffles, ____________
4. ____________, juice
5. ____________, juice
6. ____________, juice

There are ______ different combinations.

Step 4
Check

Is the solution reasonable?
Reread the problem.

How can you check to make sure your answer is correct?


Solve. Use the make a list strategy.

1. Karen packs 3 pairs of pants in blue, black, and white. She packs 3 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?
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.

<table>
<thead>
<tr>
<th>Favorite Fruit Juice</th>
<th>Number of Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apple</td>
<td>8</td>
</tr>
<tr>
<td>Grape</td>
<td>4</td>
</tr>
<tr>
<td>Orange</td>
<td>10</td>
</tr>
<tr>
<td>Pineapple</td>
<td>2</td>
</tr>
</tbody>
</table>

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

1. How many students like grape juice? ________________________________

2. Which juice flavor is the students’ least favorite? ________________________________

3. How many more students like orange juice than pineapple juice? ________________________________

4. Which two juice flavors do the students like the best? ________________________________

5. Which juice flavor did the students like the most? How can you tell? ________________________________

6. How many students were in this survey? How do you know? ________________________________
Lisa surveyed the students at her school to find out what they like to do after school. The bar graph shows the results.

You have learned to interpret data in a pictograph. You can also interpret the data in a bar graph.

What is the difference between the most and least favorite after school activities?

Five students like to read. One student likes to play with her friends. Subtract to find the difference. $5 - 1 = 4$

So, the difference between the most and least favorite after school activities is 4.

1. What is the difference between the number of people who like to play outside and the number who like to watch television?

2. What is the second most popular after school activity?

3. If you were in charge of planning activities, how would you use this information? What would you plan?
Like a vertical bar graph, a **line plot** shows information vertically. The base of the line plot is just that, a line, where we can place numbers or sometimes words. Unlike a bar graph, a line plot doesn’t have a vertical scale. Above each number or word at the base, we plot an X to represent how often something happens.

Let’s make a line plot together. We’ll plot the number of chores Paula did last week. On Sunday, Thursday, and Saturday, she did 4 chores a day. On Monday through Wednesday, she did 2 chores a day. One Friday, she did none. Use the space below to make your line plot.

1. Make a line along the bottom of the page, but leave room for words below the line.

2. Write the days of the week under the line. Space the days as evenly as you can.

3. For each chore Paula completed each day, put one X above that day.

4. Take a look at your line plot. You may not have an X above each day. Should you?
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 (3 of the 5).
- It is unlikely that you will land on the letter A or B. Only 1 of the 5 letters is an A. Only 1 of the 5 letters is a B.

Describe the probability of landing on each number. Write certain, likely, unlikely, or impossible.

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 ________.
Beatriz joined a new basketball team. The first game they played, they scored 15 points. The next game they scored 20, and the following game they scored 25. If this pattern continues, how many points will they have scored at the end of 10 games?

### Understand
You know the scores of the first three games. 
You need to find the total points scored after 10 games.

### Plan
Use the *make a table* strategy. Make a table showing 10 games and scores. Find scores by adding 5 to each previous score.

### Solve
Carry out your plan.

<table>
<thead>
<tr>
<th>Game</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score</td>
<td>15</td>
<td>20</td>
<td>25</td>
<td>30</td>
<td>35</td>
<td>40</td>
<td>45</td>
<td>50</td>
<td>55</td>
<td>60</td>
</tr>
</tbody>
</table>

To find the total, add the scores from each game.

- \(15 + 20\) \(=\) \(35 + 25\) \(=\) \(60 + 30\) \(=\)
- \(90 + 35\) \(=\) \(125 + 40\) \(=\) \(165 + 45\) \(=\)
- \(210 + 50\) \(=\) \(260 + 55\) \(=\) \(315 + 60\) \(=\)

So, the total number of points scored by this new team is 375 points.

### Check
Look back at the problem. Check your addition with subtraction. Ask yourself if the answer seems reasonable.
Use any strategy shown below to solve.

- Use the four-step plan
- Make a table
- Work backward
- Guess and check
- Work a simpler problem
- Make a list

Ana is working hard to improve her swimming. Each day she swims 12 meters further than she did the day before. Ana swam 60 meters on Monday. How many meters will she be swimming by Saturday?

**Understand**

What do you know?

Each day Anna Swims _______________

She swam _______________

What do you need to find? _______________

**Plan**

Use the _______________

**Solve**

60 + 12 _____  72 + 12 _____  84 + 12 _____  
96 + 12 _____  108 + 12 _____

Anna can swim _______________ by Saturday.

**Check**

__________________________________________
Reteach

Parts of a Whole

A fraction is a number that names part of a whole. To write a fraction, each part of the whole must be the same size.

1 part shaded \[ \rightarrow \frac{1}{4} \] is shaded.
4 parts in all \[ \rightarrow \frac{1}{4} \] is shaded.

2 part shaded \[ \rightarrow \frac{2}{3} \] is shaded.
3 parts in all \[ \rightarrow \frac{2}{3} \] is shaded.

4 unequal parts
You cannot write a fraction.

3 unequal parts
You cannot write a fraction.

Write a fraction that describes the fractional part of the whole that is shaded.

1. \[ \frac{}{} \] parts shaded \[ \frac{}{} \] parts in all
   fraction \[ \frac{}{} \]

2. \[ \frac{}{} \] parts shaded \[ \frac{}{} \] parts in all
   fraction \[ \frac{}{} \]

3. \[ \frac{}{} \] parts shaded \[ \frac{}{} \] parts in all
   fraction \[ \frac{}{} \]

4. \[ \frac{}{} \] parts shaded \[ \frac{}{} \] parts in all
   fraction \[ \frac{}{} \]

5. \[ \frac{}{} \] parts shaded \[ \frac{}{} \] parts in all
   fraction \[ \frac{}{} \]
You can use a fraction to describe part of a group or set.

1 cone shaded
3 cones in all
One-third or $\frac{1}{3}$ are shaded.

5 cones shaded
6 cones in all
Five-sixths or $\frac{5}{6}$ are shaded.

Write a fraction that describes the fractional part of the set that is shaded.

1. _______ are shaded.
2. _______ are shaded.
3. _______ are shaded.
4. _______ are shaded.
5. _______ are shaded.
6. _______ are shaded.
Danny and Drew were playing cards. Danny had two cards in his hand that equaled 8 and the difference was 2. Drew held two cards that equaled six and the difference was 4. Do you know which cards they were holding?

Let's start with Danny's cards.

**Understand:** Danny had two cards. The sum of the cards was 8. The difference was 2. What were the cards?

**Plan:** Think about the different ways you can make the number 8.
Think...0 + 8 = __ and 1 + 7 = __

**Solve:** To arrive at 8, we can add lots of numbers, but if the difference between the two addends is two, Danny must have a 3 and a 5 in his hand.
5 + 3 = 8, and 5 - 3 = 2

**Check:** Look back at the problem.
5 + 3 = 8, and 5 - 3 = 2 The difference is 2.
We are correct.

Using the same strategy, we can see that Drew is holding a 1 and a 5.
Choose a strategy to solve.

<table>
<thead>
<tr>
<th>Items</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apples</td>
<td>$1 per lb</td>
</tr>
<tr>
<td>Bananas</td>
<td>2 lb per $1</td>
</tr>
<tr>
<td>Oranges</td>
<td>3 for a $1</td>
</tr>
<tr>
<td>Pears</td>
<td>$2 per lb</td>
</tr>
</tbody>
</table>

1. Teresa buys some fruit. She spent $5 and bought apples, bananas, and 3 oranges. She didn’t buy any pears. What did Teresa buy?

2. Dana bought some fruit, too. She spent $3 and didn’t buy any bananas or oranges. What did she buy?

3. Carmen and Bernice rented a boat from 9 A.M. to 2 P.M. How much did it cost?

4. Fernando’s lunch totaled $4. He gave the waitress a ten dollar bill. How much change did he receive?

5. Would you rather find six dimes, four nickels, and eight pennies in the couch or eight nickels, two quarters, and three pennies?

6. Dana loves to go to the community pool. Admission is $2 per day. She likes to buy a snack while she’s there. She usually buys a bag of chips for 65 cents, and a soda for 95 cents. If Dana goes to the pool five days a week, how much does she spend?
Find Equivalent Fractions

Fraction models can help you find fractions that name the same number, or equivalent fractions.

\[ \frac{3}{4} \]

\[ \frac{6}{8} \]

\[ \frac{9}{12} \]

\( \frac{3}{4}, \frac{6}{8}, \text{ and } \frac{9}{12} \) are equivalent fractions.

Use models to complete the equivalent fractions.

1. \( \frac{1}{2} = \frac{\text{__}}{4} \)
2. \( \frac{1}{3} = \frac{\text{__}}{6} \)
3. \( \frac{2}{5} = \frac{\text{__}}{10} \)
4. \( \frac{1}{4} = \frac{\text{__}}{8} \)
5. \( \frac{3}{5} = \frac{\text{__}}{10} \)
6. \( \frac{3}{6} = \frac{\text{__}}{12} \)
7. \( \frac{3}{12} = \frac{\text{__}}{4} \)
8. \( \frac{1}{2} = \frac{\text{__}}{12} \)
9. \( \frac{4}{5} = \frac{\text{__}}{10} \)
10. \( \frac{2}{8} = \frac{\text{__}}{4} \)
11. \( \frac{8}{12} = \frac{\text{__}}{3} \)
Reteach

Problem-Solving Strategy: Draw a Picture

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?

<table>
<thead>
<tr>
<th>Step 1</th>
<th>Make sure that you understand the problem.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Understand</td>
<td>• What do you know?</td>
</tr>
<tr>
<td></td>
<td>An amusement park has _____ roller coasters.</td>
</tr>
<tr>
<td></td>
<td>Each roller coaster has _____ cars.</td>
</tr>
<tr>
<td></td>
<td>Each car has _____ wheels.</td>
</tr>
<tr>
<td></td>
<td>• What do you need to find?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step 2</th>
<th>Figure out a plan.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plan</td>
<td>You can draw a picture to show what you know and what you need to find out.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step 3</th>
<th>Carry out your plan.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solve</td>
<td>Draw 4 roller coasters.</td>
</tr>
<tr>
<td></td>
<td>Draw 6 cars on each roller coaster.</td>
</tr>
<tr>
<td></td>
<td>Draw 2 wheels on each car.</td>
</tr>
</tbody>
</table>

Count the number of wheels.
There are _____ wheels.
Reteach

Problem-Solving Strategy (continued)

Step 4
Check

Is the solution reasonable? Yes No

How can you use your picture to check your answer?

Solve. Use the draw a picture strategy.

1. There are 3 rows of 5 mini pizzas on a tray. Each mini pizza has 2 pepper slices on it. How many pepper slices are there in all?

2. Reshma baked 3 batches of banana bread. Each batch had 4 loaves. Each loaf had 12 nuts in it. How many nuts did Reshma use in all?

3. The quesadilla was cut into six pieces. Christina ate one third, Luis ate one third, and Mario ate one piece. How many pieces were left?

4. The pencil cup needed to be cleaned out. There were 25 pencils in the cup. 12 were broken, 5 didn’t have any erasers, and the rest were able to be sharpened and used. How many pencils were put back in the cup?
Compare and Order Fractions

You can compare fractions to see which fraction is greater than ( > ), is less than ( < ), or if they are equivalent.

\[
\frac{1}{8} \text{ is less than } \frac{3}{8}
\]

\[
\frac{1}{8} < \frac{3}{8}
\]

\[
\frac{5}{6} \text{ is greater than } \frac{1}{2}
\]

\[
\frac{5}{6} > \frac{1}{2}
\]

You can order fractions from greatest to least.

Compare. Write >, <, or =.

1. \[
\frac{2}{6} \bigcirc \frac{1}{3}
\]

2. \[
\frac{1}{2} \bigcirc \frac{1}{5}
\]

3. \[
\frac{4}{8} \bigcirc \frac{7}{8}
\]

4. \[
\frac{1}{4} \bigcirc \frac{1}{8}
\]

Order from greatest to least.

5. \[
\frac{1}{3}, \frac{1}{8}, \frac{1}{6}
\]

6. \[
\frac{2}{5}, \frac{4}{8}, \frac{6}{7}
\]

7. \[
\frac{1}{2}, \frac{3}{4}, \frac{2}{3}
\]

8. \[
\frac{5}{9}, \frac{1}{9}, \frac{7}{9}
\]
Name __________________________ Date _____________

Reteach

Locate Fractions on a Number Line

Locate Points on a Number Line

Locate the letter that names $\frac{1}{3}$ on the number line.

Point $B$ represents $\frac{1}{3}$. So, Point $B$ names $\frac{1}{3}$ on the number line.

Name Points on a Number Line

Which number does point $A$ best represent on the number line?

The interval between lines is $\frac{1}{2}$. $3 + \frac{1}{2} = 3\frac{1}{2}$ So, Point $A = 3\frac{1}{2}$.

Locate a point on the number line.

1. $\frac{1}{5} = \text{Point } ________$

2. $2\frac{1}{2} = \text{Point } ________$

Name a point on the number line.

3. Point $X = ________$

4. Point $Y = ________
Reteach
Tenths

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 the part that is shaded.

1. _____ 2. _____ 3. _____

Write each fraction as a decimal.

4. \( \frac{7}{10} \) _____ 5. three tenths _____ 6. \( \frac{9}{10} \) _____

Write each decimal as a fraction.

7. 0.5 _____ 8. 0.4 _____ 9. 0.1 _____
This model shows 1 whole and 5 tenths shaded.

\[ 1 \text{ whole and 5 tenths} \]
\[ 1 \frac{5}{10} = 1.5 \]

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.

\[ 2 \text{ wholes and 12 hundredths} \]
\[ 2 \frac{12}{100} \text{ Decimal: 2.12} \]

Read: two and twelve hundredths

Write each as a decimal.

1. 2 wholes and 12 hundredths

2. 1 whole and 5 tenths

3. 2 wholes and 12 hundredths

4. 1 whole and 5 tenths

5. \( 6 \frac{7}{10} = \) _____

6. \( 9 \frac{3}{10} = \) _____

7. \( 4 \frac{59}{100} = \) _____

8. \( 7 \frac{15}{100} = \) _____

9. \( 1 \frac{8}{100} = \) _____

10. \( 4 \frac{9}{10} = \) _____

11. \( 8 \frac{64}{100} = \) _____

12. \( 1 \frac{1}{100} = \) _____

13. \( 5 \frac{14}{100} = \) _____
Problem-Solving Strategy: Work Backward

Work Backward

Aretha rode on a bus for 2 miles from home to the train station. Then she took a train to the city. She returned home the same way. She traveled 16 miles total. How many miles did she travel on the train each way?

<table>
<thead>
<tr>
<th>Step 1 Understand</th>
<th>What do you need to find?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>You need to find how many miles she traveled each way on the train.</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Step 2 Plan</th>
<th>Make a plan.</th>
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<tr>
<td></td>
<td>Work backward.</td>
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<table>
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<tr>
<th>Step 3 Solve</th>
<th>Carry out your plan.</th>
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<tbody>
<tr>
<td>Step 1</td>
<td>Find the number of miles each way.</td>
</tr>
<tr>
<td></td>
<td>(16 \div 2 = 8)</td>
</tr>
<tr>
<td>Step 2</td>
<td>She traveled 2 miles on the bus each way.</td>
</tr>
<tr>
<td></td>
<td>(8 - 2 = 6)</td>
</tr>
<tr>
<td></td>
<td>She traveled 6 miles each way on the train.</td>
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<table>
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<tr>
<th>Step 4 Check</th>
<th>Check your answer.</th>
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<tr>
<td></td>
<td>Make sure your answer is reasonable.</td>
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</table>

Solve. Use the work backward strategy.

1. The South Sound Ferry has a snack bar. Drinks cost $1 and hamburgers cost $3. Julia has 1 drink and 1 hamburger. Julia and Harry spend $12 altogether. How many drinks and hamburgers does Harry have?

2. Tickets for the ferry are $5 for adults and $2 for children. The Lin family spends $16 to ride the ferry. How many children do Mr. and Mrs. Lin have?
3. Marisol and her sister Marta spend $3 each for two bus tickets to the carnival. Once at the carnival, Marisol buys a popcorn for $4 and Marta buys a hot dog for $2. They each get a caramel apple, which cost $2 each. If they began with $20.00 to share and need to save at least $3 to get back home, do they have any money to spend after eating? How much?

4. Bethany and Andrey want to go to the library. Andrey lives 10 blocks away from the library. Bethany will be walking from the park, which is 7 blocks away from Andrey’s house. If Bethany stops first to pick up Andrey, how many total blocks will she walk to the library? How many more blocks will she walk than Andrey?

5. Samantha’s mother has given her 2 hours to play any of her 4 favorite video games. It will take her 30 minutes to play one game and 45 minutes to play another. The third game takes 20 minutes to play and the fourth game takes one hour and 20 minutes. List three different combinations of games Samantha can play completely in the amount of time her mother has given her?
Write a fraction and a decimal for each shaded part.

1. 

2. 

3. 

4. Sadie went to the pet store to buy fish food. She spent 4 dimes and 10 pennies. What fraction of a dollar did Sadie spend?
Choose the Best Strategy

Justina is planting a row of shrubs in her backyard. She places shrubs 3 feet apart over a distance of 20 yards. She places the first shrub 3 feet from the edge of the yard. How many shrubs does Justina plant?

**Step 1**
Understand

Be sure you understand the problem.
Read carefully.

What facts do you know?
- The shrubs are spread over a distance of ______ yards.
- Justina begins 3 feet from the edge of the yard and places shrubs ______ feet apart.

What do you need to find?
- You need to find the number of feet in ______ yards.
- You need to find how many ____________.

**Step 2**
Plan

Make a plan.
Choose a strategy.

To find the answer, you can draw a diagram.
Find the number of feet in 20 yards.
Show a distance that is that many feet long.
Count by 3s to see how many shrubs Justina uses if they are placed 3 feet apart.

To find the answer, you can also write an equation.
All the shrubs are the same distance apart.
Use division to find how many shrubs Justina uses.
Step 3 Solve

Carry out your plan.

How many feet are in 20 yards?
1 yard = 3 feet
20 \times 3 = 60

Draw a diagram. Show a 60-foot distance. Count by 3s, adding tick marks as shown.

0 3 6 9 12 15 18 21 24 27 30 33 36 39 42 45 48 51 54 57 60

Count the tick marks from 3 to 60. Justina uses _____ shrubs.

Step 4 Check

Is the solution reasonable?
Reread the problem.
Does your answer make sense? Yes  No
Which method do you prefer? Explain.

Use any strategy shown below to solve.

- Make an organized list
- Act it out
- Draw a picture  - Use logical reasoning
- Work backward

1. There are 900 seconds in 15 minutes. How many seconds are in one hour?

2. Adelaide’s parents are having a dinner party. There are 112 guests invited. Should 5, 6, or 8 guests sit at each table so that each table has the same number of guests?

Reteach

Problem-Solving Investigation  (continued)
Multiply Multiples of 10, 100, and 1,000

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, $5 \times 30 = 150$.

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. You may use models.

1. $3 \times 20 = \underline{\phantom{000}} \text{ tens} = \underline{\phantom{000}}$
2. $4 \times 40 = \underline{\phantom{000}} \text{ tens} = \underline{\phantom{000}}$

3. $7 \times 20 = \underline{\phantom{000}} \text{ tens} = \underline{\phantom{000}}$
4. $4 \times 20 = \underline{\phantom{000}} \text{ tens} = \underline{\phantom{000}}$

5. $2 \times 30 = \underline{\phantom{000}}$
6. $3 \times 30 = \underline{\phantom{000}}$

7. $8 \times 20 = \underline{\phantom{000}}$
8. $5 \times 60 = \underline{\phantom{000}}$
9. $4 \times 700 = \underline{\phantom{000}}$

10. $5 \times 600 = \underline{\phantom{000}}$
11. $2 \times 9,000 = \underline{\phantom{000}}$
12. $6 \times 8,000 = \underline{\phantom{000}}$
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?

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<th><strong>Be sure you understand the problem.</strong></th>
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<tr>
<td><strong>Understand</strong></td>
<td>Read carefully.</td>
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</table>

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 ______.

<table>
<thead>
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<th>Step 2</th>
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<tr>
<td><strong>Plan</strong></td>
<td>Choose a strategy.</td>
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</table>

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.
### 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 $8 + 3 = \boxed{11}$.
There are $11$ liters in the water cooler.

### Step 4
**Check**

**Is the solution reasonable?**
Reread the problem.

How can you check your answers?


---

### Solve. Use logical reasoning.

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 a ham sandwich, one has a tuna sandwich, and one has a cheese sandwich. Ted and Cathy do not eat meat. Cathy does not eat fish. What does Ella eat?
Estimate Products

To estimate a product, round the greater factor 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. Show your work.

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. \(9 \times 2,134\)
You can multiply using models or pencil and paper.

Find $4 \times 26$.
Show 4 groups of 26.

**Step 1**
Multiply the ones.
$4 \times 6$ ones = 24 ones

**Step 2**
Multiply the tens.
$4 \times 2$ tens = 8 tens

**Step 3**
Add.

Complete to find the product. You may use models to help you.

1. $23 \times 5$
2. $44 \times 3$
3. $31 \times 8$
4. $52 \times 7$
5. $45 \times 9$
6. $45 \times 5$
7. $64 \times 6$
8. $78 \times 3$
9. $86 \times 4$
10. $92 \times 5$
11. $9 \times 52$
12. $72 \times 7$
13. $68 \times 3$
14. $5 \times 83$
15. $2 \times 88$
16. $48 \times 6$
If Dave cuts a 144-inch-long piece of wood into 8-inch pieces, how many pieces will he have?

**Step 1**
Understand

**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

- Logical reasoning
- Draw a picture
- Act it out
- Make an organized list
- Solve a simpler Problem

**Make a plan.**
Choose a strategy.

You may draw a picture or 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.
### Reteach

**Problem-Solving Investigation (continued)**

#### Step 3

**Solve**

**Carry out your plan.**

**Plan 1** Draw a diagram. Count up groups of 8.

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<tr>
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<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
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<tbody>
<tr>
<td>8</td>
<td>16</td>
<td>24</td>
<td>32</td>
<td>40</td>
<td>48</td>
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<td>56</td>
<td>64</td>
<td>72</td>
<td>80</td>
<td>88</td>
<td>96</td>
</tr>
<tr>
<td>104</td>
<td>112</td>
<td>120</td>
<td>128</td>
<td>136</td>
<td>144</td>
</tr>
</tbody>
</table>

Count. There are _____ pieces of wood in all.

**Plan 2** Write a division sentence.

______ ÷ ______ = ______

He will have _____ pieces of wood.

#### Step 4

**Check**

**Is the solution reasonable?**

Reread the problem.

How can you check your answer?

---

### 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?
Reteach

Multiply Two-Digit Numbers

Find \(4 \times 16\).

**Step 1**
Multiply the ones. Regroup if necessary.

\[
\begin{array}{c}
2 \leftarrow \text{2 tens} \\
16 \\
\times 4 \\
4 \leftarrow \text{4 ones}
\end{array}
\]

**Think:** \(4 \times 16 = 24\) ones

24 ones = 2 tens 4 ones

So, \(4 \times 16 = 64\).

**Step 2**
Multiply the tens. Add all the tens.

\[
\begin{array}{c}
2 \\
16 \\
\times 4 \\
64
\end{array}
\]

**Think:** \(4 \times 1 \text{ ten} = 4 \text{ tens}\)
4 tens + 2 tens = 6 tens

Multiply. Remember to regroup if necessary.

1. \(15 \times 3\)  
2. \(38 \times 3\)  
3. \(59 \times 7\)  
4. \(68 \times 2\)  
5. \(74 \times 8\)

6. \(28 \times 5\)  
7. \(82 \times 6\)  
8. \(45 \times 4\)  
9. \(49 \times 2\)  
10. \(53 \times 8\)

11. \(45 \times 6\)  
12. \(58 \times 5\)  
13. \(38 \times 7\)  
14. \(95 \times 4\)  
15. \(34 \times 8\)

16. \(2 \times 39 = \)  
17. \(45 \times 7 = \)  
18. \(6 \times 77 = \)
Reteach

Multiply Greater Numbers

Use what you know about multiplying 2-digit numbers to multiply 3- and 4-digit numbers.

Find $2 \times 2,739$.

**Step 1**
Multiply the ones. Regroup if necessary.

```
1  2,739
×  2
8
```

$2 \times 9$ ones = 18 ones

18 ones = 1 ten 8 ones

**Step 2**
Multiply the tens. Regroup if necessary.

```
1  2,739
×  2
78
```

$2 \times 3$ tens = 6 tens

6 tens + 1 ten = 7 tens

**Step 3**
Multiply the hundreds. Regroup if necessary.

```
1  2,739
×  2
478
```

$2 \times 7$ hundreds = 14 hundreds = 1 thousand 4 hundreds

**Step 4**
Multiply the thousands. Regroup if necessary.

```
1  2,739
×  2
5,478
```

$2 \times 2$ thousands = 4 thousands

4 thousands + 1 thousand = 5 thousands

---

Multiply.

1. $252 \times 3$
2. $164 \times 4$
3. $736 \times 6$
4. $205 \times 8$
5. $1,246 \times 3$
6. $5,718 \times 4$
7. $3,962 \times 7$
8. $2,498 \times 5$