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### Multiplying and Dividing Larger Numbers

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To the Teacher

This Practice and Homework Book provides reinforcement of the concepts and skills explored in the Pearson Math Makes Sense 4 program.

There are two sections in the book. The first section follows the sequence of Math Makes Sense 4 Student Book. It is intended for use throughout the year as you teach the program. A two-page spread supports the content of each core lesson in the Student Book.

In each Lesson:

Quick Review summarizes the math concepts and terminology of the Student Book lesson.

The right page is the “homework” page, to be completed by the student with the assistance of a family member.

Try These presents questions the student can use to check understanding of the math concepts and skills in each lesson.

Stretch Your Thinking presents an extension question.

Math at Home

The second section of the book, on pages 145 to 156, consists of 3 pull-out Math at Home magazines. These fun pages contain intriguing activities, puzzles, rhymes, and games to encourage home involvement. The perforated design lets you remove, fold, and send home this eight-page magazine after the student has completed Units 3, 6, and 8.
To the Family

This book will help your child practise the math concepts and skills that have been explored in the classroom. As you assist your child to complete each page, you have an opportunity to become involved in your child's mathematical learning.

The left page of each lesson contains a summary of the main concepts and terminology of the lesson. Use this page with your child to review the work done in class. The right page contains practice.

Here are some ways you can help:

- With your child, read over the Quick Review. Encourage your child to talk about the content and explain it to you in his or her own words.
- Read the instructions with (or for) your child to ensure your child understands what to do.
- Encourage your child to explain his or her thinking.
- Some of the pages require specific materials. You may wish to gather items such as a centimetre ruler, index cards, a measuring tape, scissors, number cubes labelled 1 to 6, and paper clips.

Many of the Practice sections contain games that will also improve your child's math skills. You may have other ideas for activities your child can share with the rest of the class.

The Math at Home pull-out pages 145 to 156 provide more fun activities.
Look at this hundred chart.

➤ There is a pattern in the circled numbers.
The pattern rule is:
Start at 3. Count on by 3s.

➤ There is a pattern in the positions of the squares with circles.
The pattern rule is:
The squares with circles lie along every third diagonal.
The diagonals go 1 down, 1 left.

**Quick Review**

Try These

1. Look at the squares with circled numbers on this hundred chart.
   a) Describe the position pattern.

   ________________________________________________________________
   ________________________________________________________________

   b) Write the number pattern.

   ________________________________________________________________

   c) Write a pattern rule for the number pattern.

   ________________________________________________________________

   d) Circle numbers to complete the pattern on the hundred chart.
Practice

1. a) Start at 102. Count on by 2s. Circle these numbers.
   b) Start at 102. Count on by 5s. Put an X on each number.
   c) Write the numbers that have both an X and are circled.
      __________________________
      __________________________
   d) Write the pattern rule for the number pattern in part c.
      __________________________

2. Look at the squares with circled numbers in this multiplication chart.
   a) Write a pattern rule for the position pattern.
      __________________________
      __________________________
      __________________________
   b) Write a pattern rule for the number pattern.
      __________________________
      __________________________

Stretch Your Thinking

Follow this position rule. Put an X in the squares on the chart. The squares with an X lie along every third diagonal, starting at the first diagonal. The diagonals go 1 down and 1 right.
Quick Review

➤ Here is a pattern of squares drawn on dot paper.

One pattern rule for the number of dots on the perimeter is:
Start at 4. Add 4 each time.

Another pattern rule for the number of dots is:
Multiply the square number by 4.

The number of dots on any perimeter is a number we get when we start at 0 and skip count by 4.
For the 10th square, skip count by 4 ten times:
4, 8, 12, 16, 20, 24, 28, 32, 36, 40
The 10th square will have 40 dots on its perimeter.

Try These

1. a) Complete the table for this pattern.

<table>
<thead>
<tr>
<th>Triangle</th>
<th>Number of Dots on Perimeter</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

b) Write the pattern rule.

c) Which triangle will have 21 dots? _________ 30 dots? _________

d) Will any triangle have 22 dots? _____
   Why or why not? __________________________
Practice

1. a) Complete the table for this pattern of regular hexagons.

\[
\begin{array}{c}
\text{Figure 1} \\
\text{Figure 2} \\
\text{Figure 3} \\
\text{Figure 4}
\end{array}
\]

The side length of each hexagon is 1 unit.

b) Write the pattern rule for the perimeters.

\[
\begin{array}{|c|c|}
\hline
\text{Figure} & \text{Perimeter (units)} \\
\hline
1 & 6 \\
2 & \\
3 & \\
4 & \\
\hline
\end{array}
\]

c) Which figure will have a perimeter of 22 units? _____ 34 units? _____

d) Predict the perimeter of the 10th figure. ___________________________

e) Will any figure have a perimeter of 40 units? Explain. _______________

2. a) Complete the table for this pattern.

\[
\begin{array}{c}
\text{Figure 1} \\
\text{Figure 2} \\
\text{Figure 3} \\
\text{Figure 4}
\end{array}
\]

b) Write the pattern rule for the areas.

\[
\begin{array}{|c|c|c|}
\hline
\text{Figure} & \text{Perimeter (units)} & \text{Area (square units)} \\
\hline
1 & & \\
2 & & \\
3 & & \\
4 & & \\
\hline
\end{array}
\]

Stretch Your Thinking

1. a) Which figure in question 2 will have a perimeter of 60 units? __________

What will its area be? _____________________________________________

b) Which figure in question 2 will have an area of 81 square units? __________

What is its perimeter? _____________________________________________
Quick Review

Here is a pattern.

From the table, the Squares in a Figure increase by 2.

Here are 2 different ways to build this pattern:

<table>
<thead>
<tr>
<th>Pattern 1</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 1</td>
<td>Figure 2</td>
<td>Figure 3</td>
<td>Figure 4</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pattern 2</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 1</td>
<td>Figure 2</td>
<td>Figure 3</td>
<td>Figure 4</td>
<td></td>
</tr>
</tbody>
</table>

The pattern rule for the number of squares in a figure is:
Start at 2. Add 2 each time.

Try These

1. a) Use counters to build this pattern.
   Record the pattern below.

<table>
<thead>
<tr>
<th>Figure</th>
<th>Counters in a Figure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>7</td>
</tr>
</tbody>
</table>

b) What is a pattern rule?
Practice

1. a) Use toothpicks to build this pattern. Draw the pattern below.

<table>
<thead>
<tr>
<th>Figure</th>
<th>Toothpicks in a Figure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>4</td>
<td>8</td>
</tr>
</tbody>
</table>

b) Write a pattern rule. ____________________________________________

c) How many toothpicks would be in the eighth figure? ________________

2. a) Use counters to build this pattern. Record the pattern below.

<table>
<thead>
<tr>
<th>Figure</th>
<th>Counters in a Figure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>4</td>
<td>11</td>
</tr>
</tbody>
</table>

b) Build the pattern in a different way. Record the pattern below.

c) Write a pattern rule: ____________________________________________

Stretch Your Thinking

Choose a pattern rule. Complete the data in the table. Draw the pattern below.

<table>
<thead>
<tr>
<th>Figure</th>
<th>Squares in a Figure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>
Quick Review

Here are 3 ways to solve this subtraction equation: 15 – □ = 6

➤ Use counters.

Put out 15 counters. Take away all but 6 counters. Count the counters you took away.

So, 15 – 9 = 6

➤ Draw a picture.

15 – 9 = 6

□ = 9 is the solution to the equation.

➤ Use guess and test.

Guess: □ = 7
Test: 15 – 7 = 8  This is too low.

Guess: □ = 9
Test: 15 – 9 = 6  This is correct.

Try These

1. Use counters to solve each equation.
   Rewrite each equation.
   Replace the symbol with the correct value.

   a) 8 + □ = 40

   b) 25 – □ = 15

   c) □ + 17 = 24

   d) □ – 25 = 20
1. Write an equation for each set of counters.
   a) 
   b) 

2. Use counters to solve each equation.
   a) \( \triangle - 8 = 8 \)
   b) \( 7 + \triangle = 24 \)
   c) \( 15 - \triangle = 13 \)

3. Draw a picture to solve each equation.
   a) \( 19 - \Box = 14 \)
   b) \( \Box + 5 = 16 \)

4. Use guess and test to solve each equation.
   a) \( 53 + \Box = 68 \)
   b) \( 37 - \triangle = 14 \)

5. Write a story problem you could solve using the equation: \( 20 = 38 - \Box \)
   Solve the equation.

   ____________________________________________________________
   ____________________________________________________________

Stretch Your Thinking

Solve: \( 126 + \Box + 847 = 1000 \) \( \Box = \) ______
Quick Review

Here are 3 ways to solve this multiplication equation: $4 \times \square = 12$

➤ Use counters.
Put out 12 counters. Divide the counters into 4 equal groups.

➤ Draw a picture.
$4 \times 3 = 12$

➤ Use mental math.
Think of a related division fact.
What do we divide 12 by to get 4?
$12 \div 3 = 4$
So, $4 \times 3 = 12$

Try These

1. Use counters to solve each equation.

   a) $5 \times \square = 20$
      $\square = \underline{\phantom{0}}$

   b) $24 \div \square = 6$
      $\square = \underline{\phantom{0}}$

   c) $\square \div 3 = 6$
      $\square = \underline{\phantom{0}}$

   d) $\square \times 8 = 32$
      $\square = \underline{\phantom{0}}$

   e) $2 \times 3 = \square$
      $\square = \underline{\phantom{0}}$

   f) $7 \times 6 = \square$
      $\square = \underline{\phantom{0}}$
1. Write a multiplication and division equation for each picture.

a) __________________________  __________________________
   __________________________  __________________________

b) __________________________  __________________________
   __________________________  __________________________

2. Draw a picture to solve each equation.

a) \(9 \times \Box = 18\)  
   b) \(14 \div \Box = 2\)  
   c) \(\Box \times 6 = 12\)

\[\Box = \underline{______}\]  
\[\Box = \underline{______}\]  
\[\Box = \underline{______}\]

3. Use mental math to solve each equation.

a) \(\Box \times 9 = 81\)  
   b) \(21 \div \triangle = 3\)  
   c) \(3 \times \triangle = 27\)

\[\Box = \underline{______}\]  
\[\triangle = \underline{______}\]  
\[\triangle = \underline{______}\]

4. Write a story problem that could be solved by using this equation: \(28 \div \Box = 7\). Solve the problem.

________________________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________

Stretch Your Thinking

Use these numbers and some of these symbols: 3, 4, \(\Box\), \(\times\), \(\div\), \(=\). Write as many different equations as you can.
Quick Review

You can show the number 1453 in different ways.

➤ Use Base Ten Blocks.

➤ Use a place-value chart.

<table>
<thead>
<tr>
<th>Thousands</th>
<th>Hundreds</th>
<th>Tens</th>
<th>Ones</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4</td>
<td>5</td>
<td>3</td>
</tr>
</tbody>
</table>

➤ Use expanded form. $1453 = 1000 + 400 + 50 + 3$

➤ Use words. 1453 is one thousand four hundred fifty-three.

The number 1453 is written in standard form. Every digit has a place value, depending on its position.

Try These

1. Write each number in standard form.
   a) two thousand six hundred thirteen _______
   b) $8000 + 600 + 40 + 1$ _______

2. Write each number in expanded form.
   a) $7125$ ______________________
   b) $2307$ ______________________

3. Write each number in words.
   a) $1620$ ______________________
   b) $3408$ ______________________
Practice

1. Complete the chart.

<table>
<thead>
<tr>
<th>Standard Form</th>
<th>Expanded Form</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Write each number in words.
   a) 3602 ______________________________________________________
   b) 5045 ______________________________________________________

3. Use each of these digits once to make each 4-digit number: 4, 2, 7, 5
   a) the greatest possible number ______
   b) the least possible number ______
   c) the greatest number with 5 tens ______
   d) the least number with 5 ones ______

Stretch Your Thinking

Use 5, 3, 1, and 7 once in each number you make.
Make as many 4-digit numbers as you can.

___________________________________________________________________
___________________________________________________________________
Comparing and Ordering Numbers

Quick Review

Here are some ways to order the numbers 3261, 3621, and 2163 from least to greatest.

➤ Use a place-value chart.

<table>
<thead>
<tr>
<th>Thousands</th>
<th>Hundreds</th>
<th>Tens</th>
<th>Ones</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>2</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>6</td>
<td>3</td>
</tr>
</tbody>
</table>

2163 has the fewest thousands, so it is the least number. Both 3261 and 3621 have 3 thousands. Compare their hundreds. So, 3261 < 3621

➤ Use a number line.

From least to greatest: 2163, 3261, 3621

Try These

1. Compare each pair of numbers. Write >, <, or =.

   a) 627 \[485 \]
   b) 2641 \[4824 \]
   c) 2683 \[2683 \]

2. Write the numbers in order from least to greatest.

   758, 709, 741

3. Write the numbers in order from greatest to least.

   7148, 6271, 7285
1. Play this game with a partner.
   The object of the game is to make the greater number.
   You will need a paper bag containing 10 cards with the digits 0 to 9.

   ➤ Draw a card from the bag.
   Record the digit in any space in the first row of your game board.
   Return the card to the bag.

   ➤ Take turns until each player fills all four spaces in a row.

   ➤ Compare your numbers.
   Write > or < in the box between the numbers.
   The player with the greater number wins a point.

   ➤ Play two more rounds.
   The player with the most points at the end of the game wins.

<table>
<thead>
<tr>
<th>Player 1</th>
<th>Player 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>____ ____ ____ ____</td>
<td>____ ____ ____ ____</td>
</tr>
<tr>
<td>____ ____ ____ ____</td>
<td>____ ____ ____ ____</td>
</tr>
<tr>
<td>____ ____ ____ ____</td>
<td>____ ____ ____ ____</td>
</tr>
<tr>
<td>____ ____ ____ ____</td>
<td>____ ____ ____ ____</td>
</tr>
</tbody>
</table>

2. a) Put your numbers from the game in order from least to greatest.

   ____________________________________________________________

   b) Put your partner’s numbers in order from greatest to least.

   ____________________________________________________________

**Stretch Your Thinking**

Make up three 4-digit numbers.
Order the numbers from greatest to least.
Quick Review

Here are four ways to sort these numbers.

86  225  895  300  75  1000  721

Venn Diagram

Venn Diagram

Venn Diagram

Carroll Diagram

<table>
<thead>
<tr>
<th>Digits add to less than 10</th>
<th>Digits add to 10 or more</th>
</tr>
</thead>
<tbody>
<tr>
<td>Even</td>
<td>300 1000 86</td>
</tr>
<tr>
<td>Odd</td>
<td>225 75 721 895</td>
</tr>
</tbody>
</table>

Try These

1. Use each Venn diagram to sort these numbers.
   94  27  85  13  44  76

   a) b) c)

   Odd Even

   Odd

   Even

   Digits add to 13

   Less than 50

   Multiples of 2
1. Sort these numbers in each Venn diagram.
   421  718  246  967  358  709  626
   a) b)

2. Use a coloured pencil to write one more number in each part of the Venn diagrams in question 1.

3. a) Sort these numbers in the Carroll diagram.
   56  101  77  84  50  126
   91  105
   b) Use a coloured pencil to write another number in each box in the Carroll diagram.

4. Elmo travels to Sweden every three years.
   Sven visits Sweden every four years.
   Both men went to Sweden in 2006.
   Use a Venn diagram to find the year in which both men will visit Sweden again.

Stretch Your Thinking

Choose two attributes. Label the circles.
Sort these numbers in the Venn diagram.
1514  2658  947  352  685  4109
Estimating Sums

Quick Review

When a question asks “about how many,” you can estimate.

Here are some ways to estimate the sum of 294 + 351.

➤ Write each number to the closest 100.
  
  294 is closest to 300.
  351 is closest to 400.
  300 + 400 = 700
  So, 294 + 351 is about 700.

➤ Use front-end estimation.
  
  Add the first digits of the numbers. For a closer estimate:
  Think about 94 and 51.
  200 + 300 = 500
  This is about 100 + 50 = 150.
  So, 294 + 351 is about 500. So, 294 + 351 is about 500 + 150 = 650.

Try These

1. Estimate each sum.
   
   a) 198 + 389  
   Estimate: ________
   
   b) 119 + 408  
   Estimate: ________
   
   c) 640 + 192  
   Estimate: ________
   
   d) 79 + 272  
   Estimate: ________
   
   e) 516 + 482  
   Estimate: ________
   
   f) 291 + 291  
   Estimate: ________

2. William estimated 246 + 585 as 700.
   Is his estimate high or low? Explain.
   
   ________________________________________________________________
   
   ________________________________________________________________
   
   ________________________________________________________________
Practice

1. About how many beads would you have if you bought these sizes:

   a) small and large? ______________  
   b) medium and jumbo? __________  
   c) medium and large? ___________  
   d) jumbo and small? ___________

2. The toy shop sold 117 wind-up cars and 289 battery-operated cars
   in one week. About how many cars did it sell? _____________________

3. Yolanda has a desktop publishing business. She wants to print
   1000 items today. She actually prints 352 brochures and 581 flyers today.
   a) About how many items did she print? _____________________________
   b) Did Yolanda reach her goal? Explain.
      ____________________________________________________________________
      ____________________________________________________________________

4. Last summer, 227 children signed up for T-ball and 139 signed up for
   baseball. About how many children signed up altogether? __________

Stretch Your Thinking

The estimated sum of two numbers is 1000.
What might the numbers be? Give three different answers.
Quick Review

➤ Use mental math to add: 267 + 197
Use the strategy of make a “friendly” number.
197 is 200 – 3.
Add 200, then take away 3.
267 + 200 = 467
467 – 3 = 464
So, 267 + 197 = 464

➤ Count on to add: 271 + 580
Add 271 and 500. 271 + 500 = 771
Count on by 10s eight times.
771, 781, 791, 801, 811, 821, 831, 841, 851
So, 271 + 580 = 851

➤ Use mental math to add: 415 + 342
Use the strategy of “adding on” from left to right.
Add on hundreds, then tens, and then ones.
Think: 415 + 300 + 40 + 2
Count on 3 hundreds: 415, 515, 615, 715
Count on 4 tens: 715, 725, 735, 745, 755
Then add 2: 755 + 2 = 757
So, 415 + 342 = 757

200 is a friendly number because it is easy to add 200.

Try These

1. Use mental math to add.
   a) 262 + 345 = _____  b) 497 + 222 = _____  c) 370 + 163 = _____
   d) 399 + 544 = _____  e) 262 + 290 = _____  f) 196 + 341 = _____

2. Becky gathered 316 clams and Charlie gathered 286.
   How many clams did they gather in all? Use mental math to find out. _____
Use mental math.

1. Add.
   \[ \text{a)} \quad 690 + 284 = \quad \quad \text{b)} \quad 2131 + 3468 = \quad \quad \]
   \[ \text{c)} \quad 352 + 213 = \quad \quad \quad \text{d)} \quad 229 + 493 = \quad \quad \]

   For which problems did you make a “friendly” number? ________________

2. Look at these containers.  
   If you bought the following groups of animals, how many toy animals would you have?
   \[ \text{a)} \quad \text{farm animals and zoo animals} \quad \quad \quad \text{b)} \quad \text{sea creatures and jungle animals} \quad \quad \quad \]
   \[ \text{c)} \quad \text{zoo animals and jungle animals} \quad \quad \quad \]

3. Ridgetown has a population of 8317 people. Mayberry has a population of 1291.  
   How many people live in the two towns? _______

4. The cafeteria sold 123 cartons of chocolate milk and 204 cartons of white milk. How many cartons of milk were sold? _______

**Stretch Your Thinking**

Use mental math to add: \[ \quad 453 + 197 + 205 = \quad \quad \quad \]

Describe the strategy you used. _______________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
Quick Review

Geraldo has 276 hockey cards and 397 baseball cards. To find how many cards Geraldo has in all, add: 276 + 397

➤ Add from right to left.

\[
\begin{array}{c}
276 \\
+ \ 397 \\
\hline
500 \\
160 \\
13 \\
\hline
673
\end{array}
\]

Geraldo has 673 cards in all.

Try These

1. Add.
   a) 295 + 104  
   b) 327 + 415  
   c) 299 + 463  
   d) 508 + 419  
   e) 285 + 79

2. There were 139 more people at the soccer game on Saturday than on Friday. On Friday there were 472 people at the game.

   How many people were at the game on Saturday? ____________________
1. Estimate first. Circle the letters next to the examples for which the sum will be less than 900. Then, add to find all the sums.
   a) 738  
      + 191  
   b) 637  
      + 439  
   c) 109  
      + 488  
   d) 718  
      + 237  
   e) 367  
      + 662  
   f) 482  
      + 519  
   g) 234  
      + 410  
   h) 689  
      + 130  
   i) 651  
      + 259  
   j) 318  
      + 491

2. Estimate first. Circle the letters next to the examples for which the sum will be greater than 700. Then, add to find all the sums.
   a) 418  
      + 231  
   b) 526  
      + 437  
   c) 381  
      + 294  
   d) 108  
      + 592  
   e) 397  
      + 459  
   f) 362  
      + 282  
   g) 583  
      + 199  
   h) 435  
      + 428  
   i) 339  
      + 382  
   j) 282  
      + 531

3. Add: 419 + 386
   Explain your strategy.________________________________________________________________

4. What is the greatest 3-digit number you can add to 457 without having to regroup in any place? ______

**Stretch Your Thinking**

The sum of two numbers is 853. What might the numbers be?
Find two pairs of numbers. ___________________________________________
Quick Review

➤ 1756 + 4828
Use column addition.

<table>
<thead>
<tr>
<th></th>
<th>1000s</th>
<th>100s</th>
<th>10s</th>
<th>1s</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>7</td>
<td>5</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>+ 4</td>
<td>8</td>
<td>2</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>15</td>
<td>7</td>
<td>14</td>
</tr>
</tbody>
</table>

15 hundreds is 1 thousand 5 hundreds
14 ones is 1 ten 4 ones

➤ 1756 + 2469
Add from right to left.

Add the ones. Add the tens. Add the hundreds. Add the thousands.

\[
\begin{array}{c}
1756 \\
+ 2469 \\
\hline
5 \\
\end{array}
\quad \begin{array}{c}
1756 \\
+ 2469 \\
\hline
25 \\
\end{array}
\quad \begin{array}{c}
1756 \\
+ 2469 \\
\hline
225 \\
\end{array}
\quad \begin{array}{c}
1756 \\
+ 2469 \\
\hline
4225 \\
\end{array}
\]

Estimate to check that the sum is reasonable.
1756 is close to 2000. 2469 is close to 2000. 4225 is close to 4000.
2000 + 2000 = 4000 So, the sum is reasonable.

Try These

1. Find each sum. Estimate to check.
   a) 5558 + 1343
   b) 3047 + 2828
   c) 4189 + 3673
   d) 1847 + 5684

2. Estimate each sum.
   a) 3276 + 4192
   b) 1258 + 3769
   c) 2672 + 3409
   Estimate: _____  Estimate: _____  Estimate: _____
Practice

1. Play this game with a partner.
   You will need:
   1 number cube labelled 1 to 6

   ➤ Take turns rolling the number cube.
      On each roll, both players record the digit rolled
      in one of the boxes in their first addition grid.
   ➤ After 8 rolls, players add.
      The player with the greater sum wins.
   ➤ Repeat with the other addition grids.

<table>
<thead>
<tr>
<th>Player A</th>
<th>Player B</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Grid 1" /></td>
<td><img src="image2.png" alt="Grid 1" /></td>
</tr>
<tr>
<td><img src="image3.png" alt="Grid 2" /></td>
<td><img src="image4.png" alt="Grid 2" /></td>
</tr>
<tr>
<td><img src="image5.png" alt="Grid 3" /></td>
<td><img src="image6.png" alt="Grid 3" /></td>
</tr>
<tr>
<td><img src="image7.png" alt="Grid 4" /></td>
<td><img src="image8.png" alt="Grid 4" /></td>
</tr>
</tbody>
</table>

Stretch Your Thinking

The sum of two 4-digit numbers is 4589.
What might the two numbers be?
Give two different answers.
Quick Review

Here are some strategies for estimating differences.

➤ Estimate: 513 – 289
   Write each number to the nearest 100 and subtract.
   500 – 300 = 200
   So, 513 – 289 is about 200.

➤ Estimate: 4592 – 2369
   Use front-end estimation.
   4592 → 4000
   2369 → 2000
   4000 – 2000 = 2000
   So, 4592 – 2369 is about 2000.

Try These

1. Estimate each difference.
   a) 749 – 263  
      Estimate: __________  
   b) 504 – 327  
      Estimate: __________  
   c) 988 – 214  
      Estimate: __________  
   d) 4580 – 1235  
      Estimate: __________  
   e) 677 – 48  
      Estimate: __________  
   f) 6896 – 1583  
      Estimate: __________

2. Natalie estimated 584 – 126 as 400. Is her estimate high or low? Explain.

__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________

To get a closer estimate, write only one number to the closest 100.
513 – 300 = 213.
So, 513 – 289 is about 213.

Use the digits in the thousands place. Replace the other digits with zeros.
1. Use the data in the chart to estimate each difference.

<table>
<thead>
<tr>
<th>School Lunches Served</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Day</strong></td>
</tr>
<tr>
<td>Monday</td>
</tr>
<tr>
<td>Tuesday</td>
</tr>
<tr>
<td>Wednesday</td>
</tr>
<tr>
<td>Thursday</td>
</tr>
<tr>
<td>Friday</td>
</tr>
</tbody>
</table>

a) About how many more lunches were served on Friday than on Monday? ________________________________

b) About how many more lunches were served on Thursday than on Tuesday? ________________________________

c) About how many more lunches were served on Wednesday than on Tuesday? ________________________________

2. Laleh estimated the difference of 7654 and 4111 as 4000, and Sam estimated the difference as 3500.

a) How might Laleh have estimated?

_____________________________________________________________

b) How might Sam have estimated?

_____________________________________________________________

c) Whose estimate is better? Explain.

_____________________________________________________________

**Stretch Your Thinking**

Find a pair of 3-digit numbers that have an estimated difference of 520.
Quick Review

Here are some strategies for using mental math to subtract.

➤ Use the strategy of “make a friendly number.”

Subtract: 719 – 398
Add 2 to 398 to make 400.
Add 2 to 719 to make 721.
721 – 400 = 321
So, 719 – 398 = 321

Subtract: 437 – 103
Subtract 100 instead of 103.
Then subtract 3.
337 – 3 = 334
So, 437 – 103 = 334

➤ Use the strategy of “counting on.”

Subtract: 441 – 230
Count: 230  330  430  440  441
+100  +100  +10  +1 = 211
So, 441 – 230 = 211

Try These

1. Use mental math to subtract.
   a) 427 – 299 = ________  
   b) 625 – 495 = ________  
   c) 586 – 397 = ________  
   d) 256 – 101 = ________  
   e) 748 – 403 = ________  
   f) 462 – 202 = ________  
   g) 4272 – 2150 = ________  
   h) 7758 – 3547 = ________  
   i) 6894 – 1673 = ________

2. Laslo travelled 637 km on Saturday and 402 km on Sunday. How much farther did he travel on Saturday than on Sunday? Use mental math to find out. ________

3. The hot dog stand served 250 hot dogs on Friday and 481 on Saturday. How many more hot dogs were served on Saturday than on Friday? Use mental math to find out. ________
1. Use mental math to find each difference. Then use the letters next to the differences to solve the riddle.

What did King Tut say when he was scared?

543 – 260 = _________ (B)  
894 – 517 = _________ (N)  
499 – 354 = _________ (M)  
532 – 220 = _________ (T)  
684 – 302 = _________ (W)  
536 – 199 = _________ (C)  
947 – 624 = _________ (L)  
622 – 415 = _________ (E)  
583 – 298 = _________ (I)  
314 – 189 = _________ (U)  
847 – 606 = _________ (Y)  
717 – 402 = _________ (Z)  
632 – 421 = _________ (F)  
231 – 111 = _________ (A)

Stretch Your Thinking

Describe two ways to find 4000 – 3894.

____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
Quick Review

There are 300 seats in the theatre. One hundred eighty-four seats are on the main floor. The rest are in the balcony.

To find how many seats are in the balcony, subtract: 300 – 184

➤ You can use place value to subtract.

You cannot take 4 ones from 0 ones.
There are no tens to regroup.
Regroup 1 hundred as 10 tens.
Regroup 1 ten as 10 ones.
Subtract the ones.
Subtract the tens.
Subtract the hundreds.

➤ You can use mental math to subtract.

Count on from 184 to 300.

You can check by adding.
Add: 184 + 116 = 300

Try These

1. Subtract.
   a) 465  
   b) 786  
   c) 574  
   d) 600  
   e) 238  
   
   \[ \begin{align*}
   &- 213 \\
   &- 229 \\
   &- 197 \\
   &- 211 \\
   &- 79
   \end{align*} \]

2. Find the difference. Use mental math.
   a) 400 – 174 = _______  
   b) 500 – 189 = _______  
   c) 347 – 215 = _______  
   d) 701 – 500 = _______  
   e) 428 – 299 = _______  
   f) 152 – 107 = _______
1. Subtract. Check your answers.
   a) \[ \begin{array}{c}
   836 \\
   - 451
   \end{array} \]  
   Check: ___
   b) \[ \begin{array}{c}
   726 \\
   - 538
   \end{array} \]  
   Check: ___
   c) \[ \begin{array}{c}
   736 \\
   - 528
   \end{array} \]  
   Check: ___

2. Use mental math to find each difference.
   a) \[ 400 - 263 = \] __________
   b) \[ 501 - 248 = \] __________
   c) \[ 450 - 231 = \] __________

3. Estimate first. Then subtract the numbers for which the difference will be less than 300.
   a) \[ \begin{array}{c}
   591 \\
   - 375
   \end{array} \]  
   b) \[ \begin{array}{c}
   436 \\
   - 168
   \end{array} \]  
   c) \[ \begin{array}{c}
   624 \\
   - 235
   \end{array} \]  
   d) \[ \begin{array}{c}
   716 \\
   - 371
   \end{array} \]  
   e) \[ \begin{array}{c}
   327 \\
   - 79
   \end{array} \]  

4. Ms. Green’s class collected 600 cans for recycling. Mr. Hso’s class collected 427 cans. How many more cans did Ms. Green’s class collect? __________

5. Sanil’s school had a book sale. On Monday they sold 697 books. On Tuesday they sold 842 books. How many more books did they sell on Tuesday? __________

**Stretch Your Thinking**

The difference of two numbers is 329. What might the numbers be? Find two pairs of numbers. __________
Quick Review

Subtract: 2053 – 997
You can use place value to subtract from right to left.

Regroup 1 ten as 10 ones.
Subtract the ones.

Regroup 1 thousand as 10 hundreds.
Subtract the hundreds.

Regroup 1 hundred as 10 tens.
Subtract the tens.

Regroup 1 ten as 10 ones.
Subtract the ones.

The sum should be the number you started with.

➤ By adding:

997
+ 1056
2053

➤ By estimating:

2000 – 1000 = 1000
1000 is close to 1056.
So, the answer is reasonable.

Try These

1. Subtract.

   a) 4532
       – 2121
   b) 5726
       – 248
   c) 7243
       – 5685
   d) 4029
       – 388

2. Subtract. Check your answer.

   a) 9354
       – 3287
       Check:
   b) 7600
       – 1452
       Check:
1. Estimate. Then subtract.
   a) 3059  b) 5138  c) 8209  d) 5439
   \[ \begin{array}{c}
   \text{– 2298} \\
   \text{– 4479} \\
   \text{– 5919} \\
   \text{– 3216}
   \end{array} \]

   Estimate: _______  Estimate: _______  Estimate: _______  Estimate: _______

2. Manjit and Irene like to collect acorns.
   Manjit collected 1286 acorns and Irene collected 898.
   How many more acorns did Manjit collect than Irene? _______

3. Play this game with a partner.
   You will need:
   1 number cube
   paper
   pencils

   ➤ Each player draws a subtraction grid like this:

   \[ \begin{array}{c}
   \hline
   \text{–} \\
   \text{□ □ □ □}
   \end{array} \]

   ➤ Take turns rolling the number cube.
   After each turn, both players record the digit rolled in any box in their grid.
   ➤ After 8 rolls, players subtract.
   The player with the greater difference wins.
   Play 5 or more games.

**Stretch Your Thinking**

A 3-digit number is subtracted from a 4-digit number.
The difference is 426. What could the two numbers be? Give two answers.

___________________________________________________________________
___________________________________________________________________
Quick Review

Jakob delivered 2472 flyers in March, 3854 in April, and 1962 in May.
How many flyers did Jakob deliver in all?

➤ Add: 2472 + 3854 + 1962

\[
\begin{array}{c}
2472 \\
+ 3854 \\
+ 1962 \\
\hline
8288
\end{array}
\]

Jakob delivered 8288 flyers.

Jakob was paid $165 for his work.
He bought a pair of skates for $119.
Later, he bought a hockey stick for $18.
How much money did Jakob have left?

➤ Subtract: \(165 \quad 119\)

\[
\begin{array}{c}
165 \\
- 119 \\
\hline
46
\end{array}
\]

Then subtract 18 from the result: \(46 - 18\)

\[
\begin{array}{c}
46 \\
- 18 \\
\hline
28
\end{array}
\]

Jacob has $28 left.

Try These

1. Add.
   a) \[4723 \quad 6415 \quad + 3027\]
   b) \[8962 \quad 3471 \quad + 536\]
   c) \[1357 \quad 2468 \quad + 2389\]
   d) \[4572 \quad 3002 \quad + 5679\]

2. Estimate to check each answer in question 1. Show your work.
   a) ____________________________
   b) ____________________________
   c) ____________________________
   d) ____________________________

34
1. Maddy had $1467 in her bank account. She withdrew $247 one week and $135 the next week. How much money did Maddy have left in her account?

2. Play this game with a partner. You will need a number cube labelled 1 to 6.
   ➤ Take turns to roll the number cube.
   On each roll, both players record the digit rolled in one of the boxes in the first addition grid.
   ➤ After 12 rolls, add.
   The player with the greater sum wins.
   ➤ Repeat with the other grids.

Player A

Player B

 Stretch Your Thinking

The sum of three 4-digit numbers is 5638. What might the numbers be?
Quick Review

Doubling is a strategy you can use to multiply.

➤ Use doubling to multiply by 4.
To find $4 \times 5$:
First find $2 \times 5$, then double.
$2 \times 5 = 10$
$4 \times 5 = 20$

➤ Use repeated doubling to multiply by 8.
To find $8 \times 3$:
First find $2 \times 3$, then double, then double again.
$2 \times 3 = 6$
$4 \times 3 = 12$
$8 \times 3 = 24$

➤ Begin with a fact you know.
Double one of the factors, then multiply.
You know $3 \times 4 = 12$.
Double the factor 3, then multiply: $6 \times 4 = 24$ (double of 12)
Or, double the factor 4, then multiply: $3 \times 8 = 24$ (double of 12)
When you double a factor, the product doubles.

Try These

1. Use doubling to multiply.
   a) $2 \times 7 = 14$
      $4 \times 7 =$
   b) $4 \times 3 = 12$
      $8 \times 3 =$
   c) $3 \times 5 = 15$

2. Double one of the factors each time to get a product.
   Then check the circle if the product is double the one in the box.
   a) $4 \times 3 = \square$
      \[ \bigcirc \]
      \[ \bigcirc \]
   b) $2 \times 5 = \square$
      \[ \bigcirc \]
      \[ \bigcirc \]
   c) $5 \times 3 = \square$
      \[ \bigcirc \]
      \[ \bigcirc \]
Practice

1. Use doubling to multiply.
   a) $2 \times 9 = 18$
   b) $3 \times 3 = 9$
   c) $6 \times 5 = \underline{\hspace{2cm}}$

2. Find each product.
   a) $2 \times 6 = \underline{\hspace{2cm}}$
   b) $2 \times 9 = \underline{\hspace{2cm}}$
   c) $2 \times 7 = \underline{\hspace{2cm}}$

3. Use repeated doubling to multiply.
   a) $8 \times 6 = \underline{\hspace{2cm}}$
   b) $8 \times 5 = \underline{\hspace{2cm}}$
   c) $9 \times 8 = \underline{\hspace{2cm}}$

4. What could each missing number be?
   Find as many answers as you can.
   a) $\underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = 18$
   b) $\triangle \times \bigcirc = 36$

Stretch Your Thinking

Multiply.
1. $2 \times 2 = \underline{\hspace{2cm}}$ $4 \times 2 = \underline{\hspace{2cm}}$ $8 \times 2 = \underline{\hspace{2cm}}$ $16 \times 2 = \underline{\hspace{2cm}}$ $32 \times 2 = \underline{\hspace{2cm}}$
2. $2 \times 5 = \underline{\hspace{2cm}}$ $4 \times 5 = \underline{\hspace{2cm}}$ $8 \times 5 = \underline{\hspace{2cm}}$ $16 \times 5 = \underline{\hspace{2cm}}$ $32 \times 5 = \underline{\hspace{2cm}}$
Quick Review

Think: 5 groups of 1 is $5 \times 1$.

$$5 \times 1 = 5$$

bowls fish fish in all

Also, $1 \times 5 = 5$

Think: 7 groups of 0 is $7 \times 0$.

$$7 \times 0 = 0$$

bowls fish fish in all

Also, $0 \times 7 = 0$

Think: 4 groups of 10 is $4 \times 10$.

$$4 \times 10 = 40$$

tanks fish fish in all

Also, $10 \times 4 = 40$

When 0 is a factor, the product is always 0.

When 1 is a factor, the product is always the other factor.

When 10 is a factor, the product is always the other factor with a zero added.

Try These

Multiply.

1. a) $6 \times 1 =$_______  b) $7 \times 1 =$_______  c) $4 \times 1 =$_______
2. a) $6 \times 0 =$_______  b) $3 \times 0 =$_______  c) $2 \times 0 =$_______
3. a) $7 \times 10 =$_______  b) $8 \times 10 =$_______  c) $4 \times 10 =$_______
1. Find each product.
   a) $1 \times 4 = ______$
   b) $0 \times 0 = ______$
   c) $0 \times 7 = ______$
   d) $5 \times 10 = ______$
   e) $6 \times 0 = ______$
   f) $10 \times 6 = ______$
   g) $0 \times 4 = ______$
   h) $7 \times 10 = ______$
   i) $1 \times 1 = ______$

2. Find each missing number.
   a) $4 \times ____ = 0$
   b) ____ $\times 6 = 6$
   c) $7 \times ____ = 70$
   d) ____ $\times 1 = 1$
   e) ____ $\times 5 = 50$
   f) ____ $\times 4 = 4$
   g) $1 \times ____ = 10$
   h) ____ $\times 1 = 3$
   i) $2 \times ____ = 2$

3. Write + or $\times$.
   a) $5 ____ 1 = 5$
   b) $1 ____ 1 = 1$
   c) $6 ____ 10 = 60$
   d) $10 ____ 3 = 30$
   e) $4 ____ 1 = 5$
   f) $0 ____ 2 = 0$
   g) $1 ____ 4 = 4$
   h) $1 ____ 1 = 2$
   i) $7 ____ 0 = 7$

4. Rico has 1 nickel, 5 dimes, and 7 pennies. How much money does Rico have? Show your work.

   ____________________________________________________________________
   ____________________________________________________________________

Stretch Your Thinking

Which is greater, the product of your age times 0 or the product of your age times 1? Explain.

   ____________________________________________________________________
   ____________________________________________________________________
   ____________________________________________________________________
Quick Review

You can use skip counting patterns to multiply mentally.

➤ To find $6 \times 8$, skip count by 8 six times.

8, 16, 24, 32, 40, 48

6 steps of 8 is 48.

$6 \times 8 = 48$

➤ Another way to find $6 \times 8$ is to skip count by 6 eight times.

6, 12, 18, 24, 30, 36, 42, 48

8 steps of 6 is 48.

$6 \times 8 = 48$

Try These

1. Skip count to find the missing numbers.
   a) 4, 8, 12, _____, _____, _____, _____
   b) 9, 18, 27, _____, _____, _____, _____
   c) 7, 14, 21, _____, _____, _____, _____

2. Skip count to find each product.
   a) $5 \times 4 = _____$
   b) $3 \times 8 = _____$
   c) $4 \times 3 = _____$
   d) $9 \times 2 = _____$
   e) $7 \times 5 = _____$
   f) $3 \times 7 = _____$
   g) $6 \times 8 = _____$
   h) $8 \times 8 = _____
Practice

1. a) Use the hundred chart.
   Colour all the numbers in which the ones digit and the tens digit add up to 9.
   
   b) What multiples have you coloured?
   ___________________________
   ___________________________
   ___________________________

2. Play this game with 2 or 3 friends.
   You will need:
   2 sets of cards numbered 2 to 10
   3 counters for each player
   a small container
   
   ➤ Take 3 counters each.
   ➤ Shuffle the cards and put them in a pile face down.
   ➤ Turn over the top card. This is the number you will start with.
   ➤ Go around the group. Say one number each, counting on by the number on the card.
   The player who says 100 or a number over 100 puts a counter in the container.
   The next player turns over a new card and starts the counting.
   ➤ The first person to get rid of all 3 counters wins.

Stretch Your Thinking

1. a) In the game above, which start numbers will result in a player saying 100?
   ___________________________

   b) Which start numbers will result in a player going over 100?
   ___________________________
Quick Review

You can multiply by adding groups to the facts you know.

➤ Use facts with 2 to multiply by 3. To find $3 \times 9$:

- $2 \times 9 = 18$
- $1 \times 9 = 9$

So, $3 \times 9 = 27$

➤ Use facts with 5 and 2 to multiply by 7. To find $7 \times 6$:

- $5 \times 6 = 30$
- $2 \times 6 = 12$

So, $7 \times 6 = 42$

➤ Use facts with 5 to multiply by 6. To find $6 \times 8$:

- $5 \times 8 = 40$
- $1 \times 8 = 8$

So, $6 \times 8 = 48$

➤ To multiply by an even factor, use a half, and then double. To find $8 \times 7$:

- Half of 8 is 4.
- $4 \times 7 = 28$
- $28 \times 2 = 56$

So, $8 \times 7 = 56$

➤ Use facts with 10 to multiply by 9. To find $9 \times 8$:

- $10 \times 8 = 80$
- $1 \times 8 = 8$

So, $9 \times 8 = 72$

➤ Use facts with 5 to multiply by 6. To find $6 \times 8$:

- $5 \times 8 = 40$
- $1 \times 8 = 8$

So, $6 \times 8 = 48$

Try These

1. a) $3 \times 7 = ____$
   b) $3 \times 5 = ____$
   c) $3 \times 8 = ____$

2. a) $6 \times 9 = ____$
   b) $6 \times 5 = ____$
   c) $6 \times 7 = ____$

3. a) $7 \times 7 = ____$
   b) $7 \times 9 = ____$
   c) $7 \times 8 = ____$

4. a) $9 \times 9 = ____$
   b) $9 \times 7 = ____$
   c) $9 \times 4 = ____$

5. a) $6 \times 3 = ____$
   b) $8 \times 6 = ____$
   c) $4 \times 9 = ____$
Practice

1. Name two facts that help you find each product.
   a) $4 \times 9$
   b) $7 \times 6$
   c) $6 \times 8$
   d) $9 \times 6$
   e) $4 \times 8$
   f) $8 \times 7$

2. Show how you could use the product of $4 \times 6$ to find the product of $8 \times 6$.

3. Play this game with a partner.
   You will need:
   3 number cubes labelled 1 to 6
   2 calculators
   ➤ Take turns to roll all 3 number cubes.
   Put the one with the greatest number aside.
   If you roll more than one greatest number, put only one aside.
   Roll the other 2 number cubes.
   Put the one with the greater number aside.
   Roll the last number cube.
   ➤ Add the numbers on your first 2 cubes.
   Multiply the total by the number on your third cube.
   The product is your score.
   ➤ Keep playing until one player reaches a total of 200.

Stretch Your Thinking

Show how you could use a half, then double to find the product $6 \times 9$. 
Using Patterns in a Multiplication Chart

Quick Review

You can use patterns to remember multiplication facts.

➤ In a multiplication chart, there are matching numbers on each side of the diagonal from 1 to 81.
If you know... then you know:

| 5 x 7 = 35 | 7 x 5 = 35 |
| 9 x 8 = 72 | 8 x 9 = 72 |

➤ There are patterns in the multiplication facts with 9.

- The digits in the product always add to 9.
  \[5 \times 9 = 45 \quad 4 + 5 = 9 \quad 8 \times 9 = 72 \quad 7 + 2 = 9\]

- The number multiplied by 9 is always 1 more than the tens digit in the product.
  \[6 \times 9 = 54 \quad 6 \text{ is 1 more than 5.} \quad 4 \times 9 = 36 \quad 4 \text{ is 1 more than 3.}\]

Try These

1. Complete.
   a) \(8 \times 9 = \_\times 8\)  
   b) \(3 \times 7 = 7 \times \_\)  
   c) \(6 \times 4 = \_\times 6\)

2. Multiply.
   a) \(9 \times 6 = \_\)  
   b) \(5 \times 9 = \_\)  
   c) \(2 \times 9 = \_\)
   d) \(9 \times 8 = \_\)  
   e) \(7 \times 9 = \_\)  
   f) \(4 \times 9 = \_\)
   g) \(8 \times 9 = \_\)  
   h) \(9 \times 7 = \_\)  
   i) \(9 \times 4 = \_\)
1. Play this game with a partner.

You will need:
25 counters
2 calculators
paper and pencils

➤ Decide on a number from 2 to 9. This number will be the game factor.
➤ Player A: Place a counter on any number on the board and multiply by the game factor. Record the product as your score.
➤ Player B: Place a counter on a number adjacent to Player A’s number. Multiply by the game factor and record your score.
➤ Continue playing. On each turn, place a counter next to the last one played. If an adjacent square is not empty, place the counter in any empty square.
➤ When the board is filled, the winner is the player with the highest total score.

When something is adjacent to something else, it is next to it.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>7</th>
<th>8</th>
<th>4</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>8</td>
<td>3</td>
<td>6</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>3</td>
<td>4</td>
<td>7</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>7</td>
<td>2</td>
<td>9</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>1</td>
<td>6</td>
<td>3</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Stretch Your Thinking

Suppose you are Player A. Where will you place the first counter? Explain.
Quick Review

There are 6 stools.
They will be put into equal rows.
How many stools could be in each row?

You can make an array to show each way.

2 rows of 3 3 rows of 2 1 row of 6 6 rows of 1

2 rows of 3 stools 3 rows of 2 stools 1 row of 6 stools

$6 \div 2 = 3$ $6 \div 3 = 2$

$6 \div 1 = 6$

Try These

1. Use the array to complete the sentence.
   a) $18 \div 6 = \underline{\hspace{2cm}}$
   b) $14 \div 2 = \underline{\hspace{2cm}}$
   c) $15 \div 3 = \underline{\hspace{2cm}}$
**Practice**

1. Write a division sentence for each array.

   a)  
   b)  
   c)  

2. Draw an array for each division sentence.

   a)  
   b)  
   c)  

3. Use counters. Make an array to find each answer.
   a) 20 ÷ 4 = _______ 
   b) 16 ÷ 2 = _______ 
   c) 6 ÷ 1 = _______
   d) 18 ÷ 9 = _______ 
   e) 30 ÷ 5 = _______ 
   f) 28 ÷ 7 = _______

**Stretch Your Thinking**

There are 24 members in the Boy Scout troop. They will march in the parade in equal rows. How many Boy Scouts could be in each row? Find as many answers as you can.
Quick Review

There are 42 students who want to play hockey. There are 6 players on a team. How many teams can there be? 

To find out, divide: 42 ÷ 6

Here are two ways to find 42 ÷ 6:

➤ Make an array of 42 counters with 6 counters in each row. There are 7 rows. So: 42 ÷ 6 = 7 There can be 7 teams.

➤ You can think about multiplication to divide. Every division fact has a related multiplication fact.

Try These

1. Write a multiplication fact and a division fact for each array.
   a) ___________________________ _________________________
   b) ___________________________ _________________________

2. Use a related multiplication fact to help you divide. Write the related fact.
   a) 20 ÷ 4 = ________  b) 30 ÷ 5 = ________  c) 14 ÷ 7 = ________
   ________________  ________________  ________________
1. Divide. Draw a picture to show your work.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>24 ÷ 3 = _______</td>
<td>30 ÷ 5 = _______</td>
</tr>
<tr>
<td>18 ÷ 2 = _______</td>
<td>5 ÷ 5 = _______</td>
</tr>
</tbody>
</table>

2. Use a related multiplication fact to divide.

- a) 18 ÷ 6 = ______
- b) 45 ÷ 5 = ______
- c) 56 ÷ 7 = ______
- d) 35 ÷ 5 = ______
- e) 24 ÷ 4 = ______
- f) 27 ÷ 3 = ______
- g) 12 ÷ 2 = ______
- h) 9 ÷ 1 = ______

3. Write a division fact to solve each question.

- a) 24 children
  - 6 children on a team
  - How many teams?
    _______________

- b) 18 cookies
  - 9 cookies on a plate
  - How many plates?
    _______________

- c) 42 cans
  - 7 cans in each row
  - How many rows?
    _______________

Stretch Your Thinking

Find all the ways of dividing 36 students into equal teams.
Write a division fact to show each way.

___________________________________________________________________
___________________________________________________________________
___________________________________________________________________
___________________________________________________________________
___________________________________________________________________

49
Quick Review

Here’s how to divide by 8 and 9.

\[ 48 \div 8 \]
\[ 8 \times \square = 48 \]
\[ 8 \times 6 = 48 \]
So, \[ 48 \div 8 = 6 \]
Also, \[ 48 \div 6 = 8 \]

\[ 63 \div 9 \]
\[ 9 \times \square = 63 \]
\[ 9 \times 7 = 63 \]
So, \[ 63 \div 9 = 7 \]
Also, \[ 63 \div 7 = 9 \]

Try These

1. Write two multiplication facts and two division facts for each array.
   
   a) \[
      \begin{array}{c}
      \bigcirc \bigcirc \bigcirc \bigcirc \\
      \bigcirc \bigcirc \bigcirc \bigcirc \\
      \bigcirc \bigcirc \bigcirc \bigcirc \\
      \bigcirc \bigcirc \bigcirc \bigcirc \\
      \bigcirc \bigcirc \bigcirc \bigcirc \\
      \end{array}
   \]
   
   b) \[
      \begin{array}{c}
      \bigcirc \bigcirc \bigcirc \\
      \bigcirc \bigcirc \bigcirc \\
      \bigcirc \bigcirc \bigcirc \\
      \bigcirc \bigcirc \bigcirc \\
      \bigcirc \bigcirc \bigcirc \\
      \end{array}
   \]

2. Divide.
   
   a) \[ 27 \div 9 = \square \]  
   b) \[ 16 \div 8 = \square \]  
   c) \[ 45 \div 9 = \square \]  
   d) \[ 64 \div 8 = \square \]  
   e) \[ 36 \div 9 = \square \]  
   f) \[ 32 \div 8 = \square \]
Practice

1. Find the product. Then write a related multiplication fact and two related division facts.
   a) $3 \times 9 = \underline{27}$
   b) $8 \times 5 = \underline{40}$
   c) $9 \times 7 = \underline{63}$

2. Divide.
   a) $49 \div 7 = \underline{7}$
   b) $81 \div 9 = \underline{9}$
   c) $45 \div 5 = \underline{9}$
   d) $27 \div 3 = \underline{9}$
   e) $56 \div 8 = \underline{7}$
   f) $36 \div 6 = \underline{6}$

3. Write a division sentence to show each answer.
   a) There are 28 days in February. How many weeks is that? _______________________________________________________________________
   b) There are 3 tennis balls in a carton. How many cartons are needed for 27 balls? _______________________________________________________________________
   c) There are 54 students in the band. They march in 6 equal rows. How many students are in each row? _______________________________________________________________________
   d) There are 9 kiwi fruit in a small basket. A box contains 72 kiwi fruit in a single layer. How many small baskets of kiwi fruit can be filled? _______________________________________________________________________

Stretch Your Thinking

Complete this division sentence in as many ways as you can. $\underline{8} \div \underline{8} = 8$ _______________________________________________________________________

51
Quick Review

Thirty-two students signed up for swimming lessons. The classes are taught in groups of 8. How many classes will there be? Here are 2 ways to find out.

➤ Use a model.
   Use 32 counters.
   Put them into groups of 8.
   So, there will be 4 classes.

➤ Guess, then test.
   Suppose you guess 5 classes.
   Test: $5 \times 8 = 40$; that is too many students.
   Guess again: $4 \times 8 = 32$; that is the correct number.
   So, there will be 4 classes.

Try These

Use counters or guess, then test. Show your work.

1. Twenty-three students go on a camping trip. Each tent holds 4 students. How many tents will be needed?

2. Ramzi has 4 cages of gerbils. There are 5 gerbils in each cage. How many gerbils does Ramzi have?
1. Suri picked 72 apples. Each basket holds 9 apples. How many baskets did she need?

2. Enrico saw 16 bicycles and tricycles in the playground. He counted a total of 36 wheels. How many bicycles were there? How many tricycles?

3. Use the data in the table. Write a story problem you can solve using multiplication or division. Solve your problem.

<table>
<thead>
<tr>
<th>Product</th>
<th>Number in a Box</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tennis balls</td>
<td>3</td>
</tr>
<tr>
<td>Baseballs</td>
<td>6</td>
</tr>
<tr>
<td>Hockey pucks</td>
<td>4</td>
</tr>
</tbody>
</table>

Stretch Your Thinking

Chase had 81 chickens. He sold an equal number of chickens to each of 3 customers and had 54 chickens left. How many chickens did Chase sell to each customer?
Quick Review

Gillian’s cat was born on May 15th, 2004.

We can write this date in different ways:

- We use 2 digits for the month and 2 digits for the day.
  
  2004  05  15
  Year  5th month  15th day

- This way of writing the date uses two 2 digits for the year too.

04  05  15  05  15  04  15  05  04
Year  Month  Day  Month  Day  Year  Day  Month  Year

Try These

1. Write each date in metric notation.
   a) November 30th, 2005 ____________  b) March 17th, 1998 ____________
   c) April 7, 2000 ___________________  d) June 26, 1959 ________________

2. Write each date using words and numbers.
   a) 1976 10 14 ______________________  b) 2007 12 01 ______________________
      Year  Month  Day                    Year  Month  Day
   c) 01 03 95 _________________________  d) 08 04 06 _________________________
      Month  Day  Year                   Month  Day  Year
   e) 05 06 00 _________________________  f) 09 05 12 _________________________
      Day  Month  Year                  Day  Month  Year
Practice

1. Write each date using words and numbers.
   a) 2001 09 08 ___________________
   b) 1989 12 11 ___________________
   c) 2009 10 02 ___________________
   d) 2004 04 03 ___________________

2. Use words and numbers to record the date of birth of 2 classmates. Then write each date in metric notation.
   a) ______________________________________________________________
   b) ______________________________________________________________

3. Write each date in metric notation.
   a) the seventh day of last month _________________________________
   b) the first day of this year _________________________________
   c) the date of your fifth birthday _________________________________
   d) the last day of next month _________________________________
   e) the day after April 19th, 2008 _________________________________
   f) the day before June 1st, 1987 _________________________________
   g) the day after December 31st, 2010 _________________________________

4. In what ways can the date 03 04 79 be interpreted?

   ______________________________________________________________

Stretch Your Thinking

Benito turned 10 on the 3rd day of the 11th month of 2005. Write this date in as many ways as you can.
Quick Review

➤ A clock with numbers and hands is an **analog clock**.

![Analog Clocks]

- 5 o’clock: 5:00
- Quarter after 5: 5:15
- Half past 5: 5:30
- Quarter to 6: 5:45

➤ A clock with numbers and no hands is a **digital clock**.

The clock shows 45 minutes after 10 o’clock. We say: “Ten forty-five.”

Try These

1. Write each time two different ways.

   a) ![Clock 1]
   
   ______________
   ______________

   b) ![Clock 2]
   
   ______________
   ______________

   c) ![Clock 3]
   
   ______________
   ______________

2. Write each time in a different way.

   a) 2:00 ______________
   b) Quarter after 9 ____________
   c) 8:30 ______________
   d) Twelve forty-five ____________
Practice

1. Read the time on each analog clock. Write the same time on the digital clock.

   a)
   
   b)
   
   c)
   
   d)

2. Write each time in a different way.

   a) quarter after 12 __________   b) 7:45 ___________________
   c) nine o’clock _____________   d) three thirty _____________
   e) 7:15 _____________________   f) half past one ____________
   g) six forty-five _____________   h) quarter to four __________

3. Caleb did push-ups for 15 minutes. He started at 4:30. At what time did he finish? ____________________________________

   Stretch Your Thinking

Millie started baking at 3:45. She finished at 5:00. How long did Millie spend baking? Explain how you know.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
Quick Review

It takes 5 minutes for the minute hand to move from one number to the next number.

8 o’clock
8:00

5 minutes after 8 o’clock
8:05

This analog clock shows
50 minutes after 12 o’clock or
10 minutes before 1 o’clock
12:50

This digital clock shows
35 minutes after 5 o’clock
5:35

It is twelve fifty or ten to one.

It is five thirty-five.

Try These

1. Write the time shown on each analog clock.
   a) b) c)
1. Write each time two different ways.
   a)  
   b)  
   c)  

   __________________ __________________ __________________

2. Skip count to find how many minutes are between each pair of times.
   a) 6:15 and 6:20 _______________
   b) 8:10 and 8:40 _______________
   c) 2:40 and 2:55 _______________
   d) 12:00 and 12:30 _____________

3. Read the time on the analog clock.
   Write the same time on the digital clock.

4. What is another way you could write twenty-five to seven?

   ____________________________________________

Stretch Your Thinking

Lester left the library at 20 minutes before 5:00.
Show the time on the digital clock.
Quick Review

The amount of time from the start to the end of an activity is the **elapsed time**.

Oscar practised on his drums from 2:30 P.M. to 3:05 P.M.

To find the elapsed time in minutes, count on by 5s.

Oscar practised for 35 minutes.

![Clock diagram]

Try These

Use a clock to help you.

1. Find each elapsed time. Write the answer in minutes.
   
   a) 2:40 P.M. to 2:55 P.M. _______________________________________
   
   b) 6:05 A.M. to 6:40 A.M. _______________________________________
   
   c) 7:55 P.M. to 8:35 P.M. _______________________________________ 
   
   d) 11:45 A.M. to 12:25 P.M. ____________________________________

2. Tell what time it will be 25 minutes later.
   
   a) It’s 4:30 P.M. __________  
   
   b) It’s 1:25 P.M. __________
   
   c) It’s 8:20 A.M. __________  
   
   d) It’s 5:15 A.M. __________
1. Play this game with a partner.
   You will need:
   2 play clocks
   2 markers
   1 number cube labelled 1 to 6

   ➤ Show 4:00 on your play clock.
   ➤ Put your markers on Start.
   ➤ Take turns:
     • Roll the number cube.
       Move your marker that many spaces.
     • If you land on a Time space, change the time on your clock. Read the new time.
   ➤ Keep playing until you reach Finish.
   ➤ Find the elapsed time between 4:00 and the new time on your clock.
   ➤ The player with the greater elapsed time wins.

Stretch Your Thinking

It is 11:20 P.M. What time will it be in 2 hours 25 minutes? ________
Quick Review

When the minute hand moves from one mark on the clock to the next mark, it takes 1 minute of time.

9:25  9:26

You can read times after the half-hour in different ways.

52 minutes after 4 o’clock or 4:52

8 minutes before 5 o’clock or 8 minutes to 5

Try These

1. Write the time shown on each clock.
   a)  
   b)  
   c)  

2. Show the time on each clock.
   a)  
   b)  
   c)  

9:58  3:39  10:21
1. Write each time two different ways.
   a) b) _________________________ _______________________

2. Show the time on each digital clock.
   a) quarter to five b) half past eleven c) quarter past six

3. Write something you might be doing at each time.
   a) 12:04 P.M. ____________________________________________________
   b) 3:58 A.M. _____________________________________________________
   c) 9:25 P.M. ____________________________________________________

Stretch Your Thinking

The sum of the digits on this digital clock is 15. At what other times will the digits add up to 15? Give at least 2 answers.
Quick Review

This is a 24-h clock.
There are 24 h in one day.
From midnight to noon, the hours are from 0 to 12.
From 1 P.M. to midnight, the hours are from 13 to 24.

When we use the 24-h clock, we use 4 digits to write the time.
10:15 A.M. is written 10:15.
6:30 A.M. is written 06:30.
6:30 P.M. is written 18:30.

Try These

1. Write each time using a 24-h clock.
   a) 8:10 A.M. _________  b) 12:00 noon _________  c) 10:20 P.M. _________

2. Write each time using A.M. or P.M.
   a) 6:12
   b) 10:55
   c) 13:43
Practice

1. Write each time using a 24-h clock. Assume it is past noon.

   a) 
   b) 
   c) 
   d) 

2. Write each time using A.M. or P.M.

   a) 07:14 
   b) 11:47 
   c) 15:58 
   d) 04:44 

3. What time is it?
   a) 2 h after 17:25 
   b) 7 h after 18:45 
   c) 6 h before 14:30 
   d) 12 h before 07:21 
   e) 20 min after 11:55 
   f) 45 min after 23:00 

4. Gerald arrived at school at 09:03. School starts at 09:00.
   How late was Gerald? 

5. Shu Ying started running on the treadmill at 07:45.
   She stopped at 08:02. How long did Shu Ying run? 

6. Mr. Albert fell asleep at 23:30 and slept for seven and one-quarter hours.
   At what time did he wake up? 

Stretch Your Thinking

Amanjeet left Winnipeg, MB, at 16:55 on Oct. 26. When she arrived in Edmonton, AB, her watch showed 08:05, Oct. 27. How long was the trip?
Quick Review

The number of units needed to cover a shape is the area of the shape. The units must be the same size. The units must be congruent. To find the area of a shape, count how many units cover it.

Try These

1. a) Use yellow Pattern Blocks to find the area of this shape. Record the area in the table.
   b) Repeat using red, blue, and green Pattern Blocks.

<table>
<thead>
<tr>
<th>Unit</th>
<th>Area in Pattern Blocks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yellow Pattern Block</td>
<td></td>
</tr>
<tr>
<td>Red Pattern Block</td>
<td></td>
</tr>
<tr>
<td>Blue Pattern Block</td>
<td></td>
</tr>
<tr>
<td>Green Pattern Block</td>
<td></td>
</tr>
</tbody>
</table>
Practice

1. a) Estimate the area of the hexagon in red Pattern Blocks. Then find the area in red Pattern Blocks and record it in the table.
   b) Repeat the activity with blue and green Pattern Blocks.

<table>
<thead>
<tr>
<th>Pattern Block Unit</th>
<th>Estimate</th>
<th>Area in Pattern Blocks</th>
</tr>
</thead>
<tbody>
<tr>
<td>red</td>
<td></td>
<td></td>
</tr>
<tr>
<td>blue</td>
<td></td>
<td></td>
</tr>
<tr>
<td>green</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Use this grid. Draw a shape with area 3 red Pattern Blocks.

Stretch Your Thinking

Suppose a shape has an area of 5 yellow Pattern Blocks.
What is its area in red Pattern Blocks? _________________________________
In blue Pattern Blocks? _________________________________
Quick Review

To find the area of a shape, count the number of square units needed to cover it.

The area of this shape is 5 square units.

To find the area of a rectangle, you can count the number of square units or you can multiply.
There are 2 rows of 5 squares.

$2 \times 5 = 10$

The area of this rectangle is 10 square units.

Try These

1. Find the area of each shape in square units.
   a) b) c)
   _______ square units _______ square units _______ square units

2. Write a multiplication fact to find the area of each rectangle.
   a) b) c)
   _______________ _______________ _______________
1. Play this game with a partner.

   You will need:
   2 number cubes    2 pencil crayons of different colours

   Take turns:
   ➤ Roll the cubes. Add the numbers to get an area in square units.
   ➤ Colour a shape with that area on the grid.
   ➤ No shape can overlap another shape.
   ➤ If there is no room left for your shape, you lose your turn.
   ➤ Continue until there is no more room on the grid.

   Stretch Your Thinking

   Find the total area you coloured on the grid. Then find the total area your partner coloured. Who coloured the greater area?
Quick Review

Each side of every square on this grid paper is 1 cm long.

Every square has an area of one square centimetre (1 cm\(^2\)).

You can use square centimetres to measure area.

The area of this shape is 3 cm\(^2\).

Try These

1. Find the area of each rectangle in square centimetres.
   
   a) 
   
   b) 
   
   c) 

   Area = _______  Area = _______  Area = _______
Practice

1. Write the area inside each shape in square centimetres.

2. Draw three different rectangles with area 12 cm\(^2\).

Stretch Your Thinking

The area of a square is 25 cm\(^2\). What are its length and width?
Quick Review

This is one way to find the approximate area of a triangle.

➢ Count each whole square. 
   *There are 8 whole squares.*
➢ Count each half square. 
   *There are 4 half squares.*
   *This equals 2 whole squares.*
➢ Count each part greater than $\frac{1}{2}$ a square as 1 square. 
   *There are 2 parts greater than $\frac{1}{2}$ a square.*
➢ Ignore each part less than $\frac{1}{2}$ a square.
➢ Add to find the total number of squares: $8 + 2 + 2 = 12$

This triangle has an area of about 12 cm².

Try These

1. Find the approximate area of each polygon.

   a) ![Polygon a]

   *Area = about ________*

   b) ![Polygon b]

   *Area = about ________*
1. Draw a large clown’s head on the grid. Use as many different polygons as you can. Find the approximate area of each part of the head.

**Stretch Your Thinking**

Explain how you would find the approximate area of a leaf.
Quick Review

A square with side lengths of 1 m has an area of one square metre (1 m²).

You can use grid paper to model a large area. Each square represents 1 m².

This is a model of a strawberry patch. It is 7 m wide and 8 m long. The model has 7 rows of 8 squares. $7 \times 8 = 56$

The area of the strawberry patch is 56 m².

Try These

1. Find the area of each garden. Each square has an area of 1 m².

   a) Area = 
   b) Area = 
   c) Area = 

2. Put the rectangles in question 1 in order from least to greatest area.

   ___________________________________________________________
1. Here are the dimensions of each of Sheila’s rectangular gardens. Model each of the gardens on the grid.

➤ Find the area of each garden.
➤ On each model, record the area and the type of flowers.

Sheila’s Gardens

<table>
<thead>
<tr>
<th>Flowers</th>
<th>Width</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roses</td>
<td>7 m</td>
<td>3 m</td>
</tr>
<tr>
<td>Wildflowers</td>
<td>5 m</td>
<td>4 m</td>
</tr>
<tr>
<td>Pansies</td>
<td>1 m</td>
<td>8 m</td>
</tr>
<tr>
<td>Petunias</td>
<td>6 m</td>
<td>4 m</td>
</tr>
<tr>
<td>Daisies</td>
<td>10 m</td>
<td>2 m</td>
</tr>
</tbody>
</table>

Stretch Your Thinking

Sheila has a rectangular pumpkin patch with area 36 m². The patch is 4 m wide. How long is it?
**Quick Review**

Different rectangles can have equal areas. Each rectangle below has an area of 10 m².

\[
\begin{array}{c}
\quad \\
\quad \\
\quad \\
\quad \\
\quad \\
\quad \\
\quad \\
\quad \\
\quad \\
\quad \\
\quad \\
\quad \\
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\quad \\
\quad \\
\quad \\
\quad \\
\quad \\
\quad \\
\quad \\
\quad \\
\quad \\
\quad \\
\quad \\
\end{array}
\]

\[
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\end{array}
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\end{array}
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\[
= 1 \text{ m}^2
\]

---

**Try These**

1. Find the area of each rectangle.
   
   a)  
   
   \[
   \begin{array}{c}
   \quad \\
   \quad \\
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   \quad \\
   \quad \\
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   \quad \\
   \quad \\
   \quad \\
   \quad \\
   \quad \\
   \quad \\
   \end{array}
   \]
   
   Area = _______

   b)  
   
   \[
   \begin{array}{c}
   \quad \\
   \quad \\
   \quad \\
   \quad \\
   \quad \\
   \quad \\
   \quad \\
   \quad \\
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   \quad \\
   \quad \\
   \quad \\
   \quad \\
   \end{array}
   \]
   
   Area = _______

   c)  
   
   \[
   \begin{array}{c}
   \quad \\
   \quad \\
   \quad \\
   \quad \\
   \quad \\
   \quad \\
   \quad \\
   \quad \\
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   \quad \\
   \quad \\
   \quad \\
   \quad \\
   \quad \\
   \end{array}
   \]
   
   Area = _______

2. Draw all rectangles with an area of 12 cm².
1. Work with a partner.
   ➤ Draw a rectangle on the grid.
   ➤ Record the area on the rectangle.
   Your partner draws a different rectangle with the same area, and records the area.
   ➤ Switch roles and repeat. Continue the game until the grid is full.

### Stretch Your Thinking

Draw two rectangles on the grid, each with an area of 1 cm².
Fractions of a Whole

Quick Review

➤ Fractions describe equal parts of a whole.

![Images of shapes divided into equal parts]

3 equal parts are thirds. \( \frac{1}{3} \) is shaded.

5 equal parts are fifths. \( \frac{4}{5} \) are shaded.

8 equal parts are eighths. \( \frac{5}{8} \) are shaded.

The denominator tells how many equal parts are in 1 whole.

The numerator tells how many equal parts are counted.

➤ A proper fraction represents an amount less than 1 whole. \( \frac{5}{8} \) is a proper fraction.

Try These

1. Write a fraction to tell what part of each shape is shaded.
   a) \[ \underline{\text{_______}} \]
   b) \[ \underline{\text{_______}} \]
   c) \[ \underline{\text{_______}} \]

2. Colour some of the equal parts of each shape.
   Write a fraction to describe the coloured parts.
   a) \[ \underline{\text{_______}} \]
   b) \[ \underline{\text{_______}} \]
   c) \[ \underline{\text{_______}} \]
   d) \[ \underline{\text{_______}} \]
Play this game with a partner.
You will need:
2 number cubes labelled 1 to 6
2 pencil crayons or crayons of different colours

Take turns making fractions.
➤ Roll the number cubes. Use the greater number as the denominator.
➤ Find a shape on the game board that can be used to show your fraction.
  Colour the shape. Write the fraction.
➤ If there is no shape that can be used, you lose your turn.
➤ Keep playing until all the shapes are coloured.

Stretch Your Thinking
This shape represents $\frac{3}{5}$ of one whole.
Show what the whole might look like.
Quick Review

This number line shows the benchmarks 0, $\frac{1}{2}$, and 1.

You can use number lines to find which benchmark a fraction is closer to.

$\frac{7}{8}$ is closer to 1.

$\frac{5}{12}$ is closer to $\frac{1}{2}$.
It is a little less than $\frac{1}{2}$.

$\frac{1}{6}$ is closer to 0.

Try These

1. Colour each strip to show a fraction. Write whether the fraction is closer to 0, $\frac{1}{2}$, or 1.

   a) [Diagram]

   Closer to ________

   b) [Diagram]

   Closer to ________

2. A trash can is not quite full. Write a fraction that might tell how full it is.

   _____________________________________________________________
Practice

Play this game with a partner.

You will need:
index cards with these fractions written on them:
\[
\begin{array}{cccccccccccc}
\frac{1}{3}, \frac{2}{3}, \frac{1}{5}, \frac{2}{5}, \frac{3}{5}, \frac{4}{5}, \frac{1}{6}, \frac{2}{6}, \frac{3}{6}, \frac{4}{6}, \frac{5}{6}, \frac{1}{8}, \frac{2}{8}, \frac{3}{8}, \frac{5}{8}, \frac{6}{8}, \frac{7}{8}, \frac{1}{12}, \frac{2}{12}, \frac{4}{12}, \frac{5}{12}, \frac{7}{12}, \frac{8}{12}, \frac{10}{12}, \frac{11}{12}
\end{array}
\]
a paper bag
strips of paper 15 cm long
crayons

Put the fraction cards in the bag.
Take turns.
➤ Draw a card from the bag.
➤ Estimate whether the fraction is closer to 0, \(\frac{1}{2}\), or 1.
➤ Fold and colour a paper strip to show the fraction.
➤ Line up your strip with this number line to check your estimate.

➤ You get a point if your estimate was right.
➤ Your partner gets a point if your estimate was wrong.
➤ Keep playing until one player has 10 points.

Stretch Your Thinking

1. Name a fraction between 0 and \(\frac{1}{2}\) that is neither closer to 0 nor closer to \(\frac{1}{2}\).

2. Name a fraction that is between \(\frac{1}{2}\) and 1 that is neither closer to \(\frac{1}{2}\) nor closer to 1.
Exploring Fractions of a Set

Quick Review

To find a fraction of a set, start by counting.

➤ There are 8 buttons.
   6 of the 8 buttons are white.
   \( \frac{6}{8} \) of the buttons are white.
   \( \frac{2}{8} \) of the buttons are black.

➤ There are 9 fish bowls.
   7 of the 9 fish bowls have a fish.
   \( \frac{7}{9} \) of the fish bowls have a fish.
   \( \frac{2}{9} \) of the fish bowls are empty.

Try These

1. What fraction of each set is shaded?
   a) \( \frac{\phantom{0}}{\phantom{0}} \)
   b) \( \frac{\phantom{0}}{\phantom{0}} \)
   c) \( \frac{\phantom{0}}{\phantom{0}} \)
   d) \( \frac{\phantom{0}}{\phantom{0}} \)

2. Here are the children who signed up for the chess club.
   What fraction are boys? \( \frac{\phantom{0}}{\phantom{0}} \)
   What fraction of the children are girls? \( \frac{\phantom{0}}{\phantom{0}} \)
Practice

1. Colour some of the fish in each set. Write to tell what fraction you coloured.

   a)    b)    
   c)    d)    

2. a) Marvin has 8 pets. 
     \( \frac{2}{8} \) of the pets are cats. 
     \( \frac{3}{8} \) of the pets are dogs. 
     The rest are hamsters. 
     Draw Marvin's pets.

   b) Suppose Marvin gets 1 more cat. What fraction of his pets will be cats?

   Stretch Your Thinking

   Three of Sally's pencils are broken. That's 1 quarter of Sally's pencils. 
   How many pencils does Sally have? Use pictures, words, and numbers 
   to show your answer.
Finding a Fraction of a Set

Quick Review

You can use fractions to show equal parts of a set.

Here is a way to find \( \frac{5}{6} \) of 18.

The denominator lets us know we are counting sixths.
Divide 18 counters into 6 equal groups to show sixths.

Try These

Draw a picture to show the fraction of each set.

1. \( \frac{1}{2} \) of 10 = ______

2. \( \frac{2}{3} \) of 9 = ______

3. \( \frac{4}{5} \) of 15 = ______

4. \( \frac{1}{4} \) of 12 = ______
Practice

1. Write a fraction for the shaded part of each set.
   a)  
   b)  
   c)  

2. Use counters to find the fraction of each set.
   a) \( \frac{1}{2} \) of 14 = ______
   b) \( \frac{2}{6} \) of 18 = ______
   c) \( \frac{3}{5} \) of 15 = ______
   d) \( \frac{3}{8} \) of 16 = ______
   e) \( \frac{3}{4} \) of 12 = ______
   f) \( \frac{6}{10} \) of 20 = ______
   g) \( \frac{7}{7} \) of 14 = ______
   h) \( \frac{7}{8} \) of 24 = ______
   i) \( \frac{2}{3} \) of 15 = ______

   Two-thirds of the pets were dogs. One-ninth of the pets were cats.
   a) How many dogs were there? ______
   b) How many cats were there? ______
   c) How many animals were neither dogs nor cats? ______

Stretch Your Thinking

1. Choose letters from the box.
   a) Write a word that uses \( \frac{1}{2} \) of the letters.
      ____________________________________________
   b) Write a word that uses \( \frac{3}{5} \) of the letters.
      ____________________________________________
Quick Review

When 2 wholes have different sizes, the same fraction of the whole is different for each whole.

Three-quarters of the big circle is greater than \( \frac{3}{4} \) of the small circle.

➤

\[ \frac{3}{5} \] of 15 counters are greater than \( \frac{3}{5} \) of 10 counters.

Try These

1. Draw a picture to show that:
   a) \( \frac{1}{2} \) of one pizza is less than \( \frac{1}{2} \) of another pizza.

   \[ \frac{5}{6} \] of one group of birds is greater than \( \frac{5}{6} \) of another group of birds.
Practice

1. Colour each strip to show $\frac{1}{4}$.
   Circle the strip that shows a shorter length to represent $\frac{1}{4}$.
   
   |   |   |   |

2. Colour $\frac{4}{5}$ of each set of balloons.
   Circle the set in which $\frac{4}{5}$ represents a greater amount.

3. Draw a picture to show that $\frac{2}{3}$ of one set of counters is greater than $\frac{2}{3}$ of another set of counters.

Stretch Your Thinking

Use 2 strips of paper of different lengths.
Fold and colour each strip to show $\frac{5}{8}$. Paste the strips below.
Circle the one in which $\frac{5}{8}$ represents a lesser amount.
Comparing and Ordering Unit Fractions

Quick Review

A fraction with a numerator of 1 is a **unit fraction**. \(\frac{1}{3}\), \(\frac{1}{8}\), and \(\frac{1}{1}\) are unit fractions.

- With different unit fractions, the equal parts of the whole have different sizes.

  ![Illustration of 5 and 8 equal parts]

  
  \[\frac{1}{5} \quad \text{5 equal parts in the whole}\]

  \[\frac{1}{8} \quad \text{8 equal parts in the whole}\]

  Fifths are greater than eighths.

  So, \(\frac{1}{5} > \frac{1}{8}\)

- Order these unit fractions from greatest to least: \(\frac{1}{7}, \frac{1}{10}, \frac{1}{2}\)

  \(\frac{1}{2}\) is the greatest because halves are greater than sevenths and tenths.

  \(\frac{1}{10}\) is the least because tenths are smaller than sevenths.

  From the greatest to least: \(\frac{1}{2}, \frac{1}{7}, \frac{1}{10}\)

Try These

1. Use > or < to compare each pair of fractions.

   - a) \(\frac{1}{3} _____ \frac{1}{6}\)
   - b) \(\frac{1}{9} _____ \frac{1}{4}\)
   - c) \(\frac{1}{5} _____ \frac{1}{2}\)

2. Order these fractions from least to greatest.

   - a) \(\frac{1}{6}, \frac{1}{3}, \frac{1}{8}\) _______ 
   - b) \(\frac{1}{4}, \frac{1}{2}, \frac{1}{5}\) _______

   - c) \(\frac{1}{7}, \frac{1}{12}, \frac{1}{10}\) _______
   - d) \(\frac{1}{9}, \frac{1}{3}, \frac{1}{7}\) _______
Practice

1. Work with a partner.
   You will need crayons and four strips of paper of the same length for each person.
   ➤ Each of you folds a strip into any number of equal parts. Colour one of the parts to show a unit fraction.
   ➤ Show your strip to your partner and name the fraction.
   ➤ Compare the fractions by lining the strips up one below the other.
   ➤ On the lines below, record a fraction sentence using >, <, or =.
   ➤ Repeat with three more pairs of strips.

   a) ________________   b) ________________
   c) ________________   d) ________________

2. Order these numbers from least to greatest.
   a) \( \frac{1}{8}, \frac{1}{14}, \frac{1}{3} \) __________   b) \( \frac{1}{10}, \frac{1}{4}, \frac{1}{6} \) __________
   c) \( \frac{1}{3}, \frac{1}{4}, \frac{1}{2} \) __________   d) \( \frac{1}{6}, \frac{1}{7}, \frac{1}{4} \) __________

3. Stivi and Zach each ordered a medium pizza.
   Stivi ate \( \frac{1}{3} \) of the pizza and Zach ate \( \frac{1}{4} \) of his pizza.
   Who ate more? Explain.
   _______________________________________________________________________

Stretch Your Thinking

1. Write a unit fraction to make each statement true.

   a) \( \frac{1}{9} > \) ____   b) \( \frac{1}{3} < \) ____   c) ____ > \( \frac{1}{8} \)   d) \( \frac{1}{7} > \) ____
   e) ____ < \( \frac{1}{5} \)   f) ____ > \( \frac{1}{9} \)   g) \( \frac{1}{10} < \) ____   h) ____ > \( \frac{1}{4} \)
Quick Review

Here is one way to order \( \frac{2}{5}, \frac{4}{5}, \) and \( \frac{1}{5} \) from greatest to least.
The fractions have the same denominator, so the parts being counted have the same size.\( \frac{4}{5} \) has the most parts, so it is the greatest.\( \frac{1}{5} \) has the fewest parts, so it is the least.

From greatest to least: \( \frac{4}{5}, \frac{2}{5}, \frac{1}{5} \)

Here are two ways to order \( \frac{2}{5}, \frac{2}{3}, \) and \( \frac{2}{6} \) from least to greatest.
The fractions have the same numerator but different denominators, so the parts being counted have different sizes.

- Use number lines.
- Use strips.

From least to greatest: \( \frac{2}{6}, \frac{2}{5}, \frac{2}{3} \)

Try These

1. Use the number lines to order \( \frac{3}{8}, \frac{3}{4}, \) and \( \frac{3}{6} \).

From greatest to least: _______
Practice

1. Colour the strips to show the fractions.
   Use > or < to compare the fractions.
   a) 
      ![Fraction Strip a)
      \[
      \begin{array}{c}
      \frac{3}{5} > \frac{3}{4}
      \end{array}
      
   b) 
      ![Fraction Strip b)
      \[
      \begin{array}{c}
      \frac{4}{10} < \frac{3}{10}
      \end{array}
      
2. Estimate to place \(\frac{2}{8}\) and \(\frac{4}{4}\) on the number line.

   ![Number Line]
   Which fraction is greater? __________

3. Use the 3 number lines to order \(\frac{4}{8}\), \(\frac{4}{6}\), \(\frac{4}{5}\).

   ![Number Lines]
   From least to greatest: __________

Stretch Your Thinking

Fold and colour paper strips to show each pair of fractions.
Use < or > to compare the fractions.

a) \(\frac{4}{8} \quad \_ \quad \frac{4}{6}\)

b) \(\frac{3}{5} \quad \_ \quad \frac{3}{4}\)

c) \(\frac{2}{3} \quad \_ \quad \frac{2}{5}\)
Exploring Tenths

Quick Review

➤ You can use Base Ten Blocks to model \( \frac{3}{10} \).

➤ You can write the fraction as a decimal using a symbol, the decimal point.

\( \frac{3}{10} \) is the same as 0.3. We say 0.3 as “zero and three-tenths.”

This is the decimal point.

Since \( \frac{3}{10} \), or 0.3, is less than 1 whole, we write 0 before the decimal point to show there is no whole number part.

➤ You can also use a place-value chart to show a decimal.

<table>
<thead>
<tr>
<th>Ones</th>
<th>Tenths</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

The decimal point is between the ones place and the tenths place.

Try These

1. Write a fraction and a decimal for each group of Base Ten Blocks shown.
   a) \[
     \text{[Base Ten Blocks]}
    \]

   __________

   b) \[
     \text{[Base Ten Blocks]}
    \]

   __________

   c) \[
     \text{[Base Ten Blocks]}
    \]

   __________

2. Write each fraction as a decimal.
   a) \( \frac{7}{10} \) __________
   b) \( \frac{2}{10} \) __________
   c) \( \frac{8}{10} \) __________
1. Play this game with a partner.
You will need:
24 small counters 1 number cube 2 game markers

Each player selects a strip to the right or the left of the game board. The object of the game is to play until one of you covers all the numbers on your strip.

➤ Put your markers on Start.
➤ Take turns rolling the number cube. Move that number of spaces in either direction.
➤ Put a counter on your strip on the fraction that names the same amount as the decimal you landed on.
➤ The first one to cover a full strip wins.

Stretch Your Thinking
Place each decimal on the number line.

0.4  0.7  0.1  0.9  0.2
Quick Review

➤ This grid is divided into 100 equal squares. Each square is one-hundredth of the grid. Three-hundredths of the grid are shaded. We can write this as $\frac{3}{100}$ or 0.03.

➤ We can use decimals to write parts of one dollar. 1 dollar = 100 cents So, 1 cent = $\frac{1}{100}$ dollar, or 0.01 dollar.

Here are 23 cents. 23 cents = $\frac{23}{100}$ dollar We write this as 23¢ or $0.23.

Try These

1. Write a fraction and a decimal for the shaded part of each picture.

   a)
   
   b)
   
   c)

2. Write each fraction as a decimal.

   a) $\frac{48}{100}$________
   b) $\frac{7}{100}$________
   c) $\frac{6}{100}$________
   d) $\frac{17}{100}$________
   e) $\frac{67}{100}$________
   f) $\frac{5}{100}$________
1. Colour the grids to show the numbers.
   a) 0.09
   b) 0.43
   c) 0.02
   d) \( \frac{70}{100} \)

2. Write each decimal as a fraction.
   a) 0.24
   b) 0.93
   c) 0.80
   d) 0.27
   e) 0.01
   f) 0.4

3. Draw pictures of dimes and pennies to show each amount.
   $0.33 $0.19

4. Write each amount as a decimal.
   a) 84¢
   b) 7 cents
   c) 15¢

Stretch Your Thinking
Carlos said that 0.30 is greater than 0.3 because 30 is greater than 3. Is he correct?
Use pictures to support your answer.
Quick Review

One row of this hundredths grid is one-tenth of the grid. Each small square is one-hundredth of the grid.

Both 0.7 and 0.70 name the shaded part of the grid. So, 0.7 = 0.70

Decimals that name the same amount are called **equivalent decimals**.

Try These

1. Write two equivalent decimals that name each shaded part.
   a)  
   b)  
   c)  
   d)  

2. Write an equivalent decimal for each number.
   a) 0.6 ________  b) 0.70 ________  c) 0.90 ________  d) 0.5 ________
   e) 0.80 ________  f) 0.1 ________  g) 0.30 ________  h) 0.60 ________
   i) 0.40 ________  j) 0.2 ________  k) 0.50 ________  l) 0.10 ________
1. Colour the grid to show each decimal.
   Write an equivalent decimal.

   a) 0.3 ____________
   b) 0.80 ____________
   c) 0.6 ____________

2. Play this game with a partner.
   You will need:
   9 pairs of cards with 2 equivalent decimals (0.1 and 0.10 to 0.9 and 0.90).
   ➤ Shuffle the cards and turn them face down on a table in 3 rows of 6.
   ➤ Take turns to turn over 2 cards.
     If the cards name equivalent decimals, keep the cards and play again.
     If the cards do not name equivalent decimals, turn them face down again.
   ➤ Play until there are no cards left on the table.
   ➤ The player with the most cards wins.

Stretch Your Thinking

Gabriel is making a design on a hundredths grid.
He says he will colour 0.6 of the grid red, and 0.6 black.
Will Gabriel’s plan work? Explain.
Quick Review

You can use whole number strategies to add decimals.

➤ To estimate 3.6 + 1.9, find a whole number close to each decimal.

➤ Use Base Ten Blocks to add.

➤ Use place value to add.

Add the tenths: 15 tenths

\[
\begin{array}{c}
3.6 \\
+ 1.9 \\
\hline
5.5
\end{array}
\]

\[
\begin{array}{c}
3.6 \\
+ 1.9 \\
\hline
.5
\end{array}
\]

Try These

Estimate each sum.
1. a) 2.8 + 3.4 ________  b) 5.9 + 2.8 ________  c) 4.3 + 5.2 ________

2. Add. Use Base Ten Blocks to help you.
   a) 3.2 + 4.5 = ________  b) 6.6 + 2.4 = ________  c) 3.5 + 8.7 = ________
Practice

1. Add. Use Base Ten Blocks or pictures of the blocks to help you.
   a) \(1.7 + 4.9 = \) _______
   b) \(6.5 + 2.7 = \) _______
   c) \(3.9 + 8.6 = \) _______
   d) \(3.8 + 2.7 = \) _______
   e) \(2.4 + 6.3 = \) _______
   f) \(4.1 + 6.4 = \) _______

2. Use place value to find each sum.
   a) \(4.2 + 2.3 = \) _______
   b) \(1.7 + 5.6 = \) _______
   c) \(7.3 + 2.8 = \) _______
   d) \(2.3 + 1.6 = \) _______
   e) \(6.4 + 9.7 = \) _______
   f) \(7.4 + 8.6 = \) _______
   g) \(3.7 + 1.9 = \) _______
   h) \(8.2 + 3.8 = \) _______
   i) \(5.7 + 6.7 = \) _______
   j) \(3.2 + 9.8 = \) _______

3. Kruti jogged 2.8 km on Saturday and 1.9 km on Sunday. How far did she jog altogether?
   ____________________________________________

4. Alexander grew two pumpkins in his garden. One had a mass of 4.7 kg. The other had a mass of 3.6 kg. What was the total mass of both pumpkins?
   ____________________________________________

5. Sally had 3.4 L of orange juice and 2.7 L of grape juice. How much juice did she have altogether?
   ____________________________________________

Stretch Your Thinking

1. a) Write two decimals whose sum is approximately 5.
   ____________________________________________
   b) Write two decimals whose sum is closer to 1 than 2.
   ____________________________________________
UNIT 5
STUDENT BOOK
LESSON 13

Subtracting Decimals to Tenths

Quick Review
You can use whole number strategies to subtract decimals.
➤ To estimate 4.2 – 1.7, find a whole number close to each decimal.

➤ Use Base Ten Blocks to subtract.

Use place value to subtract. Try to subtract the tenths.

You cannot take 7 tenths from 2 tenths.
Trade 1 whole for 10 tenths.
Subtract the tenths.
Subtract the ones.

Try These
1. Estimate each difference.
   a) 5.8 – 2.9 ________  b) 8.1 – 3.2 ________  c) 2.1 – 0.9 ________

2. Subtract.
   a) 8.4 – 3.2 = ________  b) 7.9 – 4.2 = ________  c) 6.4 – 2.5 = ________
1. Subtract. Use Base Ten Blocks or pictures of the blocks to help you.
   a) 7.4 – 2.3 = _______
   b) 2.7 – 0.8 = _______
   c) 4.2 – 3.8 = _______
   d) 4.9 – 2.6 = _______
   e) 5.2 – 3.7 = _______
   f) 0.9 – 0.2 = _______
   g) 4.8 – 3.7 = _______
   h) 6.4 – 5.8 = _______
   i) 3.6 – 0.7 = _______

2. Use place value to find each difference.
   a) 9.3
   b) 10.2
   c) 14.8
   d) 8.5
   e) 6.4
   
   - 6.4
   - 3.6
   - 6.9
   - 0.7
   - 2.8

   f) 8.4
   g) 3.8
   h) 7.5
   i) 12.6
   j) 10.4
   
   - 0.9
   - 1.2
   - 2.8
   - 9.9
   - 3.7

3. When Baily planted a new evergreen tree, the tree was 1.3 m tall. Now it is 2.1 m tall.
   How much has the tree grown? ________________________________

4. Symron lives 2.4 km from the movie theatre.
   Sofia lives 3.1 km from the theatre.
   How much farther away does Sofia live? _________________________

5. Stephanie had 1.8 L of water.
   After she drank some water, she had 1.3 L of water left.
   How much water did she drink? ________________________________

Stretch Your Thinking

1. a) Name two decimals whose difference is approximately 2.

   ________________________________

   b) Name two decimals whose difference is between 2 and 3, but closer to 3.

   ________________________________
Quick Review

You can use different methods to add and subtract decimals to hundredths.
➤ You can use a place-value mat.
➤ You can count on.
➤ You can use place value.

What is the change from $5 when you spend $3.52?

Use place value and subtraction to find out.

<table>
<thead>
<tr>
<th>Line up the decimal points.</th>
<th>Trade $1 for 10 dimes.</th>
<th>Subtract the cents.</th>
<th>Subtract the dollars.</th>
</tr>
</thead>
<tbody>
<tr>
<td>$5.00</td>
<td>$5.00</td>
<td>$5.00</td>
<td>$5.00</td>
</tr>
<tr>
<td>– 3.52</td>
<td>– 3.52</td>
<td>– 3.52</td>
<td>– 3.52</td>
</tr>
</tbody>
</table>

The change from $5 is $1.48.

Try These

1. Add or subtract.
   a) $2.49 + $1.30 = $3.79
   b) $4.26 + $3.49 = $7.75
   c) $9.32 – $4.50 = $4.82
   d) $7.27 – $4.88 = $2.39

2. Find each sum or difference.
   a) $5.39 + $2.20 = $7.59
   b) $1.49 + $7.37 = $8.86
   c) $14.55 – $8.32 = $6.23
   d) $10.00 – $8.23 = $1.77
1. Find each sum.
   a) $6.70 + 2.85 = 9.55$
   b) $2.57 + 5.84 = 8.41$
   c) $6.85 + 1.78 = 8.63$
   d) $1.99 + 0.67 = 2.66$

2. Find each difference.
   a) $6.74 - 2.54 = 4.20$
   b) $5.75 - 2.83 = 2.92$
   c) $7.00 - 2.51 = 4.49$
   d) $3.49 - 0.58 = 2.91$

3. Use the prices in the table to solve the problems.
   a) Yvonne bought a sun hat and beach towel. How much did she spend?
      ________________________________
      Sun Hat: $5.79
      Beach Towel: $9.85
      Yvonne spent: $5.79 + $9.85 = $15.64
   
   b) How much change did Yvonne get from $20? _______________
      $20 - $15.64 = $4.36
   
   c) Sandy bought two items. She spent $13.62. Which two items did she buy?
      ________________________________
      Beach Ball: $1.59
      Flippers: $4.67
      Sandy bought: Beach Ball + Flippers = $1.59 + $4.67 = $6.26
   
   d) How much more does a sun umbrella cost than a beach towel? _______
      Sun Umbrella: $12.84
      Beach Towel: $9.85
      More: $12.84 - $9.85 = $3.09
   
   e) How much do a beach ball and a sun umbrella cost altogether? _______
      Beach Ball: $1.59
      Sun Umbrella: $12.84
      Together: $1.59 + $12.84 = $14.43

Stretch Your Thinking

Malio bought two items listed on the Beach Supplies table. He got $2.62 change from $10.
Which two items did he buy? ____________________________________________
Objects in Our World

Quick Review

➤ You can sort objects by the shapes of the bases.

➤ You can sort objects by the shapes of the faces.

Try These

1. Sort these objects. Use the letters to record your sorting.
1. Write the name of a prism to answer each riddle.
   a) I have 6 congruent faces. __________
   b) I have 3 rectangular faces and 2 triangular faces. __________
   c) I have 2 square bases and 4 square faces. __________

2. Look through old magazines or catalogues for 3 small pictures of objects that look like prisms. Cut them out and paste them here. Name the prism each object resembles.

3. Sort these objects. Use these attributes: “Has square bases” and “Has all congruent faces”

   Record your sorting.

   A  B  C
   D  E

Stretch Your Thinking

Complete each sentence.

a) All triangular prisms have __________________________

b) All cubes have __________________________

c) No rectangular prisms have __________________________
Quick Review

You can use modelling clay to build prisms.

➤ Rectangular prisms

➤ Triangular prisms

Try These

1. Use modelling clay. Make a prism with each set of faces. Identify each prism.

   a)
   
   

   b)
   

   __________________________

   __________________________
Practice

1. Identify the object that has each set of faces.
   
   a) 
   
   b) 
   
   c) 

2. Use modelling clay. Make a prism for each description. Identify the prism.
   
   a) It has 2 congruent triangle faces and 3 congruent rectangle faces.
   
   b) It has 2 congruent square faces and 4 congruent rectangle faces.
   
   c) It has 3 pairs of congruent rectangle faces.

Stretch Your Thinking

Make a prism with modelling clay. Describe the prism in as many ways as you can.
Exploring Nets

Quick Review

A pattern that can be folded to form an object is called a **net**.

- A rectangular prism can be made from a net.

![Net of a rectangular prism]

- A triangular prism can also be made from a net.

![Net of a triangular prism]

Try These

1. Name the prism you could make with each net.

   - a) ![Net of a rectangular prism]
   - b) ![Net of a rectangular prism]
   - c) ![Net of a triangular prism]
Practice

1. Circle the picture that shows a net for the prism named.
   a) cube          b) rectangular prism          c) triangular prism

2. Trace this net on paper, then cut it out.
   Decorate the net to look like a package for a product.
   Then fold and tape your package.

Stretch Your Thinking

Draw a net for a cube on the grid paper.
Write the letters T and B on 2 faces of the net so that when the net is folded, the T will be on the top and the B on the bottom.
A line of symmetry divides a shape into 2 congruent parts. You can fold along the line and the 2 parts match.

You can use a Mira to check a line of symmetry.

Some shapes have more than 1 line of symmetry.

A rectangle has 2 lines of symmetry.

Some shapes have no line of symmetry.

This shape is non-symmetrical.

Try These

1. Colour the pictures that have 1 or more lines of symmetry.
Practice

1. Label the shapes below as follows:
   A – no lines of symmetry
   B – 1 line of symmetry
   C – 2 lines of symmetry
   D – more than 2 lines of symmetry

2. Look at these numbers.

   0 1 2 3 4 5 6 7 8 9

   a) Which numbers have no lines of symmetry? ______________
   b) Which numbers have 1 line of symmetry? ______
   c) Which numbers have more than 1 line of symmetry? ______

Stretch Your Thinking

1. Does a circle have more than 1 line of symmetry? Explain.
   ____________________________________________________________
   ____________________________________________________________
Quick Review

A symmetrical shape has one or more lines of symmetry. Here is one way to make a symmetrical shape.

➤ Draw a line of symmetry on dot paper. Draw one-half of a shape on one side of the line.

➤ Draw the other half of the shape on the other side of the line.

Try These

1. One-half of a symmetrical shape is shown. Complete the shape.
   a) 
   b)
1. Work with a partner.
   One person draws one-half of a symmetrical shape on one side of the line. The other person completes the shape.

2. Find the shapes that are symmetrical. Draw the lines of symmetry.
   a)  
   b)  
   c)  

**Stretch Your Thinking**

One-quarter of a symmetrical shape is shown. Complete the shape.
Quick Review

A line of symmetry divides a shape into two parts that are congruent. When a line of symmetry can be drawn on a shape, it has symmetry.

Some shapes have no lines of symmetry.

Some shapes have more than one line of symmetry.

0 lines of symmetry 1 line of symmetry 4 lines of symmetry

Try These

1. Is each broken line a line of symmetry? Write Yes or No.
   a)  
   b)  
   c)  

   ______  ______  ______
1. Draw as many lines of symmetry on each shape as you can.
   a) b) c)

2. Work with a partner.
   Each of you draw one-half of a design on one side of the line of symmetry on your grid. Switch places and complete your partner’s design.

   Your Grid

   Your Partner’s Grid

Stretch Your Thinking

Complete the shape to make it symmetrical.
Quick Review

The **title** of a graph tells you what the graph is about. The **labels** on the **axes** tell you what data are shown in the graph.

**Pictograph**
*Symbols* are used to show data in a pictograph. The **key** shows what each symbol stands for.

For this pictograph, the key is □ represents 10 tickets. So, □ represents 5 tickets.

**Bar Graph**
*Bars* are used to show data in a bar graph. Numbers on the axis show the scale.

In this bar graph, 1 square represents 10 tickets. So, \( \frac{1}{2} \) square represents 5 tickets.

Try These

Use the pictograph to answer these questions.

1. Which drink had the most votes? __________

2. Which drink had 12 votes? __________

3. How many votes did lemonade have? ________

![Favourite Drinks]

- Milk
- Juice
- Lemonade
- Water

\( = 6 \) votes
Practice

1. This graph shows the number of pet owners in each grade at Parkdale School.
   a) Which grade has the most pet owners? ______________
   b) Which grade has one-half as many pet owners as Grade 2? ______________
   c) How many pet owners did Grade 6 have? ___

2. This graph shows the types of dwellings the students in Enzo’s school live in.
   a) How many students live in condos? __________________
   b) How many more students live in duplexes than condos? ______________
   c) How many students live in condos and townhouses altogether? ______________
   d) 26 girls live in apartments. How many boys live in apartments? ______________

Stretch Your Thinking

How many students attend Enzo’s school? Show how you know.

___________________________________________________________________
___________________________________________________________________
___________________________________________________________________
Quick Review

Here are the results of a survey showing the favourite subjects of students in Kim’s class.

<table>
<thead>
<tr>
<th>Subject</th>
<th>Math</th>
<th>Science</th>
<th>Social Studies</th>
<th>Gym</th>
<th>Writing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Students</td>
<td>6</td>
<td>7</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

Here’s how Kim made a pictograph to display these data.

To make sure her graph was not too large, Kim chose 🧑‍🏫 to represent 2 students. Kim completed the pictograph with a key, a label on the axis, and a title.

Try These

1. Suppose you drew a pictograph to represent the data in each table. What key would you use for each graph?

   a) Favourite Fruit | Number of Students
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Orange</td>
<td>12</td>
</tr>
<tr>
<td>Apple</td>
<td>6</td>
</tr>
<tr>
<td>Banana</td>
<td>8</td>
</tr>
<tr>
<td>Grape</td>
<td>10</td>
</tr>
</tbody>
</table>

   Key: ____________________________

   b) Eye Colour | Number of People
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue</td>
<td>25</td>
</tr>
<tr>
<td>Brown</td>
<td>40</td>
</tr>
<tr>
<td>Grey</td>
<td>5</td>
</tr>
<tr>
<td>Green</td>
<td>15</td>
</tr>
</tbody>
</table>

   Key: ____________________________
Practice

1. Draw a pictograph to display these data.

   **Names for Our Fish**

<table>
<thead>
<tr>
<th>Number of students</th>
<th>Bubbles</th>
<th>Spotty</th>
<th>Precious</th>
<th>Ralph</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>20</td>
<td>10</td>
<td>5</td>
<td>10</td>
</tr>
</tbody>
</table>

2. Finish the pictograph to display the data in the table.

   **Birds Seen in the Park**

<table>
<thead>
<tr>
<th>Bird</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crow</td>
<td>4</td>
</tr>
<tr>
<td>Robin</td>
<td>12</td>
</tr>
<tr>
<td>Chickadee</td>
<td>14</td>
</tr>
<tr>
<td>Duck</td>
<td>20</td>
</tr>
</tbody>
</table>

   **Birds Seen in the Park**

<table>
<thead>
<tr>
<th>Crow</th>
<th>Robin</th>
<th>Chickadee</th>
<th>Duck</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

   = 4 birds

**Stretch Your Thinking**

Suppose the key on a pictograph is $⊙ = 40$ votes.
What symbol would you draw to represent:

10 votes? _______________  
20 votes? _______________
Quick Review

The students in Arnie’s school voted on a mascot for their school hockey team. Here is a table Arnie made to show how they voted.

<table>
<thead>
<tr>
<th>Animal</th>
<th>Student Votes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brown bear</td>
<td>40</td>
</tr>
<tr>
<td>Cougar</td>
<td>60</td>
</tr>
<tr>
<td>Eagle</td>
<td>75</td>
</tr>
<tr>
<td>Coyote</td>
<td>35</td>
</tr>
</tbody>
</table>

Here’s how to draw a vertical bar graph to display the data in Arnie’s table.

1. Draw 2 axes. Label them “Animal” and “Student Votes”.
2. Count by 5s for the scale. The scale is 1 square represents 5 votes.
3. Draw a vertical bar for each animal in the table.
4. Write a title for the graph.

Try These

Use the data in this table to complete the graph.

<table>
<thead>
<tr>
<th>Ice-Cream Flavour</th>
<th>Number of People</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vanilla</td>
<td>40</td>
</tr>
<tr>
<td>Chocolate</td>
<td>75</td>
</tr>
<tr>
<td>Strawberry</td>
<td>50</td>
</tr>
</tbody>
</table>

a) Label the axes.
b) Number the scale.
c) Give the graph a title.
1. The students in Peter's school voted for their favourite type of music. The results are displayed in this table.

   a) Draw a vertical bar graph to display these data.

<table>
<thead>
<tr>
<th>Type of Music</th>
<th>Rock</th>
<th>Rap</th>
<th>Hip Hop</th>
<th>Pop</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Students</td>
<td>65</td>
<td>70</td>
<td>40</td>
<td>55</td>
</tr>
</tbody>
</table>

   b) Write two things you know from looking at your graph.

   ___________________________________________________________
   ___________________________________________________________

**Stretch Your Thinking**

Your grid paper has 20 squares along one side. The greatest value you have to display on the graph is 150. What scale will you use? Explain.

___________________________________________________________________
___________________________________________________________________
Quick Review

These two graphs show the same data.

In the pictograph, symbols show the data. In the bar graph, bars show the data.

From the pictograph, we use the key to determine the number of trees. From the bar graph, we use the scale to determine the number.

Try These

Use the data displayed in the graphs above.

a) How many oak trees were planted in Victory Park? __________

b) What does on the pictograph represent? __________

c) How many birch trees were planted? __________

d) What is the scale on the bar graph? ________________

e) How many more oak trees were planted than willow trees? ________
Practice

1. Use the data in the bar graph.
   a) How many people took part in the walk-a-thon? _____
   b) Which group had the most people? ________________
   c) How many more Brownies took part than Cubs? _____
   d) Suppose you wanted to display these data as a pictograph. What key would you use?
                      _____________________________
   How many symbols would you need for the Girl Guides? ________________

2. This bar graph shows how long five of Canada’s Prime Ministers of Canada were in office.
   a) Who was in office the longest time?
                      _____________________________
   Who was in office the shortest time?
                      _____________________________
   b) Who was in office about 7 years longer than St. Laurent?
                      _____________________________
                      _____________________________

Stretch Your Thinking

Lester B. Pearson was Prime Minister from April, 1963 to April, 1968.
How long was he in office? ____________
Add this information to the graph in question 2 above.
Quick Review

➤ Use place value to multiply by 10 and by 100.

You know $5 \times 1 = 5$.
Use mental math to find $5 \times 10$ and $5 \times 100$.

- $5 \times 1$ ten = 5 tens
- $5 \times 1$ hundred = 5 hundreds
- $5 \times 10 = 50$
- $5 \times 100 = 500$

➤ Use basic multiplication facts and place value to multiply by multiples of 10 and 100.

You know $3 \times 3 = 9$.
Use mental math to find $3 \times 30$ and $3 \times 300$.

- $3 \times 3$ tens = 9 tens
- $3 \times 3$ hundreds = 9 hundreds
- $3 \times 30 = 90$
- $3 \times 300 = 900$

Try These

Multiply. Use Base Ten Blocks when they help.

1. a) $6 \times 1 = \underline{\hphantom{00}}$  
    $6 \times 10 = \underline{\hphantom{00}}$
    $6 \times 100 = \underline{\hphantom{00}}$

   b) $8 \times 1 = \underline{\hphantom{00}}$  
    $8 \times 10 = \underline{\hphantom{00}}$
    $8 \times 100 = \underline{\hphantom{00}}$

   c) $9 \times 1 = \underline{\hphantom{00}}$  
    $9 \times 10 = \underline{\hphantom{00}}$
    $9 \times 100 = \underline{\hphantom{00}}$

2. a) $3 \times 2 = \underline{\hphantom{00}}$
    $3 \times 20 = \underline{\hphantom{00}}$
    $3 \times 200 = \underline{\hphantom{00}}$

   b) $5 \times 2 = \underline{\hphantom{00}}$
    $5 \times 20 = \underline{\hphantom{00}}$
    $5 \times 200 = \underline{\hphantom{00}}$

   c) $4 \times 2 = \underline{\hphantom{00}}$
    $4 \times 20 = \underline{\hphantom{00}}$
    $4 \times 200 = \underline{\hphantom{00}}$

3. a) $8 \times 4 = \underline{\hphantom{00}}$
    $8 \times 40 = \underline{\hphantom{00}}$
    $8 \times 400 = \underline{\hphantom{00}}$

   b) $3 \times 4 = \underline{\hphantom{00}}$
    $3 \times 40 = \underline{\hphantom{00}}$
    $3 \times 400 = \underline{\hphantom{00}}$

   c) $5 \times 4 = \underline{\hphantom{00}}$
    $5 \times 40 = \underline{\hphantom{00}}$
    $5 \times 400 = \underline{\hphantom{00}}$
Find each product. Then fill in the boxes below with the letters that match the products. The words in the boxes will answer this riddle:

**Why do rabbits make good mathematicians?**

A \[ 6 \times 100 = \_ \]  
B \[ 8 \times 10 = \_ \]  
C \[ 3 \times 50 = \_ \]  
D \[ 80 \times 7 = \_ \]  
E \[ 6 \times 80 = \_ \]  
F \[ 3 \times 300 = \_ \]  
G \[ 6 \times 400 = \_ \]  
H \[ 5 \times 60 = \_ \]  
I \[ 7 \times 100 = \_ \]  
J \[ 200 \times 5 = \_ \]  
K \[ 5 \times 100 = \_ \]  
L \[ 4 \times 30 = \_ \]  
M \[ 9 \times 10 = \_ \]  
N \[ 2 \times 9 = \_ \]  
O \[ 2 \times 100 = \_ \]  
P \[ 6 \times 30 = \_ \]  
Q \[ 7 \times 700 = \_ \]  
R \[ 3 \times 10 = \_ \]  
S \[ 8 \times 20 = \_ \]  
T \[ 3 \times 80 = \_ \]  
U \[ 7 \times 50 = \_ \]  
V \[ 5 \times 10 = \_ \]  
W \[ 7 \times 300 = \_ \]  
X \[ 8 \times 90 = \_ \]  
Y \[ 4 \times 200 = \_ \]  
Z \[ 9 \times 50 = \_ \]

---

**Stretch Your Thinking**

There are 40 quarters in a roll.  
How many quarters are there in 10 rolls?

---

How many quarters are there in 100 rolls?
Estimating Products

Quick Review

Estimate to solve multiplication problems.

➤ A basket holds 23 apples.
   About how many apples do 5 baskets hold?
   To estimate $5 \times 23$
   $5 \times 20 = 100$
   There are about 100 apples in 5 baskets.

➤ A bucket holds 28 tennis balls.
   About how many tennis balls do 7 buckets hold?
   To estimate $7 \times 28$
   $7 \times 30 = 210$
   There are about 210 tennis balls in 7 buckets.

Try These

1. Estimate each product.
   a) $4 \times 29$
      Estimate: __________
   b) $6 \times 52$
      Estimate: __________
   c) $5 \times 81$
      Estimate: __________

2. There are 48 crayons in a box.
   About how many crayons are there in 8 boxes? ________________

3. There are 9 chairs in each row.
   About how many chairs are there in 18 rows? ________________

4. Kara bought 27 packs of stickers. There are 8 stickers in each pack.
   About how many stickers does Kara have? ________________
Practice

1. Estimate each product.
   a) $6 \times 78$ __________  
   b) $4 \times 93$ __________  
   c) $9 \times 42$ __________  
   d) $5 \times 69$ __________  
   e) $7 \times 21$ __________  
   f) $52 \times 7$ __________  
   g) $38 \times 8$ __________  
   h) $47 \times 6$ __________  
   i) $84 \times 5$ __________  

2. About how many gel pens would you have if you bought:
   a) 3 boxes? __________  
   b) 7 boxes? __________  
   c) 5 boxes? __________  
   d) 8 boxes? __________  

3. Bertha types 58 words a minute. About how many words can she type in:
   a) 5 minutes? __________  
   b) 8 minutes? __________  
   c) 30 minutes? __________  

4. Estimate how many treats you would get from:
   a) 6 piñatas __________  
   b) 4 piñatas __________  
   c) 9 piñatas __________  
   d) 8 piñatas __________  

Stretch Your Thinking

Jack collects superhero trading cards. He has 5 collections with 22 cards each and 7 collections with 27 cards each. About how many cards does Jack have altogether?
Quick Review

Here are two ways to use models to multiply $5 \times 22$.

➤ Use Base Ten Blocks. Arrange 5 groups of 22.

Multiply the tens. $5 \times 20 = 100$

Multiply the ones. $5 \times 2 = 10$

Add. $100 + 10 = 110$

➤ Show an array on grid paper.

5 rows of 20 = 100

5 rows of 2 = 10

Add. $100 + 10 = 110$

Try These

Use the models to multiply.

1. a) $4 \times 16 = _____$

   $4 \times 10 = _____$

b) $3 \times 15 = _____$

   3 rows of 10 = _____
1. Multiply. Use grid paper or Base Ten Blocks when they help.
   \[
   \begin{array}{cccccc}
   & a) & 32 & \times 4 \\
   b) & 42 & \times 4 \\
   c) & 84 & \times 2 \\
   d) & 71 & \times 8 \\
   e) & 65 & \times 3 \\
   f) & 56 & \times 3 \\
   g) & 19 & \times 5 \\
   h) & 57 & \times 6 \\
   i) & 48 & \times 4 \\
   j) & 56 & \times 9 \\
   \end{array}
   \]

2. Play this game with a partner.

   You will need:
   10 small pieces of paper with one of these numbers written on each piece: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9
   a small paper bag
   paper and pencil
   
   ➤ Draw a multiplication grid like this on your paper.
   ➤ Put the numbered pieces of paper in a bag.
   ➤ Pull out 3 numbered pieces each.
   ➤ Record each digit in one of the boxes in your multiplication grid.
   ➤ Find your products.
   The player with the greater product wins a point.
   ➤ Play 5 rounds.
   ➤ Then, change the rules to make a new game. Record your digits in the boxes of your partner’s multiplication grid. Play 5 more rounds.

Stretch Your Thinking

The box to the right represents the game you just played.
The digit boxes are represented by A, B, and C.
Which digit box is the best place to write your highest number?
Explain.
Quick Review

Here are 3 ways to multiply: $64 \times 6$.

➤ Multiply the tens. → Multiply the ones. → Add.

\[
60 \times 6 = 360 \quad 4 \times 6 = 24 \quad 360 + 24 = 384
\]

So, $64 \times 6 = 384$

➤ Write the number in expanded form: $64 = 60 + 4$

Multiply the tens and multiply the ones. Then add.

\[
6 \times 64 = (6 \times 60) + (6 \times 4)
\]
\[
\Downarrow \quad \Downarrow
\]
\[
360 + 24 = 384
\]

So, $64 \times 6 = 384$

➤ Break the number apart.

\[
64 \times 6
\]

Multiply the ones: $6 \times 4 \rightarrow 24$

Multiply the tens: $6 \times 60 \rightarrow 360$

Add. $384$

So, $64 \times 6 = 384$

Try These

Find each product. Show your work.

1. a) $27 \times 8 = _____$       b) $58 \times 3 = _____$       c) $77 \times 7 = _____$

2. a) $51 \times 8$       b) $35 \times 6$       c) $63 \times 2$
Practice

Play this game with a partner.

You will need:
paper and pencils
counters of 2 colours

➤ Take turns to choose one number from each number box.
   Multiply your 2 numbers and cover the product on the game board with a counter.
➤ Continue playing until one player covers 4 products in a vertical, horizontal, or diagonal line.

<table>
<thead>
<tr>
<th>117</th>
<th>216</th>
<th>304</th>
<th>504</th>
<th>135</th>
<th>54</th>
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<td>588</td>
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<td>420</td>
<td>152</td>
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</tbody>
</table>

Stretch Your Thinking

Which product is greater, 98 \times 6 or 76 \times 9? How much greater?

____________________

____________________

____________________

____________________
Quick Review

You can use patterns and mental math to multiply.

➤ Multiply: $7 \times 89$

Think:

89 is 1 less than 90.
So, $7 \times 89$ is
7 less than $7 \times 90$.
$7 \times 90 = 630$
Subtract 7.
$630 - 7 = 623$
So, $7 \times 89 = 623$

➤ Multiply: $6 \times 52$

Think:

52 is 2 more than 50.
So, $6 \times 52$ is
650 plus $6 \times 2$.
$6 \times 50 = 300$
Add $6 \times 2$, or 12.
$300 + 12 = 312$
So, $6 \times 52 = 312$

Try These

Use patterns to multiply.

1. a) $6 \times 78 =$
   b) $4 \times 29 =$
   c) $5 \times 59 =$
   d) $7 \times 68 =$
   e) $8 \times 27 =$
   f) $9 \times 79 =$

2. a) $8 \times 31 =$
   b) $7 \times 52 =$
   c) $6 \times 42 =$
   d) $4 \times 92 =$
   e) $9 \times 71 =$
   f) $8 \times 62 =$

3. a) $53 \times 8 =$
   b) $79 \times 7 =$
   c) $61 \times 6 =$
   d) $82 \times 5 =$
   e) $58 \times 4 =$
   f) $32 \times 9 =$
   g) $41 \times 6 =$
   h) $9 \times 82 =$
   i) $51 \times 7 =$
1. Use patterns to complete each multiplication chart.

a)  
\[
\begin{array}{cccc}
\times & 12 & 13 & 14 & 15 \\
5 & & & & \\
6 & & & & \\
7 & & & & \\
\end{array}
\]

b)  
\[
\begin{array}{cccc}
\times & 20 & 21 & 22 & 23 \\
7 & & & & \\
8 & & & & \\
9 & & & & \\
\end{array}
\]

2. Hot dogs cost $2 each. How much do 7 hot dogs cost?
_______________

3. Marbles are sold in bags of 49. How many marbles are in 8 bags?
_______________

4. There are 52 cards in a deck. How many cards are in 7 decks?
_______________

5. There are 13 doughnuts in a baker’s dozen.
   How many doughnuts are there in 9 bakers’ dozens?  _______________

6. There are 24 pencil-tip erasers in a package.
   How many erasers are there in 6 packages?  _______________

**Stretch Your Thinking**

Explain how you could use patterns to find $7 \times 699$.
___________________________________________________________________
___________________________________________________________________
___________________________________________________________________
Quick Review

Margaret bought 5 boxes of paper clips. Each box contains 175 paper clips. How many paper clips did she get?

The total number of paper clips is $5 \times 175$.

Here is one way to multiply:
Break 175 apart.
Multiply each part by 5.
Then add.

\[
\begin{align*}
\text{Multiply the ones: } & 5 \times 5 \quad \rightarrow \quad 25 \\
\text{Multiply the tens: } & 5 \times 70 \quad \rightarrow \quad 350 \\
\text{Multiply the hundreds: } & 5 \times 100 \quad \rightarrow \quad + 500 \\
\text{Add.} & \quad \rightarrow \quad 875
\end{align*}
\]

Margaret got 875 paper clips.

Try These

1. Multiply.
   \[\begin{array}{cccc}
   a) & 340 & \times 2 \\
   b) & 121 & \times 9 \\
   c) & 517 & \times 8 \\
   d) & 258 & \times 7 \\
   e) & 409 & \times 6
   \end{array}\]

2. Lester has 3 books of stickers. Each book has 144 stickers. How many stickers does Lester have? ________________
Practice

1. Multiply.
   a) 763  
   × 4
   b) 495  
   × 8
   c) 508  
   × 9
   d) 659  
   × 5
   e) 828  
   × 3
   f) 614  
   × 7 = _______
   g) 8 × 271 = ________
   h) 366 × 6 = ______

2. There are 125 balloons in a bag.
   How many balloons are there in 7 bags? ________________

3. Play this game with a partner.
   You will need a set of 10 cards numbered 0 to 9.
   ➤ Each of you draw a multiplication grid like this:
      
   ➤ Shuffle the cards and lay them face side down.
   ➤ Take turns flipping over a card.
      Each time a card is turned over, both players write that number in any box on their grids.
   ➤ Continue until players have filled all the boxes on their grids.
   ➤ Multiply. The player with the greater product wins.
   Play 5 more games.

Stretch Your Thinking

Choose a 3-digit number to multiply by 8 so that the product is between 4000 and 5000, but closer to 4000.

__________________________

× 8
Quick Review

In a division fact, the answer is the quotient.

\[ 18 \div 6 = 3 \]

quotient

Here are two ways to estimate \( 74 \div 8 \).

➤ Use division.

Think

74 is close to 72.
72 is a multiple of 8.
\[ 72 \div 8 = 9. \]

So, \( 74 \div 8 \) is about 9.

➤ Use multiplication.

Think

About how many groups of 8 are in 74?
\[ 9 \times 8 = 72. \]
72 is close to 74.

So, \( 74 \div 8 \) is about 9.

Try These

1. Circle the quotient in each division fact.
   a) \( 24 \div 8 = 3 \)  
   b) \( 32 \div 4 = 8 \)  
   c) \( 48 \div 6 = 8 \)

2. Write a division fact that helps you estimate each quotient.
   a) \( 37 \div 6 \) _________  
   b) \( 48 \div 7 \) _________  
   c) \( 25 \div 4 \) _________

3. Write a multiplication fact that helps you estimate each quotient.
   a) \( 17 \div 8 \) _________  
   b) \( 82 \div 9 \) _________  
   c) \( 34 \div 7 \) _________

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1. Write a division and a multiplication fact that help you estimate the quotient.
   a) $23 \div 6 \quad \quad \quad \quad b) 55 \div 9 \quad \quad \quad \quad c) 36 \div 5 \quad \quad \quad \quad d) 39 \div 8 \quad \quad \quad \quad$

2. Estimate each quotient.
   a) $17 \div 6 \quad \quad b) 44 \div 9 \quad \quad c) 37 \div 5 \quad \quad d) 20 \div 7 \quad \quad e) 19 \div 2 \quad \quad f) 33 \div 4 \quad \quad g) 29 \div 3 \quad \quad h) 70 \div 8$

3. Joachim has 71 stickers. He wants to arrange them into 8 groups.
   About how many stickers will be in each group? ________________

4. About how many weeks are there in 44 days? ________________

5. Eighty-four students sign up for basketball. The coach puts them into 9 teams. About how many students are on each team? ________________

6. Sarah shares 26 seashells among 8 friends. About how many seashells does each friend get? ________________

Stretch Your Thinking

Is the quotient of $55 \div 7$ greater than or less than 8? Explain.

___________________________________________________________________
___________________________________________________________________
Division with Remainders

Quick Review

Here's how to share 17 pears equally among 5 boxes.

Divide: \( 17 \div 5 \)

Put 3 pears in each box.
There are 2 pears left over.
Write: \( 17 \div 5 = 3 \text{ R}2 \)
This is a division sentence.
The “R” stands for remainder.

Here's how to decide how many tables are needed for 32 students eating in the lunchroom. Six students can fit at each table.

Divide: \( 32 \div 6 \)
Think about the division fact that is closest to \( 32 \div 6 \).
You know that \( 30 \div 6 = 5 \). So, \( 32 \div 6 = 5 \text{ R}2 \)
But if 5 tables are used, then 2 students cannot sit at a table. So, 6 tables are needed.

Try These

1. Write a division sentence for this picture.

2. Divide.
   a) \( 15 \div 6 = \) ______
   b) \( 27 \div 5 = \) ______
   c) \( 31 \div 4 = \) ______
   d) \( 19 \div 6 = \) ______
   e) \( 17 \div 4 = \) ______
   f) \( 37 \div 8 = \) ______
1. Play this game with a partner.

You will need:
counters of two colours
number cubes: one labelled 1, 1, 2, 2, 3, 3 and one labelled 4, 4, 5, 5, 6, 6

Take turns:
➤ Roll the number cubes to make a 2-digit number.
   (For example, with 6 and 3, you can make 63 or 36.)
➤ Place a counter on a circled number.
   Divide your 2-digit number by the number in your circle.
➤ Place a counter on a square containing your remainder if you can.
➤ Remove your counter from the circle.
Continue playing until all the squares are covered.

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<td>0</td>
<td>5</td>
<td>3</td>
<td>1</td>
<td>4</td>
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</tbody>
</table>

2. Write a division sentence with remainder 8.

__________________________________________________________________

2. Write a division sentence with remainder 4.

__________________________________________________________________
Using Base Ten Blocks to Divide

Quick Review

➤ Divide: 24 ÷ 2

Divide the blocks into two equal groups.
So, 24 ÷ 2 = 12

➤ Divide: 63 ÷ 5

Divide the blocks into 5 equal groups.
There are 10 in each group and 13 left over.

Trade the leftover ten rod for 10 unit cubes.

Divide the 13 unit cubes among the 5 equal groups.

So, 63 ÷ 5 = 12 R3

Try These

1. Divide. Use Base Ten Blocks when they help.
   a) 88 ÷ 4 = _______
   b) 54 ÷ 3 = _______
   c) 37 ÷ 2 = _______
   d) 89 ÷ 8 = _______
   e) 25 ÷ 2 = _______
   f) 41 ÷ 3 = _______

2. Divide. Draw a picture to show how you got the answer.
   27 ÷ 7 = _______
Practice

1. Divide. Use Base Ten Blocks when they help.
   a) \[ 56 \div 7 = \] _______
   b) \[ 81 \div 9 = \] _______
   c) \[ 35 \div 4 = \] _______
   d) \[ 27 \div 6 = \] _______
   e) \[ 75 \div 8 = \] _______
   f) \[ 24 \div 6 = \] _______

2. Write a division sentence to show each answer.
   a) Nine children want to share 36 stickers equally.
      How many stickers will each child get?
      _______________________________________________________________

   b) It takes 2 cups of milk to make a milkshake.
      How many milkshakes can be made with 17 cups of milk?
      _______________________________________________________________

   c) Emilio is putting 7 treats into each party bag.
      How many bags can he fill with 59 treats?
      _______________________________________________________________

3. Three tennis balls fit into each carton.
   How many cartons are needed for 29 tennis balls?
   _______________________________________________________________

4. Four children can fit into each seat on the carnival ride.
   How many seats are needed for 39 children?
   _______________________________________________________________

5. Write 2 division sentences with remainders.
   _______________________________________________________________

Stretch Your Thinking

Daniella divided a number between 45 and 50 by 5. The remainder was 4.
What number did Daniella divide? Write the division sentence.
Another Strategy for Division

Quick Review

Divide: $55 \div 2$

You write:

```
  2
2 5 1 5
```

Arrange the 5 rods in 2 equal rows.

One ten rod remains.

Trade the leftover ten rod for 10 ones.

Now you have 15 unit cubes.

Share the 15 cubes equally among the 2 groups.

So, $55 \div 2 = 27 \text{ R}1$

Try These

1. Divide. Use Base Ten Blocks when they help.
   a) $25 \div 8 =$ _______
   b) $42 \div 5 =$ _______
   c) $59 \div 7 =$ _______
   d) $29 \div 4 =$ _______
   e) $37 \div 9 =$ _______
   f) $34 \div 6 =$ _______
   g) $20 \div 7 =$ _______
   h) $52 \div 8 =$ _______
   i) $19 \div 3 =$ _______

2. Luis divided 43 marbles equally among his 6 friends. How many marbles did each friend get? Did Luis have any marbles left? Write a division sentence to show how you got the answer.
1. Play this game with a partner.

<table>
<thead>
<tr>
<th>Start</th>
<th>40</th>
<th>21</th>
<th>33</th>
<th>11</th>
<th>44</th>
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<td>20</td>
<td>25</td>
<td>39</td>
<td>48</td>
<td>38</td>
</tr>
</tbody>
</table>

You will need:
1 marker per player
50 counters per player
1 number cube marked 2 to 7

➢ Place your markers on Start.
➢ Take turns.
➢ Roll the number cube. Move that many spaces in either direction.
➢ Divide the number you land on by the number you rolled. If you have a remainder, give that many counters to your partner.
➢ Continue to take turns. On each turn, you may move your marker in either direction.
➢ Play until one player runs out of counters. That player is the winner.

Stretch Your Thinking

Describe the strategy you used to try to win this game.

___________________________________________________________________
___________________________________________________________________
___________________________________________________________________

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Calendar Puzzles

Take a month from an old calendar. Cut out all the squares except the 1st square and put them in a paper bag. Now, you can challenge a friend to help you put the month back together!

➤ Pull a square out of the bag. In your head, figure out where that day would lay using the first day as your starting point.

➤ Did you use a pattern to help? Share it with your partner!

➤ Take turns until the month is back in "tiptop" shape! Could you use the same pattern for another month?

Did You Know?

Our number system was developed by mathematicians in India in the sixth century. Traders carried the system west to Baghdad. Arabs then took it to North Africa and Europe. See how a good idea spreads?

What could a possible date be?

Did the girl say to the boy octopus?

I wanna hold your hand, hand, hand, hand, hand, hand, hand, hand

Math makes lots of sense to me. Until my brain goes numb. But when I get confused, I remember the "rule of thumb." I think about the problem until my brain goes numb. Math makes lots of sense to me.

The next 4 pages fold in half to make an 8-page booklet.

Did you know?

Another month? Could you use the same pattern for "tiptop"?

Parent note: Did you use a pattern to help? Share it with your child where that day would lay using the first day as your starting point. Pull a square out of the bag. In your head, figure out where that day would lay using the first day.

Challenge a friend to help put the month back together.
4-In-A-Row

**You’ll need:**
- different counters for each player
- cards numbered 1–10
- a multiplication table

**On your turn:**
- Choose 2 cards from the top of the pile.
- Find the numbers on the top row and left side column of the multiplication chart.
- Find the product of the two numbers and put a counter on that square.
- If you draw a 10, you get to put your counter on any square.

Take turns until someone gets 4 counters in a row. (The counters can run diagonally, vertically, and horizontally.)

Hey, here’s a really cool pattern!

---

Sum It Up!

**You’ll need:**
- 3 sets of cards numbered 1–9 (shuffled well)
- a coin
- a large book to use as a barrier

**To begin:**
Without peeking, each player draws 8 cards and lays them out one at a time, left to right in 2 rows of 4.

Flip the coin.

➤ Switch the position of 2 cards.
➤ Switch the position of 4 cards.

➤ Both players may switch any 2 or 4 cards to make the largest sum.

So, if you drew this: 1 7 4 8 Then flipped tails ...
2 9 3 6

You’d probably change it to this: 8 7 4 1 Switch the 8 and 1.
9 2 3 6 Switch the 9 and 2.

➤ Figure out the sum of your two numbers.
➤ Show your numbers to your partner.
➤ The player with the highest sum earns a point.
➤ If the sums are within 1000 of each other, you both earn a point.
➤ The first player with 10 points wins!
How Many?

Oh, no! I was on my way to pick up balls for a “Family Fun Day” when I accidentally spilled pop on my list.

➤ Can you figure out how many of each ball I need?
➤ Is there more than one way to solve it?
➤ Make a list of all the choices.

What if I could clean the spill enough to see that the first number had 2 digits, with a 0 in the ones place? How many of each ball would I need now?

Think About It!

What is 42 = ?
What is 36 = ?

Make up your own puzzles for others to solve!

Multiplication Table for 4-In-A-Row

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<td>54</td>
<td>63</td>
<td>72</td>
<td>81</td>
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</table>
On a Trip ...

Do you find long car rides boring? Watch for a sign showing the number of kilometres to 2 or 3 places.

➤ Can you estimate the distance between those places, before you drive past?

➤ Get everyone in on it. Who can make the best estimate?

(Don’t give up! The more you try it, the faster you’ll get!)

Powerful Patterns

“I built 7 triangles with only 13 toothpicks.”

“But that’s impossible! Each triangle has 3 sides. \(7 \times 3 = 21\).”

What do you think?
Make a prediction, then try it out yourself. If you get stuck, use a mirror to read the hints below:

What if you changed the shape to squares? Would you need to build it all to find out?

Mind Readers, Inc.

Master this trick and your friends will think you are a mind reader!

Lead your friends carefully through the following steps:

1. In your head, think of a secret number between 1 and 10.
2. Double that number.
3. Add 12. Now keep that total in your head.
4. Divide your total by 4 and remember the answer.
5. Now think of your original number. Take half of that and subtract it from the total in step 4.

Now tell your friend that the answer to his/her secret calculation is 3!

Can you figure out why it works? Will it work with any number?

Hint: Try using counters to build the idea.
Math at Home 2

Math at Home

Math is all around my house. It shows up everywhere.

How many minutes are left until all these jobs are done?

How many eggs to bake a cake?

How long to brush my hair?

How many strokes will I need to sweep the upstairs hall?

How many pop star posters should I pick up in groups of two?

How much water fills the sink to scrub those dishes clean?

How many of my sister’s toys are scattered on the floor?

How many minutes are left until all these jobs are done?

But wait! I guess it’s no big deal, ’cause “Mathy” chores are fun!

Or grab a whole lot more.

Fold
**String Shapes**

Cut two pieces of string 30 cm long. Use one piece to design a dog pen with the greatest possible area. Use the other one to design a pen with the least possible area.

What is the perimeter of both shapes?
Hmmm … interesting!

**Shopping Anyone?**

**Before you play:**
- Cut out from a grocery store flyer about 20 items that cost less than $4.00.
- Place the pictures in a bag you can’t see through.
- Each take a pencil and paper and print $20.00 at the top of the page.

**On your turn:**
- Pull a “price tag” out of the bag.
- Print the price underneath the $20.00 and subtract. (Estimate first.)
- On your next turn, you’ll subtract the price from the money you had left from your turn before.

Play until someone runs out of money!

**Terrific Tangrams**

**You’ll need:**
- 3 number cubes labelled 1 to 6
- 1 set of tangram pieces for each player (trace the pieces on the next page and cut apart)

The goal here is to earn each piece in order to make the fish on the next page!

**On your turn:**
- Roll all three number cubes.
- Add, subtract, multiply, or divide the numbers to try to get an answer that matches a number on a tangram shape.

**If you rolled:**

1 3 5

**You might say,** “5 x 1 is 5, and 5 + 3 is 8, so I get the shape with an 8 on it!”

Use the pieces you’ve earned to begin building a fish design. You can make it any way you choose. The example on page 8 shows one way to do it. But, here’s the catch: every line of symmetry in your fish shape is worth 5 points if you can prove it!

How many different ways are there to make a fish with lines of symmetry? Can you design more than one?

Try it again – this time aim for a symmetrical design that is not a fish.
Time Olympics

With a friend, think of 10 “active events” to include in your “Time Olympics.” Print them on separate pieces of paper.

Here are a few ideas to get you started:

➤ Do the “hokey-pokey” 2 times through.

➤ Run around the house 3 times (outside, please!).

➤ Push a cotton ball across the floor with your nose.

➤ Put the pieces of paper face down on the table.

➤ One person chooses one and reads it.

➤ Both players write down an estimate of how long it will take to do the event.

➤ The player who picked the activity begins, while the other person keeps track of the time.

➤ Whoever ends up with the closest estimate keeps the card.

➤ Take turns until all Olympic events are done.

➤ Whoever has the most cards wins GOLD!

Chocolate Bar Surprise

Willie Wonka is looking for a great new chocolate bar to make in his “Chocolate Factory.” Follow the clues below to create the perfect bar for Willie.

Follow the clues below to create the perfect bar for Willie.

➤ \( \frac{1}{1} \) is mint (colour green)

➤ \( \frac{1}{1} \) is caramel filled (colour golden brown)

➤ \( \frac{1}{1} \) is dark chocolate (colour dark brown)

➤ \( \frac{1}{1} \) is white chocolate (colour white)

➤ \( \frac{5}{8} \) has rice crisps (colour speckled)

Now, design your own!

Tell a friend about each flavour using fractions.

Is anyone hungry?
How Long? How Wide? How Thick?

You’ll need:
➤ 3 of each card — cm, m
➤ a number cube labelled 1 to 6

Before you begin, put the cards face down on the table. Decide how many points you’ll need to win the game.

On your turn:
➤ Choose a card and roll the number cube.
➤ Find something in your house that is about the same length as the card and number cube show. (If you rolled a 2 and picked a cm card, you’d look for something with a dimension of 2 cm.)
➤ Once you’ve found something, measure it.
If you’re close: 1 point
Exactly right: 2 points

Hmmm … How are you going to decide how close is close enough? Is it harder to guess within 2 m or 2 cm? Why?

Play until one player earns enough points!

At the Mall
➤ Which stores do you think cover the greatest area?
➤ Which ones cover the least?
➤ Which ones are farthest away from each other?

Check the mall layout sign and see if you’re right!

Did anything surprise you?

Savvy Saving
If you start with 1¢ and double your savings each day, how long until you have about $5? Guess first, then try it!

How much do you think you’ll have by the end of the month? A calculator could be your friend on this one!

Did You Know?
Ralf Laue of Germany can toss a pancake 416 times in 2 minutes. How many times could he do it in 1 minute? 6 minutes? 10 seconds?
Shopping’s just a BORE!
Don’t ever let me hear you say,
But...

Just browse a little while,
Angles jumping out at you,

Numbers on the labels.
Numbers on the tags.
Numbers on the cash register.
Numbers on the bags.

There are shapes of every size
Lining every aisle.

Visiting the supermarket
And you’ll see math galore!

Estimate the grocery bill.
Count up change galore.

Although it takes a little while,
Just take a look around,

There are shapes of every size.
Numbers on the bags.
Numbers on the cash register.
Numbers on the tags.
Numbers on the labels.

Fold

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Math at Home
Math at Home

Pet Survey

Got a Minute?
Look at a clock
give 5 minutes to 2.
I guess 1:55 is the same.

Need a Hint?
Each pet best.
Figure out what fraction of kids liked each pet.

Graph.
Take the survey and turn them into a circle graph.

Now let’s make it a bit more interesting!

Check the results below!

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Dog</td>
<td>Cat</td>
<td>Hamster</td>
<td>Goldfish</td>
</tr>
</tbody>
</table>

12 six-year-olds were surveyed.

About their favourite pets.

Fold
Guesstimate!

Here is a game you can play with 2 or more people. Before you begin, you will need to make number sentence strips. You can cut them from page 3 or make your own from cardstock.

1. Place all of your strips on the table, face up. Mix them up so that they are not in any particular order.
2. Player A chooses a strip (in her mind).
3. She now gives the hint by telling 2 numbers that are close to the product of that strip.

Example:

The product of my strip is somewhere between 300 and 400.

4. Player B tries to guess which strip Player A was thinking of. Could there be more than 1 answer?
5. Use the calculator to check!

Try making up your own number strips. Use division, multiplication or maybe a combination!

Calculator Patterns

Enter a number in a calculator and show it to a friend. Secretly, either add or subtract a one-digit number from the first number and press the equal key.

Give the calculator to your friend and ask him to press the equal key 3 more times, watching the numbers change each time. Challenge him to try to figure out what you did!

Switch places and play again!

Party Time

Imagine you’re having a pizza party and 5 kids have been invited over.

➤ You estimate that each kid will eat 3 pieces. (Don’t forget yourself!)
➤ If each pizza is cut into 8 pieces, how many whole pizzas will you need to order?

(Use the pizzas below to help you figure it out!)

What fraction will be left over?
Art Attack!

Create an abstract sculpture using many 3-D objects, some tape, and your imagination.

First, collect several empty boxes, toilet paper rolls, milk cartons, juice boxes, ice-cream cones, and any other interesting 3-D objects you can find.

Think about how the shapes might fit together and then start taping. Each time you pick up a new object, count the faces and name them.

When you’re all done, tell someone about your masterpiece. (Be sure to point out lots of cool “attributes”!) When you’re all done, tell someone about your masterpiece. (Be sure to point out lots of cool “attributes”!)

Guessimate Number Strips

- 173 x 3
- 82 x 6
- 45 x 4
- 151 x 4
- 256 x 4
- 0 x 7
- 43 x 6
- 2 x 7

Crazy Clocks

What time could it be if the minute hand and the hour hand made a square corner?

Smaller than a square corner?

Bigger than a square corner?

Is there more than one choice? Use a real clock to find out!

Think about how the shapes might fit together and then start taping. Each time you pick up a new object, count the faces and name them. What time could it be if the minute hand and the hour hand made a square corner?
Dream Design

Have you always wanted that dream room but never been allowed to design your own? Here’s your chance!

The grid below represents your new room. Each square stands for 1 square metre.

What’s the area of the room? What’s the perimeter?

6 m

5 m

➤ Draw in furniture where you would like it placed. (Pretend you’re looking down from the ceiling.)
➤ Estimate the actual size of real furniture and cover the right number of squares. (A queen-size bed would cover approximately 2 squares by 2½ squares.)
➤ Colour your furniture.

Let’s Take a Closer Look …

➤ What area of floor space does your bed take up?
➤ Is it more or less than the dresser?
➤ What’s the area of the “empty” floor space?
➤ Find the perimeter of 3 different pieces of furniture.
➤ If your room was only \( \frac{1}{2} \) the size, would you still be able to fit all the furniture in? How could you test your prediction?

Great news! Now you get to design your floor!
Use at least 3 different colours to create an interesting tile pattern on the grid below.

6 m

5 m

Show your design to your family. Do you think they’ll go for it?