1. When all the seats are filled, a Ferris wheel can take 72 people for a ride. There are 313 people waiting to ride the wheel. Which drawing represents the number of rides with all the seats filled?

A  
\[
\begin{array}{c|c}
72 & x \\
\hline
& 313 \\
\end{array}
\]

B  
\[
\begin{array}{c}
313 \\
\hline
72 & x \\
\end{array}
\]

C  
\[
\begin{array}{c|c}
72 & x \\
\hline
& 313 \\
\end{array}
\]

D  
\[
\begin{array}{c}
313 \\
\hline
72 & x \\
\end{array}
\]

2. Last year, a bead store sold 104,002 glass beads and 47,357 wooden beads. How many more glass beads than wooden beads did the store sell?

A 54,755  
B 56,645  
C 67,645  
D 67,755

3. A farmer has to pack 836 oranges into boxes. Each box holds 44 oranges. Let \( b \) be the total number of boxes the farmer needs.

a. Draw a picture you can use to find \( b \).

b. Write an equation to find \( b \).

c. How many boxes will the farmer need?

4. The table shows the thickness of different brands of plastic bags.

<table>
<thead>
<tr>
<th>Brand</th>
<th>Thickness (centimeters)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron Sides</td>
<td>0.023</td>
</tr>
<tr>
<td>Mighty Hold</td>
<td>0.003</td>
</tr>
<tr>
<td>Steely Bags</td>
<td>0.032</td>
</tr>
<tr>
<td>Super XX</td>
<td>0.004</td>
</tr>
</tbody>
</table>

List the brands of bags in order from thinnest to thickest.
1. When all the seats are filled, a Ferris wheel can take 72 people for a ride. There are 313 people waiting to ride the wheel. Which drawing represents the number of rides with all the seats filled?

A
\[
\begin{array}{c|c}
72 & 313 \\
\hline
x & \\
\end{array}
\]

B
\[
\begin{array}{c|c}
313 & 72 \\
\hline
x & \\
\end{array}
\]

C
\[
\begin{array}{c|c}
72 & 313 \\
\hline
x & \\
\end{array}
\]

D
\[
\begin{array}{c|c}
72 & 313 \\
\hline
& x \\
\end{array}
\]

2. Last year, a bead store sold 104,002 glass beads and 47,357 wooden beads. How many more glass beads than wooden beads did the store sell?

A 54,755
B 56,645
C 67,645
D 67,755

3. A farmer has to pack 836 oranges into boxes. Each box holds 44 oranges. Let \( b \) be the total number of boxes the farmer needs.

a. Draw a picture you can use to find \( b \).

b. Write an equation to find \( b \).
\[
836 \div 44 = b
\]

c. How many boxes will the farmer need?
19 boxes

4. The table shows the thickness of different brands of plastic bags.

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</tbody>
</table>

List the brands of bags in order from thinnest to thickest.

Mighty Hold,
Super XX, Iron Sides, Steely Bags
Jerry’s kitten grew 3 cm between the ages of 4 months and 5 months. The kitten grew 2 cm between the ages of 5 months and 6 months. At 6 months, the kitten is 19 cm tall. How tall was Jerry’s kitten when it was 4 months old?
Name ____________________________

Quick Check 5-1

Use mental math to find each quotient.

1. \(4,800 \div 80 = \)
   - A  6
   - B  60
   - C  600
   - D  6,000

2. A paper company has 30 boxes of paper ready to ship. There are 27,000 pieces of paper in the boxes. If each box has an equal number of pieces of paper, how many pieces of paper are in each box?
   - A  9
   - B  90
   - C  900
   - D  9,000

3. \(16,000 \div 40 = \)
   - A  4,000
   - B  400
   - C  40
   - D  4

4. 360 fifth-graders went on a field trip. On the trip, they were divided into groups with 40 students in each group. How many groups were there?
   - A  9
   - B  6
   - C  4
   - D  2

5. **Writing to Explain** A theater company made 6,000 programs for their current play. The play will have 20 performances. If they would like to have the same number of programs available for each performance, how many programs should they count out for the first performance? Use mental math to find the answer. Explain how you got your answer.
Quick Check 5-1

1. $4,800 \div 80 =$
   - A 6
   - B 60
   - C 600
   - D 6,000

2. A paper company has 30 boxes of paper ready to ship. There are 27,000 pieces of paper in the boxes. If each box has an equal number of pieces of paper, how many pieces of paper are in each box?
   - A 9
   - B 90
   - C 900
   - D 9,000

3. $16,000 \div 40 =$
   - A 4,000
   - B 400
   - C 40
   - D 4

4. 360 fifth-graders went on a field trip. On the trip, they were divided into groups with 40 students in each group. How many groups were there?
   - A 9
   - B 6
   - C 4
   - D 2

5. Writing to Explain  A theater company made 6,000 programs for their current play. The play will have 20 performances. If they would like to have the same number of programs available for each performance, how many programs should they count out for the first performance? Use mental math to find the answer. Explain how you got your answer.

See student samples at the right.
Using Patterns to Divide

You can use basic facts and patterns to divide mentally.

Using basic facts
What is $350 \div 70$?
Think: $350 \div 70$ is the same as $35 \text{ tens} \div 7 \text{ tens}$.
$35 \div 7 = 5$
So, $350 \div 70 = 5$.

Using patterns
What is $5,400 \div 60$?
$5,400 \div 60$ is the same as $540 \div 6$.
$54 \div 6 = 9$, so $540 \div 6 = 90$.
So, $5,400 \div 60 = 90$.

Find each quotient. Use mental math.
1. $280 \div 70 = \underline{\blank}$
2. $320 \div 40 = \underline{\blank}$
3. $360 \div 60 = \underline{\blank}$
4. $7,200 \div 80 = \underline{\blank}$
5. $9,000 \div 30 = \underline{\blank}$
6. $4,800 \div 80 = \underline{\blank}$
7. $2,000 \div 40 = \underline{\blank}$
8. $5,600 \div 70 = \underline{\blank}$
9. Number Sense How is dividing 250 by 50 the same as dividing 2,500 by 500?

10. Explain It Explain how you can mentally determine that $35,000 \div 70 = 500$. 

Name ________________________________
Using Patterns to Divide

You can use basic facts and patterns to divide mentally.

**Using basic facts**

What is $350 \div 70$?

Think: $350 \div 70$ is the same as $35 \text{ tens} \div 7 \text{ tens}$.

$35 \div 7 = 5$

So, $350 \div 70 = 5$.

**Using patterns**

What is $5,400 \div 60$?

$5,400 \div 60$ is the same as $540 \div 6$.

$54 \div 6 = 9$, so $540 \div 6 = 90$.

So, $5,400 \div 60 = 90$.

Find each quotient. Use mental math.

1. $280 \div 70 = \underline{4}$

2. $320 \div 40 = \underline{8}$

3. $360 \div 60 = \underline{6}$

4. $7,200 \div 80 = \underline{90}$

5. $9,000 \div 30 = \underline{300}$

6. $4,800 \div 80 = \underline{60}$

7. $2,000 \div 40 = \underline{50}$

8. $5,600 \div 70 = \underline{80}$

9. **Number Sense** How is dividing $250$ by $50$ the same as dividing $2,500$ by $500$?

**Sample answer:** $250 \div 50 = 5$ and $2,500 \div 500 = 5$. Both problems use the same basic fact that $25 \div 5 = 5$.

10. **Explain It** Explain how you can mentally determine that $35,000 \div 70 = 500$.

**You know that** $35 \div 7 = 5$. Using math facts and patterns you also know that $3,500 \div 70 = 50$ and $35,000 \div 70 = 500$. 

Name _______________________

Reteaching 5-1
Name ____________________________

Using Patterns to Divide

In 1 through 4, find each quotient. Use mental math.

1. \(360 \div 40 = 36 \text{ tens} \div 4 \text{ tens} = \) ________________

2. \(5,400 \div 90 = 540 \text{ tens} \div 9 \text{ tens} = \) ________________

3. \(240 \div 30 = 24 \text{ tens} \div 3 \text{ tens} = \) ________________

4. \(4,800 \div 10 = 480 \text{ tens} \div 1 \text{ ten} = \) ________________

Use mental math to answer the following questions.

5. If the vehicles are divided evenly among the sections, how many vehicles are in each section?

___________________________

6. If the vehicles are divided evenly among the rows in each section, how many vehicles are in each row?

___________________________

7. Estimation Suppose there are 297 students going on a field trip. If each schoolbus can carry 58 students, estimate the number of buses that will be needed to transport all the students.

___________________________

8. Algebra If \(160,000 \div n = 4\), what is the value of \(n\)?

A 40  B 400  C 4,000  D 40,000

9. Explain It Solve the equation \(n \times 50 = 5,000\). Explain your solution.

___________________________
Using Patterns to Divide

In 1 through 4, find each quotient. Use mental math.

1. \(360 \div 40 = 36 \text{ tens} \div 4 \text{ tens} = 9\)
2. \(5,400 \div 90 = 540 \text{ tens} \div 9 \text{ tens} = 60\)
3. \(240 \div 30 = 24 \text{ tens} \div 3 \text{ tens} = 8\)
4. \(4,800 \div 10 = 480 \text{ tens} \div 1 \text{ ten} = 480\)

Use mental math to answer the following questions.

5. If the vehicles are divided evenly among the sections, how many vehicles are in each section?
   \(300 \text{ vehicles}\)

6. If the vehicles are divided evenly among the rows in each section, how many vehicles are in each row?
   \(30 \text{ vehicles}\)

7. Estimation Suppose there are 297 students going on a field trip. If each school bus can carry 58 students, estimate the number of buses that will be needed to transport all the students.
   Since \(\frac{300}{60} = 5\), about 5 school buses will be needed.

8. Algebra If \(160,000 \div n = 4\), what is the value of \(n\)?
   \(A \ 40 \quad B \ 400 \quad C \ 4,000 \quad D \ 40,000\)

9. Explain It Solve the equation \(n \times 50 = 5,000\). Explain your solution.
   \(n = 100; \ Sample \ answer: \ Divide \ each \ side \ by \ 50.\)
**Move Those Zeros**

Kerry uses a crane to lower zeros into the answers below. Cross off each zero after it has been used.

1. \(24 \div 6 = \) _________
2. \(560 \div 7 = \) 8 _________
3. \(240 \div 6 = \) 4 _________
4. \(56 \div 7 = \) _________
5. \(2,400 \div 6 = \) 4 _________
6. \(6,300 \div 9 = \) 7 _________
7. \(24,000 \div 6 = \) 4 _________
8. \(63 \div 9 = \) _________
9. \(56,000 \div 7 = \) 8 _________
10. \(63,000 \div 9 = \) 7 _________
11. \(5,600 \div 7 = \) 8 _________
12. \(630 \div 9 = \) 7 _________

13. How many zeros does Kerry have left over? _________

14. Write a division problem whose quotient has the same number of zeros that Kerry has left over.
Move Those Zeros

Kerry uses a crane to lower zeros into the answers below. Cross off each zero after it has been used.

1. \(24 \div 6 = \underline{4}\)
2. \(560 \div 7 = \underline{80}\)
3. \(240 \div 6 = \underline{40}\)
4. \(56 \div 7 = \underline{8}\)
5. \(2,400 \div 6 = \underline{400}\)
6. \(6,300 \div 9 = \underline{700}\)
7. \(24,000 \div 6 = \underline{4000}\)
8. \(63 \div 9 = \underline{7}\)
9. \(56,000 \div 7 = \underline{8000}\)
10. \(63,000 \div 9 = \underline{7000}\)
11. \(5,600 \div 7 = \underline{800}\)
12. \(630 \div 9 = \underline{70}\)

13. How many zeros does Kerry have left over? \(\underline{2}\)

14. Write a division problem whose quotient has the same number of zeros that Kerry has left over.

Sample answer: \(7,200 \div 8 = 900\)
1. Carson School has 1,200 students. The principal organizes them into 40 teams for Field Day. If each team is the same size, how many people are on a team?
   - A  30
   - B  40
   - C  116
   - D  120

2. Look at the figure below made up of 1-unit cubes.

   ![Figure](image)

   What is the volume of the figure?
   - A  20 units
   - B  40 units
   - C  80 units
   - D  400 units

3. A service group earns $1,800 by recycling scrap metal. Each pound of scrap metal is worth $30. How many pounds of scrap metal did the group recycle?
   - A  150
   - B  60
   - C  15
   - D  6

4. Fill in the blanks to complete the table.

<table>
<thead>
<tr>
<th>Expression</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>400 ÷ 50</td>
<td>8</td>
</tr>
<tr>
<td>4,000 ÷ 50</td>
<td>80</td>
</tr>
<tr>
<td>40,000 ÷ 50</td>
<td></td>
</tr>
<tr>
<td>400,000 ÷ 50</td>
<td>8,000</td>
</tr>
</tbody>
</table>

5. Multiply.
   \[ 416 \times 34 \]

6. Emma buys a book and gives the clerk $13.00. How much did the book cost if her change is $0.33?
1. Carson School has 1,200 students. The principal organizes them into 40 teams for Field Day. If each team is the same size, how many people are on a team?
   A 30  
   B 40  
   C 116  
   D 120

2. Look at the figure below made up of 1-unit cubes.
   What is the volume of the figure?
   A 20 units  
   B 40 units  
   C 80 units  
   D 400 units

3. A service group earns $1,800 by recycling scrap metal. Each pound of scrap metal is worth $30. How many pounds of scrap metal did the group recycle?
   A 150  
   B 60  
   C 15  
   D 6

4. Fill in the blanks to complete the table.

   | 400 ÷ 50 | = 8  |
   | 4,000 ÷ 50 | = 80  |
   | 40,000 ÷ 50 | = 800  |
   | 400,000 ÷ 50 | = 8,000  |

5. Multiply.
   416
   × 34

   ________
   14,144

6. Emma buys a book and gives the clerk $13.00. How much did the book cost if her change is $0.33?
   ________
   $12.67
The Rokko railway tunnel in Japan is about 52,800 feet long. There are 5,280 feet in one mile. How many miles long is the tunnel?
Estimate using compatible numbers.

1. \( \frac{567}{82} \approx \)
   
   A 5  
   B 6  
   C 7  
   D 8

2. \( \frac{2512}{65} \approx \)
   
   A 50  
   B 40  
   C 30  
   D 25

3. An elementary school has 1,558 students. There are 48 classes. Estimate the number of students in each class.
   
   A about 50  
   B about 40  
   C about 30  
   D about 20

4. **Writing to Explain** Kyle has 314 stamps in his collection. He is placing his stamps in an album with pages that each hold 42 stamps. He estimates he will need about 8 pages. Is he right? Why or why not?
Estimate using compatible numbers.

1. \(567 \div 82 \approx\)
   - A 5
   - B 6
   - C 7
   - D 8

2. \(2,512 \div 65 \approx\)
   - A 50
   - B 40
   - C 30
   - D 25

3. An elementary school has 1,558 students. There are 48 classes. Estimate the number of students in each class.
   - A about 50
   - B about 40
   - C about 30
   - D about 20

4. **Writing to Explain** Kyle has 314 stamps in his collection. He is placing his stamps in an album with pages that each hold 42 stamps. He estimates he will need about 8 pages. Is he right? Why or why not?

   **See student samples at the right.**
Estimating Quotients with 2-Digit Divisors

You can use compatible numbers to estimate a quotient.

Find \(175 \div 32\).

**Step 1:** Find compatible numbers for 175 and 32.
32 rounds to 30.
Think: 18 can be divided evenly by 3.
180 is close to 175 and 30 is close to 32.
180 and 30 are compatible numbers.

**Step 2:** Divide. Use patterns to help you, if possible.
Think: 180 ÷ 30 is the same as 18 tens ÷ 3 tens.
\(18 \div 3 = 6\)
So, \(180 \div 30 = 6\).

**Step 3:** Check for reasonableness.
\(6 \times 30 = 180\)
So, a good estimate of \(175 \div 32\) is 6.

Estimate each quotient using compatible numbers.

1. \(298 \div 25\)
2. \(5,391 \div 77\)
3. \(24,303 \div 12\)
4. \(276 \div 42\)
5. \(1,347 \div 54\)
6. \(5,564 \div 91\)

At Elmer Elementary School, fifth-grade students are saving money for a summer trip to Washington, D.C.

7. The money Percy has saved is how many times as great as the money James has saved?

<table>
<thead>
<tr>
<th>Student</th>
<th>Amount Saved</th>
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</thead>
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<tr>
<td>Percy</td>
<td>$125</td>
</tr>
<tr>
<td>Emily</td>
<td>$80</td>
</tr>
<tr>
<td>George</td>
<td>$202</td>
</tr>
<tr>
<td>James</td>
<td>$41</td>
</tr>
<tr>
<td>Bertha</td>
<td>$159</td>
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Estimating Quotients with 2-Digit Divisors

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32 rounds to 30.
Think: 18 can be divided evenly by 3.
180 is close to 175 and 30 is close to 32.
180 and 30 are compatible numbers.

**Step 2:** Divide. Use patterns to help you, if possible.
Think: 180 ÷ 30 is the same as 18 tens ÷ 3 tens.
18 ÷ 3 = 6
So, 180 ÷ 30 = 6.

**Step 3:** Check for reasonableness.
6 × 30 = 180
So, a good estimate of 175 ÷ 32 is 6.

Estimate each quotient using compatible numbers.

1. 298 ÷ 25
   - 10

2. 5,391 ÷ 77
   - 70

3. 24,303 ÷ 12
   - 2,000

4. 276 ÷ 42
   - 7

5. 1,347 ÷ 54
   - 27

6. 5,564 ÷ 91
   - 60

At Elmer Elementary School, fifth-grade students are saving money for a summer trip to Washington, D.C.

7. The money Percy has saved is how many times as great as the money James has saved?
   - about three times as great

<table>
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<td>Bertha</td>
<td>$159</td>
</tr>
</tbody>
</table>

34  Topic 5
Estimating Quotients with 2-Digit Divisors

In 1 through 4, estimate the quotients using compatible numbers.

1. 566 ÷ 81 = ____________  
2. 453 ÷ 93 = ____________  
3. 1,423 ÷ 69 = ____________  
4. 8,631 ÷ 10 = ____________  

5. **Reasoning** If you use $99.00 ÷ 11 to estimate $98.69 ÷ 11, is $9.00 greater than or less than the exact answer? Explain.

6. Suppose there are 19 students in a class. A teacher has 122 pencils and passes them out to the class. Estimate the number of pencils each student will receive. ____________

7. At a department store, a package of 12 handkerchiefs costs $58.99. Estimate how much each handkerchief costs. ____________

8. **Number Sense** Which is the closest estimate for 2,130 ÷ 33?
   
   A 7  
   B 17  
   C 70  
   D 700

9. **Explain It** Explain how to estimate 498 ÷ 12.

   __________________________________________

   __________________________________________
Estimating Quotients with 2-Digit Divisors

In 1 through 4, estimate the quotients using compatible numbers.

1. \(566 \div 81 = \) \(\square \)
2. \(453 \div 93 = \) \(\square \)
3. \(1,423 \div 69 = \) \(\square \)
4. \(8,631 \div 10 = \) \(\square \)

5. **Reasoning** If you use \(99.00 \div 11\) to estimate \(98.69 \div 11\), is \(9.00\) greater than or less than the exact answer? Explain.
   Greater than; Sample answer: \(11 \times 9 = 99\), which is greater than \(98.69\).

6. Suppose there are 19 students in a class. A teacher has 122 pencils and passes them out to the class. Estimate the number of pencils each student will receive.
   \(6\)

7. At a department store, a package of 12 handkerchiefs costs \$58.99. Estimate how much each handkerchief costs.
   \$5

8. **Number Sense** Which is the closest estimate for \(2,130 \div 33\)?
   
<table>
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<th>C</th>
<th>D</th>
</tr>
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<tbody>
<tr>
<td>7</td>
<td>17</td>
<td>70</td>
<td>700</td>
</tr>
</tbody>
</table>

9. **Explain It** Explain how to estimate \(498 \div 12\).
   
   **Sample answer:** Use compatible numbers: \(500 \div 10 = 50\).
They Have Clues!

Each person below has information for you. Use it to write the best estimate from the box for each exercise.

1. I have $203. About how much money should I give to each of my 4 children to save?

2. I collected 37 blankets. About how many should each of the 5 homeless shelters get?

3. Our team won the tournament. The prize was $562. About how much should each of 8 players get?

4. I have 22 pens. About how many should go into each of 4 bins?

5. There are 7 bird cages at the zoo. About how many of 212 birds will go into each cage?

Answer Box

- $50
- 5
- $70
- 7
- 30

Estimation
They Have Clues!

Each person below has information for you. Use it to write the best estimate from the box for each exercise.

1. I collected 37 blankets. About how many should each of the 5 homeless shelters get?
   - Answer Box
   - $50
   - 7
   - 30
   - $70

2. Our team won the tournament. The prize was $562. About how much should each of 8 players get?
   - $50

3. I have 22 pens. About how many should go into each of 4 bins?
   - $70

4. There are 7 bird cages at the zoo. About how many of 212 birds will go into each cage?
   - 5

5. I have $203. About how much money should I give to each of my 4 children to save?
   - 30
1. An apartment complex has 91 apartments. There are 177 cars in the complex parking lot. Which is the best estimate of the average number of cars per apartment?
   A. About 1
   B. About 2
   C. About 10
   D. About 20

2. A town is 28 square miles in area. The town’s population is 2,603. Which is the best estimate of the average number of people per square mile?
   A. About 9
   B. About 13
   C. About 90
   D. About 130

3. Frank earns $7 per hour. How much does Frank earn for working 19 hours?
   A. $133
   B. $106
   C. $73
   D. $26

4. A copy shop prints 5,493 pages. They use the pages to make 68 same-size booklets. About how many pages are in each booklet?

5. Twenty-three students make paper flowers to decorate their classroom. Each student makes 12 flowers. How many flowers did the students make altogether?

6. A youth group has 6 fifth-grade students, 7 sixth-grade students, and 4 eighth-grade students. One member of the group wins an award. Fill in the blanks below to describe the chances that the winner is a sixth-grader.
1. An apartment complex has 91 apartments. There are 177 cars in the complex parking lot. Which is the best estimate of the average number of cars per apartment?
   A) About 1
   B) About 2
   C) About 10
   D) About 20

2. A town is 28 square miles in area. The town’s population is 2,603. Which is the best estimate of the average number of people per square mile?
   A) About 9
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3. Frank earns $7 per hour. How much does Frank earn for working 19 hours?
   A) $133
   B) $106
   C) $73
   D) $26

4. A copy shop prints 5,493 pages. They use the pages to make 68 same-size booklets. About how many pages are in each booklet?
   \[
   \frac{5,493}{68} \approx 80
   \]
   about 80 pages

5. Twenty-three students make paper flowers to decorate their classroom. Each student makes 12 flowers. How many flowers did the students make altogether?
   \[276\text{ flowers}\]

6. A youth group has 6 fifth-grade students, 7 sixth-grade students, and 4 eighth-grade students. One member of the group wins an award. Fill in the blanks below to describe the chances that the winner is a sixth-grader.
   \[7 \text{ out of } 17\]
Five seconds after one swimmer wins a race, 2 more swimmers finish the course. Five seconds later, 2 more swimmers finish. If the pattern continues, how many swimmers will have finished after 30 seconds?
Solve.

1. During a 5-day sale, a store sold 56 shirts, 86 pairs of pants, and 78 pairs of shorts. If they sold the same number of articles of clothing each day, how many pieces of clothing did they sell each day?

   A 44  
   B 56  
   C 86  
   D 220

2. A school has 14 kindergarten classrooms, 13 first-grade classrooms, and 15 second-grade classrooms. If the school has the same number of classrooms on each of its three floors, how many classrooms are on each floor?

   A 16  
   B 15  
   C 14  
   D 13

3. Writing to Explain Marissa has swim practice every day Monday through Friday. The swimming season is 12 weeks long. If she spends a total of 120 hours at practice during the swimming season and practices the same number of hours each day, how many hours does she practice each day? Explain.
Solve.

1. During a 5-day sale, a store sold 56 shirts, 86 pairs of pants, and 78 pairs of shorts. If they sold the same number of articles of clothing each day, how many pieces of clothing did they sell each day?

   A 44  
   B 56  
   C 86  
   D 220

2. A school has 14 kindergarten classrooms, 13 first-grade classrooms, and 15 second-grade classrooms. If the school has the same number of classrooms on each of its three floors, how many classrooms are on each floor?

   A 16  
   B 15  
   C 14  
   D 13

3. **Writing to Explain** Marissa has swim practice every day Monday through Friday. The swimming season is 12 weeks long. If she spends a total of 120 hours at practice during the swimming season and practices the same number of hours each day, how many hours does she practice each day?

   Explain.

See student samples at the right.
Name

Problem Solving: Multiple-Step Problems

Faye is putting together packets of colored beads to give as gifts. The chart shows the beads she had on hand yesterday. This morning she bought 4 boxes of yellow beads containing 45 beads each. How many packets of 60 beads can she put together?

<table>
<thead>
<tr>
<th>Trinket Beads</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
</tr>
<tr>
<td>Red</td>
</tr>
<tr>
<td>Blue</td>
</tr>
<tr>
<td>Green</td>
</tr>
</tbody>
</table>

Find the hidden question or questions.

1. How many yellow beads are there? \(45 \times 4 = 180\)

2. How many beads are there in all? \(195 + 170 + 175 + 180 = 720\)

Solve. \(720 \div 60 = 12\)

Write the answer in a sentence. Faye will make 12 packets.

Look Back and Check

Is the answer reasonable? Yes. Since \(60 \times 10 = 600\), the answer is reasonable.

1. Faye decides to double the number of yellow beads in the mix. How many packets will she make if she fills each packet with 60 beads?

2. Explain It Faye plans to fill packets with 60 beads after deciding not to add any yellow beads to the mix. What hidden question or questions would you have to ask? Explain.
Name
Problem Solving: Multiple-Step Problems

Faye is putting together packets of colored beads to give as gifts. The chart shows the beads she had on hand yesterday. This morning she bought 4 boxes of yellow beads containing 45 beads each. How many packets of 60 beads can she put together?

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</tr>
<tr>
<td>Blue</td>
<td>170</td>
</tr>
<tr>
<td>Green</td>
<td>175</td>
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Find the hidden question or questions.

1. How many yellow beads are there? 1. \(45 \times 4 = 180\)
2. How many beads are there in all? 2. \(195 + 170 + 175 + 180 = 720\)

Solve.
\[720 \div 60 = 12\]

Write the answer in a sentence.
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Is the answer reasonable? Yes. Since \(60 \times 10 = 600\), the answer is reasonable.

1. Faye decides to double the number of yellow beads in the mix. How many packets will she make if she fills each packet with 60 beads?

2. Explain It Faye plans to fill packets with 60 beads after deciding not to add any yellow beads to the mix. What hidden question or questions would you have to ask? Explain.

The hidden question is “How many beads are in the mix?”

40 Topic 5
Problem Solving: Multiple-Step Problems

Write and answer the hidden question. Then solve.

1. Gloria talked on her cell phone for 320 minutes the first month, 243 minutes the second month, and 489 minutes the third month. Her payment package does not allow her to pay per minute; she can only buy packages. If she has to pay $25 for every 200 minutes, how much did she pay for the first three months?

2. Each can of paint will cover 450 tiles. Augustin is painting 300 tiles in his bathroom, 675 in his kitchen, and 100 in his hallway. How many cans of paint does he need to buy?

3. Number Sense The sum of three different numbers is 18. If every number is a prime number, what are the three numbers?

4. Explain It You earn $3 an hour as a waitress. After working 3 hours, you earn $12, $5, and $7 in tips. How much money did you earn in total? Explain how you found your answer.
Problem Solving: Multiple-Step Problems

Write and answer the hidden question. Then solve.

1. Gloria talked on her cell phone for 320 minutes the first month, 243 minutes the second month, and 489 minutes the third month. Her payment package does not allow her to pay per minute; she can only buy packages. If she has to pay $25 for every 200 minutes, how much did she pay for the first three months?

   How many total minutes did she use for the first 3 months? (1,052) How many “200 minute” packages did she use? (6);
   She had to pay $150 for the first three months.

2. Each can of paint will cover 450 tiles. Augustin is painting 300 tiles in his bathroom, 675 in his kitchen, and 100 in his hallway. How many cans of paint does he need to buy?

   How many total tiles is Augustin painting? (1,075) He will need to buy 3 cans of paint.

3. Number Sense The sum of three different numbers is 18. If every number is a prime number, what are the three numbers?

   What prime numbers are less than 18? (2, 3, 5, 7, 11, 13, 17); 2, 5, and 11 or 2, 3, and 13.

4. Explain It You earn $3 an hour as a waitress. After working 3 hours, you earn $12, $5, and $7 in tips. How much money did you earn in total? Explain how you found your answer.

   \[3 \times 3 = 9, \text{ and } 12 + 5 + 7 = 24,\]
   so you earned $33 total.
Hearty Roots

An organic farm opened a farm stand to sell vegetables. Help the customers spend their money wisely.

<table>
<thead>
<tr>
<th>Vegetable</th>
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</tr>
</thead>
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<tr>
<td>Cucumbers</td>
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</tr>
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<td>Tomatoes</td>
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</tr>
<tr>
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<td>$0.60 each or $5.59 for a dozen</td>
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1. One customer bought three 2-lb bags of tomatoes. How much did he save by buying these instead of six 1-lb bags?

2. Another customer bought 8 cucumbers, 10 zucchini, and 1 pound of tomatoes. Based on the money he spent, show how the customer could have purchased more vegetables for less money.

3. You have $20.00 to spend at Hearty Roots. Give an example of how you could get the best value for the money. Tell what you would buy and how much money you would have left over.
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1. One customer bought three 2-lb bags of tomatoes. How much did he save by buying these instead of six 1-lb bags? $1.23

2. Another customer bought 8 cucumbers, 10 zucchini, and 1 pound of tomatoes. Based on the money he spent, show how the customer could have purchased more vegetables for less money.

Possible answer: The customer spent $11.98. If he had bought a bag of 10 cucumbers and a dozen zucchini along with the 1 pound of tomatoes, he would have purchased more vegetables for $11.32.

3. You have $20.00 to spend at Hearty Roots. Give an example of how you could get the best value for the money. Tell what you would buy and how much money you would have left over.

Possible answer: I would buy a bag of 10 cucumbers, 2 lb of tomatoes, and two dozen zucchini for $18.48. I would have $1.52 left over.
1. Dora, Brent, Cara, and Andre go out for dinner. The bill is $32, plus $5.60 tax, and a $6.40 tip. Each person pays an equal share of the total cost. What is each person’s share?
   A $12
   B $11
   C $8
   D $3

2. Mr. Lopez drives his car 12,000 miles each year for 5 years. What is the total number of miles Mr. Lopez drives?
   A 6,000
   B 60,000
   C 600,000
   D 6,000,000

3. A row in a parking lot is 214 yards wide. Each parking space is 2 yards wide. How many parking spaces will fit in one row?
   A 170
   B 120
   C 107
   D 102

4. A school principal orders 75 boxes of chalk. Each box has 12 sticks of chalk. The school has 23 teachers. Does the principal have enough chalk to give each teacher 40 sticks? If yes, how many sticks are left over? If no, how many more sticks does the principal need?

5. A wire is 16.5 centimeters long. Lisa cuts 1.025 centimeters of one end of the wire. How long is the remaining wire?

6. In 2005, the Houston Livestock Show and Rodeo had 1,740,095 visitors. What is the value of the digit 7 in this number of people?
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4. A school principal orders 75 boxes of chalk. Each box has 12 sticks of chalk. The school has 23 teachers. Does the principal have enough chalk to give each teacher 40 sticks? If yes, how many sticks are left over? If no, how many more sticks does the principal need?

   No. \((75 \times 12 = 900, 900 \div 23 = 39 \text{ R } 3); \)
   The principal needs 20 more sticks.
   \((3 + 20 = 23).\)

5. A wire is 16.5 centimeters long. Lisa cuts 1.025 centimeters off one end of the wire. How long is the remaining wire?
   15.475 cm

6. In 2005, the Houston Livestock Show and Rodeo had 1,740,095 visitors. What is the value of the digit 7 in this number of people?
   Seven hundred thousand
Problem of the Day

In the art room are several square tables. Each table is big enough for 2 students to sit around each of its 4 sides. For today’s project, the students make a large rectangular table by placing 5 square tables end to end. How many students will be able to sit at this large table?
Divide.

1. $\frac{40}{583}$
   - A 13 R 63
   - B 14 R 23
   - C 15 R 32
   - D 16 R 2

2. $\frac{30}{312}$
   - A 9 R 12
   - B 9 R 42
   - C 10 R 10
   - D 10 R 12

3. **Writing to Explain** There are 324 students in the fifth grade at Read Elementary. For a pizza party, they ordered one extra-large pizza for every 20 students. How many extra-large pizzas did they order? Explain.
Divide.

1. \( \frac{40}{583} \)
   - A 13 R 63
   - B 14 R 23
   - C 15 R 32
   - D 16 R 2

2. \( \frac{30}{312} \)
   - A 9 R 12
   - B 9 R 42
   - C 10 R 10
   - D 10 R 12

3. **Writing to Explain** There are 324 students in the fifth grade at Read Elementary. For a pizza party, they ordered one extra-large pizza for every 20 students. How many extra-large pizzas did they order? Explain.

See student samples at the right.
Dividing by Multiples of 10

Find $623 \div 40$.

**Step 1:** Estimate the quotient using compatible numbers, $600 \div 40 = 15$. Then, divide the tens.

<table>
<thead>
<tr>
<th>40</th>
<th>623</th>
</tr>
</thead>
<tbody>
<tr>
<td>-40</td>
<td>Divide $62 \div 40 = 1$</td>
</tr>
<tr>
<td>22</td>
<td>Subtract $62 - 40 = 22$</td>
</tr>
</tbody>
</table>

**Step 2:** Bring down the ones. Then, divide the ones.

<table>
<thead>
<tr>
<th>15</th>
<th>623</th>
</tr>
</thead>
<tbody>
<tr>
<td>-40</td>
<td>Multiply $1 \times 40 = 40$</td>
</tr>
<tr>
<td>223</td>
<td>Divide $223 \div 40 = 5$</td>
</tr>
<tr>
<td>-200</td>
<td>Multiply $5 \times 40 = 200$</td>
</tr>
<tr>
<td>23</td>
<td>Subtract $223 - 200 = 23$</td>
</tr>
</tbody>
</table>

**Step 3:** Since $23 < 40$, write $23$ as the remainder in the quotient.

<table>
<thead>
<tr>
<th>15</th>
<th>R23</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>623</td>
</tr>
<tr>
<td>-40</td>
<td>223</td>
</tr>
<tr>
<td>-200</td>
<td>23</td>
</tr>
</tbody>
</table>

Compare $23 < 40$

Complete.

1. $60 \overline{288}$
   - $24$
   - $2$ R
2. $20 \overline{455}$
   - $4$
   - $5$
3. $80 \overline{866}$
   - $1$ R
4. $30 \overline{233}$
5. $50 \overline{498}$

6. **Reasoning** Celia plans to pack her books in boxes when her family moves. Each box will hold 20 books. Celia has 97 books. How many boxes will she need to pack all her books?
Name ____________________________

**Dividing by Multiples of 10**

Find \( \frac{623}{40} \).

**Step 1:** Estimate the quotient using compatible numbers, \( 600 \div 40 = 15 \). Then, divide the tens.

\[
\begin{array}{c|c|c|c|c|c|c}
40 & 623 \\
-40 & & & & & \\
\hline
22 & & & & & \\
\end{array}
\]

**Step 2:** Bring down the ones. Then, divide the ones.

\[
\begin{array}{c|c|c|c|c|c|c}
40 & 623 \\
-40 & 223 \\
\hline
\end{array}
\]

**Step 3:** Since \( 23 < 40 \), write \( 23 \) as the remainder in the quotient.

\[
\begin{array}{c|c|c|c|c|c|c}
40 & 623 \\
-40 & 223 \\
\hline
23 & R23
\end{array}
\]

Complete.

1. \( \frac{60}{48} \)
   - \( \frac{240}{240} \)
   - \( \frac{48}{48} \)

2. \( \frac{20}{15} \)
   - \( \frac{4}{40} \)
   - \( \frac{55}{55} \)
   - \( \frac{40}{40} \)
   - \( \frac{15}{15} \)

3. \( \frac{80}{66} \)
   - \( \frac{80}{80} \)
   - \( \frac{66}{66} \)

4. \( \frac{30}{7} \)
   - \( \frac{233}{210} \)
   - \( \frac{23}{23} \)

5. \( \frac{50}{9} \)
   - \( \frac{498}{450} \)
   - \( \frac{48}{48} \)

6. **Reasoning** Celia plans to pack her books in boxes when her family moves. Each box will hold 20 books. Celia has 97 books. How many boxes will she need to pack all her books?

5 boxes

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\( \frac{\text{Name}}{} \)
Dividing by Multiples of 10

In 1 through 6, divide.

1. 20)467
   _____

2. 40)321
   _____

3. 80)813
   _____

4. 40)284
   _____

5. 90)648
   _____

6. 10)587
   _____

7. To drive from New York City, NY, to Los Angeles, CA, you must drive about 2,779 miles. If you drive 60 miles per hour without stopping, about how many hours do you have to drive?

8. Reasoning Suppose one bottle of paint can cover 20 tiles. You have 348 tiles. How many bottles of paint do you need to buy to cover all 348 tiles? Explain.

9. A group of 483 students is taking a field trip. One bus is needed for every 50 students. How many buses are needed?

10. Geometry A decagon is a ten-sided figure. If a decagon has a perimeter of 114 centimeters, how long is each side of the figure?

    A  11.4 cm   B  14 cm   C  114 cm   D  124 cm

11. Explain It To figure out how many hours it will take to drive from his home to his cousin’s house, a student divides 289 by 60 and estimates that it will take about 4.5 hours. Explain whether you think this is a reasonable estimate.

   __________________________________________________________
   __________________________________________________________
Dividing by Multiples of 10

In 1 through 6, divide.

1. \(20 \div 467\) \(\underline{23 \text{ R7}}\)  
2. \(40 \div 321\) \(\underline{8 \text{ R1}}\)  
3. \(80 \div 813\) \(\underline{10 \text{ R13}}\)  
4. \(40 \div 284\) \(\underline{7 \text{ R4}}\)  
5. \(90 \div 648\) \(\underline{7 \text{ R18}}\)  
6. \(10 \div 587\) \(\underline{58 \text{ R7}}\)

7. To drive from New York City, NY, to Los Angeles, CA, you must drive about 2,779 miles. If you drive 60 miles per hour without stopping, about how many hours do you have to drive? About 46 hours

8. **Reasoning** Suppose one bottle of paint can cover 20 tiles. You have 348 tiles. How many bottles of paint do you need to buy to cover all 348 tiles? Explain.

**18 bottles; Sample answer:** You must buy whole bottles and paint all tiles.

9. A group of 483 students is taking a field trip. One bus is needed for every 50 students. How many buses are needed? 10 buses

10. **Geometry** A decagon is a ten-sided figure. If a decagon has a perimeter of 114 centimeters, how long is each side of the figure?

   \(\text{A} \ 11.4 \text{ cm} \quad \text{B} \ 14 \text{ cm} \quad \text{C} \ 114 \text{ cm} \quad \text{D} \ 124 \text{ cm}\)

11. **Explain It** To figure out how many hours it will take to drive from his home to his cousin’s house, a student divides 289 by 60 and estimates that it will take about 4.5 hours. Explain whether you think this is a reasonable estimate.

   **Sample answer:** yes, because \(60 \times 4 = 240\), and \(60 \times 5 = 300\). Since 289 is between 240 and 300, 4.5 is a good estimate.
Blimp Rides

Blimps are huge airships. Today they may float over huge public events for the purpose of advertising or for taking aerial photographs. Use mental math and the numbers in the blimps to help answer 1 through 4.

1. 400 people rode on 20 blimps.

2. 320 people rode on 40 blimps.

3. If 60 blimps each had 70 people on board, how many people would be riding on the blimps?

4. If 25 blimps each had 40 people on board, how many people would be riding on the blimps?

5. Use one of the numbers in the blimps and write an original division problem that can be solved by mental math.
Blimp Rides

Blimps are huge airships. Today they may float over huge public events for the purpose of advertising or for taking aerial photographs. Use mental math and the numbers in the blimps to help answer 1 through 4.

1. 400 people rode on 20 blimps.  
   **20 people per blimp**

2. 320 people rode on 40 blimps.  
   **8 people per blimp**

3. If 60 blimps each had 70 people on board, how many people would be riding on the blimps?  
   **4,200 people**

4. If 25 blimps each had 40 people on board, how many people would be riding on the blimps?  
   **1,000 people**

5. Use one of the numbers in the blimps and write an original division problem that can be solved by mental math.  
   **Sample answer:** 4,200 people rode in 7 blimps. How many people rode in each blimp?  
   **4,200 ÷ 7 = 600 people**
1. A computer can load 753 megabytes in 20 seconds. Which best describes the loading speed of the computer?
   A. Around 30 megabytes per second
   B. Close to 38 megabytes per second
   C. Nearly 40 megabytes per second
   D. More than 41 megabytes per second

2. The table shows the number of square feet painted by three house painters.

<table>
<thead>
<tr>
<th>Painter</th>
<th>Square Feet Painted</th>
<th>Days Worked</th>
</tr>
</thead>
<tbody>
<tr>
<td>Martin</td>
<td>719</td>
<td>2</td>
</tr>
<tr>
<td>Juan</td>
<td>825</td>
<td>3</td>
</tr>
<tr>
<td>Christy</td>
<td>836</td>
<td>3</td>
</tr>
</tbody>
</table>

Which best describes Christy's average painting speed?
   A. Almost 260 square feet per day
   B. Almost 270 square feet per day
   C. Almost 280 square feet per day
   D. Almost 290 square feet per day

3. A model of 1-foot cubes is shown below.

What is the volume of this model?
   A. 90 cubic feet
   B. 60 cubic feet
   C. 30 cubic feet
   D. 15 cubic feet

4. List the painters in Question 2 in order from slowest to fastest average painting speed.

5. A business earns $45,692 in January and $70,359 in February. How much money did the business earn during these two months?

6. The graph shows the number of votes for each person in a school election.

Which student won the election?
1. A computer can load 753 megabytes in 20 seconds. Which best describes the loading speed of the computer?
   A  Around 30 megabytes per second
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   **Juan, Christy, Martin**

5. A business earns $45,692 in January and $70,359 in February. How much money did the business earn during these two months?
   
   **$116,051**

6. The graph shows the number of votes for each person in a school election.

Which student won the election?
   
   **Ana**

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Problem of the Day 5-5

There is an average of 125,000 hairs on a person’s head. If 50 hairs fall out each day and no hairs grow back, how long will it take to lose all 125,000 hairs?
Quick Check

1. \(45 \div 418\)
   - A 8 R13
   - B 8 R58
   - C 9 R3
   - D 9 R13

2. \(61 \div 256\)
   - A 4 R2
   - B 4 R12
   - C 5 R22
   - D 5 R49

3. **Writing to Explain** Use the table to answer the following questions. Show your work.

<table>
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</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.** On Monday, the pool was only open for summer camps. If 72 students fit in each bus the campers took to the pool, how many buses did they need?

**b.** On Friday, the pool was rented for a family reunion. If the pool needs 1 lifeguard for every 15 people, how many lifeguards did they need on Friday?
Divide.

1. \[45 \div 9 = 5 \text{ R} 0\]
2. \[61 \div 10 = 6 \text{ R} 1\]

3. **Writing to Explain** Use the table to answer the following questions. Show your work.

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**b.** On Friday, the pool was rented for a family reunion. If the pool needs 1 lifeguard for every 15 people, how many lifeguards did they need on Friday?

*See student samples at the right.*
1-Digit Quotients

Find $436 \div 53$.

To find the answer, first estimate the quotient.

Think: $400 \div 50 = 8$ or $450 \div 50 = 9$

Try 9:

```
9
53 ) 436
  -477
  59
```

Write 9 in the ones place.
Multiply, $9 \times 53 = 477$.
Subtract, $436 - 477 = -41$.
This estimate is too high.

Try 8:

```
8
53 ) 436
  -424
  12
```

Write 8 in the ones place.
Multiply, $8 \times 53 = 424$.
Subtract, $436 - 424 = 12$.
Compare, $12 < 53$. Write the remainder in the quotient.

$436 \div 53 = 8 \text{ R}12$

Check:
$8 \times 53 = 424$
$424 + 12 = 436$

Complete.

1. $7 \text{ R} 245$
2. $64 \text{ R}12$
3. $51 \text{ R} 489$

Divide. Check by multiplying.

4. $49 \text{ R} 240$
5. $79 \text{ R} 698$
6. $25 \text{ R} 194$

7. **Explain It** Explain how you know the answer to the problem below has an error.

```
2 R 86
77 ) 240
-154
- 86
```

---

Topic 5
1-Digit Quotients

Find \(436 \div 53\).

To find the answer, first estimate the quotient.
Think: \(400 \div 50 = 8\) or \(450 \div 50 = 9\)

Try 9:

\[
\begin{array}{c|c}
53 & 436 \\
\hline
53 & 477 \\
\hline
& 41
\end{array}
\]

Write 9 in the ones place.
Multiply, \(9 \times 53 = 477\).
Subtract, \(436 - 477 = -41\).
This estimate is too high.

Try 8:

\[
\begin{array}{c|c}
53 & 436 \\
\hline
53 & 424 \\
\hline
& 12
\end{array}
\]

Write 8 in the ones place.
Multiply, \(8 \times 53 = 424\).
Subtract, \(436 - 424 = 12\).
Compare, \(12 < 53\). Write the remainder in the quotient.

\(436 \div 53 = 8 \text{ R} 12\)

Check:
\(8 \times 53 = 424\)
\(424 + 12 = 436\)

Complete.

\[
\begin{array}{ccc}
1. & 7 \text{ R} 21 & 2. & 5 \text{ R} 12 & 3. & 9 \text{ R} 30 \\
32 & 245 & 64 & 332 & 51 & 489
\end{array}
\]

Divide. Check by multiplying.

\[
\begin{array}{ccc}
4. & 4 \text{ R} 20 & 5. & 8 \text{ R} 66 & 6. & 7 \text{ R} 19 \\
49 & 216 & 79 & 698 & 25 & 194
\end{array}
\]

7. ** Explain It ** Explain how you know the answer to the problem below has an error.

\[
\begin{array}{c|c}
2 & 77 \\
\hline
2 & 240 \\
\hline
& 154 \\
\hline
& 86
\end{array}
\]
The remainder is greater than the divisor.
1-Digit Quotients

In 1 through 6, find each quotient.

1. \(37 \div 120\)  
2. \(39 \div 342\)  
3. \(62 \div 338\)  
4. \(42 \div 284\)  
5. \(82 \div 599\)  
6. \(55 \div 474\)

7. Solomon has $118. He wants to purchase concert tickets for himself and 5 friends. Each ticket costs $19. Does he have enough money? Explain.

8. **Number Sense** Which problem will have the greater quotient, \(376.0 \div 93\) OR \(376 \div 93.01\)? Explain how you know.

9. Which is \(458 \div 73\)?  
   A 5 R19  
   B 5 R20  
   C 6 R19  
   D 6 R20

10. **Explain It** A student solves the problem \(354 \div 24\). The student finds an answer of 13 R40. Explain how you can tell that the answer is incorrect just by looking at the remainder.
1-Digit Quotients

In 1 through 6, find each quotient.

1. 37 \div 120 = \underline{3} \text{ R}9
2. 39 \div 342 = \underline{8} \text{ R}30
3. 62 \div 338 = \underline{5} \text{ R}28
4. 42 \div 284 = \underline{6} \text{ R}32
5. 82 \div 599 = \underline{7} \text{ R}25
6. 55 \div 474 = \underline{8} \text{ R}34

7. Solomon has $118. He wants to purchase concert tickets for himself and 5 friends. Each ticket costs $19. Does he have enough money? Explain.

Yes: \( 118 \div 19 = 6 \text{ R}4 \), so he has enough money to buy 6 tickets.

8. Number Sense Which problem will have the greater quotient, \( 376.0 \div 93 \) OR \( 376 \div 93.01 \)? Explain how you know.

376.0 \div 93; Sample answer: The same number, 376, is divided by a smaller divisor.

9. Which is \( 458 \div 73 \)?
   A  5 R19   B  5 R20   C  6 R19   D  6 R20

10. Explain It A student solves the problem \( 354 \div 24 \). The student finds an answer of 13 R40. Explain how you can tell that the answer is incorrect just by looking at the remainder.

Sample answer: The remainder of 40 is greater than the divisor of 24, so an error must have been made.
Orbiting Estimates

Mercury makes a complete orbit around the Sun in 88 days. Mars makes a complete orbit around the Sun in 687 days. In the exercises below, use compatible numbers and multiplication to make the estimates.

1. How many orbits around the Sun will Mercury make in 1,060 days? Show your work.

2. Now use a different operation to estimate for the same problem. Show your work.

3. Estimate the number of days it will take Mars to complete 12 orbits. Show your work.
Orbiting Estimates

Mercury makes a complete orbit around the Sun in 88 days. Mars makes a complete orbit around the Sun in 687 days. In the exercises below, use compatible numbers and multiplication to make the estimates.

1. How many orbits around the Sun will Mercury make in 1,060 days? Show your work.
   Sample answer: Estimate \( \frac{1,060}{88} \). Substitute 1,080 for 1,060; substitute 90 for 88.
   \( \frac{1,080}{90} = 12 \). Estimate is about 12 times.
   
   Actual is 12.04.

2. Now use a different operation to estimate for the same problem. Show your work.
   Sample answer: \( 88 \times ? = 1,060 \). Round 88 to 90. 90 \( \times 12 = 1,080 \). Estimate is about 12 times.

3. Estimate the number of days it will take Mars to complete 12 orbits. Show your work.
   Sample answer: Estimate \( 12 \times 687 \).
   Substitute 10 for 12. \( 10 \times 687 = 6,870 \).
   Estimate is about 6,870 days. Actual answer is 8,244 days.
1. A librarian has 883 books to shelve. Each shelf holds 98 books. How many books will be left over after filling as many shelves as possible?
   A 1
   B 9
   C 89
   D 97

2. A marina has 16 docks. Each dock has room for the same number of boats. When 101 boats sail in, they fill all the docks, with 5 boats left over. How many boats are in each dock?
   A 21
   B 11
   C 6
   D 5

3. Jordan hikes 1 1/2 miles along a nature trail. Which point best represents 1 1/2 on the number line?
   A Point P
   B Point Q
   C Point R
   D Point S

4. A store gets a delivery of 347 boxes. The manager organizes all the boxes by putting 72 boxes in each of the store’s warehouses and 59 boxes in the store’s basement. How many warehouses does the store have?

5. A school band raises $615 to buy new drums. How many drums can the band buy for $84 each?

   43.02 – 37.57
1. A librarian has 883 books to shelve. Each shelf holds 98 books. How many books will be left over after filling as many shelves as possible?
   A 1️⃣
   B 9️⃣
   C 89️⃣
   D 97️⃣

2. A marina has 16 docks. Each dock has room for the same number of boats. When 101 boats sail in, they fill all the docks, with 5 boats left over. How many boats are in each dock?
   A 21️⃣
   B 11️⃣
   C 6️⃣
   D 5️⃣

3. Jordan hikes 1 1/2 miles along a nature trail. Which point best represents 1 1/2 on the number line?
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   C Point R
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4. A store gets a delivery of 347 boxes. The manager organizes all the boxes by putting 72 boxes in each of the store's warehouses and 59 boxes in the store's basement. How many warehouses does the store have?

5. A school band raises $615 to buy new drums. How many drums can the band buy for $84 each?

   43.02 – 37.57
   5.45️⃣
Rahmi is moving to a new house. He has 180 books to move. He can put 25 books in a box. How many boxes does Rahmi need?
Name

Divide.

1. $31 \div 428$
   - A 13 R 25
   - B 13 R 3
   - C 12 R 26
   - D 12 R 56

2. $44 \div 912$
   - A 20 R 32
   - B 20 R 12
   - C 19 R 76
   - D 19 R 36

3. **Writing to Explain** A cereal company packs 24 boxes of cereal into one shipping box to be shipped. If they have 364 boxes of cereal to pack, how many complete shipping boxes will be filled? Explain.

   **24 cereal boxes = 1 shipping box**
Divide.

1. \(31 \div 428\)
   - A 13 R 25
   - B 13 R 3
   - C 12 R 26
   - D 12 R 56

2. \(44 \div 912\)
   - A 20 R 32
   - B 20 R 12
   - C 19 R 76
   - D 19 R 36

3. **Writing to Explain** A cereal company packs 24 boxes of cereal into one shipping box to be shipped. If they have 364 boxes of cereal to pack, how many complete shipping boxes will be filled? Explain.

   **24 cereal boxes = 1 shipping box**

   See student samples at the right.
2-Digit Quotients

Find 866 ÷ 34.

**Step 1:** Round the divisor to the nearest ten. Look at the first digit in the divisor and the first digit in the dividend. What basic division fact is the best estimate of the quotient of these two numbers?

34/866  →  30/866

8 ÷ 3 = 2 R2

**Step 2:** Use this fact to begin the quotient. Write it over the tens place.

2

\[
\begin{array}{c|c}
34 & 866 \\
\hline
68 & 186 \\
\end{array}
\]

Multiply, 2 × 34 = 68.

Subtract and bring down the next digit in the dividend.

25 R16

\[
\begin{array}{c|c}
34 & 866 \\
\hline
68 & 186 \\
\end{array}
\]

Multiply, 5 × 34 = 170.

Subtract. Compare the remainder with the divisor. If the remainder is less than the divisor, write it in the quotient.

Check.

25 × 34 = 850

850 ÷ 16 = 866

**Complete.**

1. 11 R [ ]
2. [ ] [ R3]
3. [ ] [ R ]

**Divide. Check by multiplying.**

4. 13)175
5. 44)508

**Estimation** April has 95 baseball cards. She wants to organize them on pages that hold 18 cards each. She has 5 pages. Does April have enough pages to organize all her cards?
2-Digit Quotients

Find \(866 \div 34\).

**Step 1:** Round the divisor to the nearest ten. Look at the first digit in the divisor and the first digit in the dividend. What basic division fact is the best estimate of the quotient of these two numbers?

\[
\begin{array}{c}
34 \div 866 \\
30 \div 866
\end{array}
\]

\(8 \div 3 = 2 \text{ R} 2\)

**Step 2:** Use this fact to begin the quotient. Write it over the tens place.

\[
\begin{array}{c}
2 \quad 34 \quad \overline{866} \\
30 \quad \overline{866}
\end{array}
\]

Multiply, \(2 \times 34 = 68\).

**Step 3:** What basic division fact is the best estimate of the next division? Use this fact and write it over the ones place.

\[
\begin{array}{c}
25 \quad \overline{R16} \\
25 \quad \overline{R16}
\end{array}
\]

Multiply, \(5 \times 34 = 170\).

Subtract. Compare the remainder with the divisor. If the remainder is less than the divisor, write it in the quotient.

Check.

\[
25 \times 34 = 850 \\
850 + 16 = 866
\]

---

Complete.

1. \(39 \div 437 = 11 \text{ R} 8\)
2. \(24 \div 627 = \quad \text{R}3 \quad 26\)
3. \(26 \div 197 = \quad \text{R} \quad 35 \text{ R}7\)

Divide. Check by multiplying.

4. \(13 \div 175 = \quad 13 \text{ R}6\)
5. \(44 \div 1508 = \quad 11 \text{ R}24\)

6. **Estimation** April has 95 baseball cards. She wants to organize them on pages that hold 18 cards each. She has 5 pages. Does April have enough pages to organize all her cards?

**No, she has room for only 90 cards.**
2-Digit Quotients

In 1 through 6, find each quotient.

1. \(14 \div 413\) __________  
2. \(29 \div 634\) __________

3. \(35 \div 768\) __________  
4. \(19 \div 401\) __________

5. \(45 \div 942\) __________  
6. \(26 \div 503\) __________

7. **Reasoning** The school student council sponsored a Switch Day where students were able to switch classes every 20 minutes. The students are in school for 7 hours. If a student switched as often as possible, how many times did that student get to visit another classroom? (Hint: There are 60 minutes in 1 hour.)

8. 456 students participated in Switch Day. The students raised money for charity so that the principal would approve of the day. If the total amount of money raised was $912, and each student brought in the same amount of money, how much did each student raise?

9. **Estimation** The total dinner bill at a buffet came out to $589 for 31 people. About how much was the buffet cost per person?

   A $15.00  
   B $20.00  
   C $22.00  
   D $25.00

10. **Explain It** If you have a two-digit divisor and a three-digit dividend, does the quotient always have the same number of digits?
2-Digit Quotients

In 1 through 6, find each quotient.

1. \(14 \div 413\) \(= 29 \text{ R7}\)
2. \(29 \div 634\) \(= 21 \text{ R25}\)
3. \(35 \div 768\) \(= 21 \text{ R33}\)
4. \(19 \div 401\) \(= 21 \text{ R2}\)
5. \(45 \div 942\) \(= 20 \text{ R42}\)
6. \(26 \div 503\) \(= 19 \text{ R9}\)

7. **Reasoning** The school student council sponsored a Switch Day where students were able to switch classes every 20 minutes. The students are in school for 7 hours. If a student switched as often as possible, how many times did that student get to visit another classroom? (Hint: There are 60 minutes in 1 hour.)

   **21 times**

8. 456 students participated in Switch Day. The students raised money for charity so that the principal would approve of the day. If the total amount of money raised was $912, and each student brought in the same amount of money, how much did each student raise?

   **$2.00**

9. **Estimation** The total dinner bill at a buffet came out to $589 for 31 people. About how much was the buffet cost per person?

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>$</td>
<td>15.00</td>
<td><strong>20.00</strong></td>
<td>22.00</td>
<td>25.00</td>
</tr>
</tbody>
</table>

10. **Explain It** If you have a two-digit divisor and a three-digit dividend, does the quotient always have the same number of digits?

    **Sample answer:** No, the quotient can have one or two digits.
Name ________________________________

Park Areas

The chart at the right shows the area, in square miles, of four parks. In the exercises below, write your answers in square miles.

1. If you divided Park A into 32 equal parts, each containing a whole number of square miles, how large would each part be? How large would the remaining area be?

<table>
<thead>
<tr>
<th>Park</th>
<th>Area (square miles)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>656</td>
</tr>
<tr>
<td>B</td>
<td>269</td>
</tr>
<tr>
<td>C</td>
<td>164</td>
</tr>
<tr>
<td>D</td>
<td>147</td>
</tr>
</tbody>
</table>

2. If you divided Park B into 53 equal parts, each containing a whole number of square miles, how large would each part be? How large would the remaining area be?

3. If you divided Park C into 16 equal parts, each containing a whole number of square miles, how large would each part be? How large would the remaining area be?

4. Complete the pictograph after choosing a picture to represent $32 \text{ mi}^2$. Be sure to represent any remaining area reasonably.

\[ = 32 \text{ mi}^2 \]

- Park A
- Park B
- Park C
- Park D
Park Areas

The chart at the right shows the area, in square miles, of four parks. In the exercises below, write your answers in square miles.

1. If you divided Park A into 32 equal parts, each containing a whole number of square miles, how large would each part be? How large would the remaining area be?
   Each section would be 20 mi², with a remaining section of 16 mi².

2. If you divided Park B into 53 equal parts, each containing a whole number of square miles, how large would each part be? How large would the remaining area be?
   Each section would be 5 mi², with a remaining section of 4 mi².

3. If you divided Park C into 16 equal parts, each containing a whole number of square miles, how large would each part be? How large would the remaining area be?
   Each section would be 10 mi², with a remaining section of 4 mi².

4. Complete the pictograph after choosing a picture to represent 32 mi². Be sure to represent any remaining area reasonably.

   Sample answer:

   ![Diagram of the pictograph with a sample answer]
1. Mr. Lee drives an average of 58 miles per hour. Which best describes how long he will take to drive 805 miles?
   A  Almost 52 hours
   B  Almost 51 hours
   C  Almost 14 hours
   D  Almost 13 hours

2. A school auditorium has 966 seats in 42 equal rows. How many seats are in each row?
   A  23
   B  24
   C  42
   D  43

3. A store clerk makes a display with 36 bags of beads. Each bag has 48 beads. How many beads are in the display?
   A  1,728
   B  1,488
   C  432
   D  372

4. Ms. Tanaka has $157 to spend on lunches this month. How many times this month can she buy a $13 lunch?

5. The table shows the number of stars in four galaxies.

<table>
<thead>
<tr>
<th>Galaxy</th>
<th>Number of Stars</th>
</tr>
</thead>
<tbody>
<tr>
<td>Galaxy J</td>
<td>815,234,796,002</td>
</tr>
<tr>
<td>Galaxy K</td>
<td>851,243,679,010</td>
</tr>
<tr>
<td>Galaxy L</td>
<td>815,234,769,120</td>
</tr>
<tr>
<td>Galaxy M</td>
<td>851,432,697,201</td>
</tr>
</tbody>
</table>

   List the galaxies in order from the least number of stars to the greatest number of stars.

6. James runs on Monday and Tuesday. On Tuesday, he runs for 3 times as many minutes as he runs on Monday. What information do you need to find out the total time James runs on the two days?
1. Mr. Lee drives an average of 58 miles per hour. Which best describes how long he will take to drive 805 miles?
   A  Almost 52 hours
   B  Almost 51 hours
   C  Almost 14 hours
   D  Almost 13 hours

2. A school auditorium has 966 seats in 42 equal rows. How many seats are in each row?
   A  23
   B  24
   C  42
   D  43

3. A store clerk makes a display with 36 bags of beads. Each bag has 48 beads. How many beads are in the display?
   A  1,728
   B  1,488
   C  432
   D  372

4. Ms. Tanaka has $157 to spend on lunches this month. How many times this month can she buy a $13 lunch?
   12

5. The table shows the number of stars in four galaxies.

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<td>851,432,697,201</td>
</tr>
</tbody>
</table>

List the galaxies in order from the least number of stars to the greatest number of stars.

L, J, K, M

6. James runs on Monday and Tuesday. On Tuesday, he runs for 3 times as many minutes as he runs on Monday. What information do you need to find out the total time James runs on the two days?

The number of minutes James runs on Monday
Teresa is buying stamps for 146 letters. Stamps are sold in books of 12. How many books does she need to buy?
Use a calculator to find the quotient. Round to the nearest hundredth if necessary.

1. \(28 \div 6844\)  
   - A 244.33  
   - B 244.34  
   - C 244.43  
   - D 244.44

2. \(42 \div 7352\)  
   - A 17.05  
   - B 17.50  
   - C 175.05  
   - D 175.50

3. An aquarium took in $2,760 in entrance fees one day. If each person paid the same amount and 368 people visited that day, what was the entrance fee?  
   - A $5.07  
   - B $5.75  
   - C $7.05  
   - D $7.50

4. **Writing to Explain** Carly and her family drove from Dallas, Texas, to Boston, Massachusetts, to visit relatives. The total driving distance was 1,815 miles. If they made 15 stops along the way, what is the average number of miles they drove in each of the 16 segments of the trip? Round your answer to the nearest hundredth of a mile. Explain.
Quick Check

1. $28 \overline{)6,844}$
   - A 244.33
   - B 244.34
   - C 244.43
   - D 244.44

2. $42 \overline{)7,352}$
   - A 17.05
   - B 17.50
   - C 175.05
   - D 175.50

3. An aquarium took in $2,760 in entrance fees one day. If each person paid the same amount and 368 people visited that day, what was the entrance fee?
   - A $5.07
   - B $5.75
   - C $7.05
   - D $7.50

4. Writing to Explain Carly and her family drove from Dallas, Texas, to Boston, Massachusetts, to visit relatives. The total driving distance was 1,815 miles. If they made 15 stops along the way, what is the average number of miles they drove in each of the 16 segments of the trip? Round your answer to the nearest hundredth of a mile. Explain.

   See student samples at the right.
Estimating and Dividing with Greater Numbers

Find $8,037 \div 77$.

You can use a calculator to divide large numbers.

**Step 1:** Estimate. Round the divisor and the dividend.

$$\frac{8,037}{77} \approx \frac{8,000}{80} = 100$$

The quotient should be close to 100.

**Step 2:** Now, use a calculator to find the quotient.

$$\frac{8,037}{77} = 104.3766234$$

**Step 3:** Round the quotient to the required place. Remember, if the digit is 5 or more, add 1 to the rounding digit. If the digit is less than 5, leave the rounding digit alone.

Round the quotient to the nearest hundredth.

104.3766234 rounded to the nearest hundredth is 104.38.

This is close to the original estimate, so the answer is reasonable.

Estimate first. Then use a calculator to find the quotient. Round to the nearest hundredth if necessary.

1. $78 \div 3,796$

2. $51 \div 2,588$

3. $38 \div 3,914$

4. $37 \div 7,492$

5. $46 \div 6,725$

6. $62 \div 9,911$

7. **Number Sense** Is $5,309 \div 26$ less than 20, greater than 20 but less than 200, or greater than 200?
Estimating and Dividing with Greater Numbers

Find \( 8,037 \div 77 \).

You can use a calculator to divide large numbers.

**Step 1:** Estimate. Round the divisor and the dividend.
\[
8,037 \div 77 \\
8,000 \div 80 = 100
\]
The quotient should be close to 100.

**Step 2:** Now, use a calculator to find the quotient.
\[
8,037 \div 77 = 104.3766234
\]

**Step 3:** Round the quotient to the required place. Remember, if the digit is 5 or more, add 1 to the rounding digit. If the digit is less than 5, leave the rounding digit alone.

Round the quotient to the nearest hundredth.
104.3766234 rounded to the nearest hundredth is 104.38.
This is close to the original estimate, so the answer is reasonable.

Estimate first. Then use a calculator to find the quotient. Round to the nearest hundredth if necessary.

1. \( 78 \div 3,796 = 0.020249 \)
2. \( 51 \div 2,588 = 0.019704 \)
3. \( 38 \div 3,914 = 0.009732 \)
4. \( 37 \div 7,492 = 0.004910 \)
5. \( 46 \div 6,725 = 0.006845 \)
6. \( 62 \div 9,911 = 0.006250 \)

7. **Number Sense** Is \( 5,309 \div 26 \) less than 20, greater than 20 but less than 200, or greater than 200?
**Greater than 200**
Estimating and Dividing with Greater Numbers

Estimate first. Then use a calculator to find the quotient. Round to the nearest hundredth if necessary.

1. \(53 \div 6,324\)  
2. \(52 \div 6,348\)  
3. \(86 \div 31,309\)  
4. \(33 \div 3,455\)

5. \(17,496 \div 91 = \)  
6. \(25,214 \div 47 = \)  
7. \(2,312 \div 26 = \)  
8. \(4,895 \div 83 = \)

The Humphrey family decided to fly from San Francisco to New York City, and from there to Rome, New Delhi, and finally Tokyo.

9. It took the Humphrey family 6 hours to travel from San Francisco to New York. How many kilometers did they travel per hour?

10. During the flight from New Delhi to Tokyo, flight attendants came through with snacks every 600 km. How many times did they come through?

11. Reasoning Use the data from Exercises 9 and 10. When the family arrived in New Delhi from Rome, the youngest son asked the pilot how fast he was flying the plane. The pilot told him about 847 km per hour. How many hours did it take the family to fly from Rome to New Delhi?

   A. 5 h  
   B. 6 h  
   C. 7 h  
   D. 8 h

12. Explain It Write a word problem that would require you to use \(5,621 \div 23\).
Estimating and Dividing with Greater Numbers

Estimate first. Then use a calculator to find the quotient. Round to the nearest hundredth if necessary.

119.32 \[ \div \] 6,324
122.08 \[ \div \] 6,348
364.06 \[ \div \] 31,309
104.70 \[ \div \] 3,455

5. 17,496 \[ \div \] 91 = 192.26
6. 25,214 \[ \div \] 47 = 536.47
7. 2,312 \[ \div \] 26 = 88.92
8. 4,895 \[ \div \] 83 = 58.98

The Humphrey family decided to fly from San Francisco to New York City, and from there to Rome, New Delhi, and finally Tokyo.

9. It took the Humphrey family 6 hours to travel from San Francisco to New York. How many kilometers did they travel per hour?

690 km per hour

10. During the flight from New Delhi to Tokyo, flight attendants came through with snacks every 600 km. How many times did they come through?

9 times

11. **Reasoning** Use the data from Exercises 9 and 10. When the family arrived in New Delhi from Rome, the youngest son asked the pilot how fast he was flying the plane. The pilot told him about 847 km per hour. How many hours did it take the family to fly from Rome to New Delhi?

A 5 h  
B 6 h  
C 7 h  
D 8 h

12. **Explain It** Write a word problem that would require you to use 5,621 \[ \div \] 23.

Check students’ problems.
You have been selected to be the teacher for a day. You are teaching division to your students. In the exercises below, explain how you can tell that each student has made an error. Then provide the correct quotient and remainder, if any.

1. Julie has written $4,411 \div 22 = 220$.

2. Jorge has written $7,128 \div 36 = 202$.

3. Jack has written $11,716 \div 58 = 212$.

4. Jamie has written $2,244 \div 22 = 120$.

Here are two divisibility rules to teach your students:

• A number is divisible by 8 if the last 3 digits are divisible by 8.
• A number is divisible by 9 if the sum of its digits is divisible by 9.

Are the following numbers divisible by 8 or 9, or both?

5. 202,008

6. 45,600

7. 30,030,003

8. 2,160
Teacher for a Day

You have been selected to be the teacher for a day. You are teaching division to your students. In the exercises below, explain how you can tell that each student has made an error. Then provide the correct quotient and remainder, if any.

1. Julie has written $4,411 \div 22 = 220$.
   **Sample answer:** There must be a zero in the tens place. $Q = 200, R = 11$

2. Jorge has written $7,128 \div 36 = 202$.
   **Sample answer:** There must be a one in the hundreds place. $Q = 198$

3. Jack has written $11,716 \div 58 = 212$.
   **Sample answer:** There must be a zero in the tens place. $Q = 202$

4. Jamie has written $2,244 \div 22 = 120$.
   **Sample answer:** There must be a zero in the ones place instead of the tens place. $Q = 102$

Here are two divisibility rules to teach your students:

- A number is divisible by 8 if the last 3 digits are divisible by 8.
- A number is divisible by 9 if the sum of its digits is divisible by 9.

Are the following numbers divisible by 8 or 9, or both?

5. $202,008$  
   **8**

6. $45,600$  
   **8**

7. $30,030,003$  
   **9**

8. $2,160$  
   **Both**
1. The table shows the amount of fish caught by three fishing boats.

**Fishing Totals**

<table>
<thead>
<tr>
<th>Boat</th>
<th>Pounds of Fish</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mary B.</td>
<td>5,915</td>
</tr>
<tr>
<td>Sea Raider</td>
<td>?</td>
</tr>
<tr>
<td>Clear Skies</td>
<td>3,276</td>
</tr>
</tbody>
</table>

The *Mary B.* caught about 12 times as much fish as the *Sea Raider*. About how many pounds of fish did the *Sea Raider* catch?

A  About 500 pounds  
B  About 600 pounds  
C  About 5,000 pounds  
D  About 6,000 pounds  

2. The *Clear Skies* sold the same amount of its fish to 28 seafood restaurants. If they sold all their fish, how many pounds did each restaurant buy?

A  128 pounds  
B  117 pounds  
C  110 pounds  
D  101 pounds  

3. How many more pounds of fish did the *Mary B.* catch than the *Clear Skies*?

A  1,629 pounds  
B  1,729 pounds  
C  2,639 pounds  
D  2,761 pounds  

4. A paper factory makes 8,423 sheets of paper in 45 minutes. How many sheets of paper does the factory make in 1 minute? Round to the nearest hundredth if necessary.

5. Lila rolls a number cube two times. The first time she gets a 3. List all the possible outcomes of Lila’s two rolls.

6. Nat has a rope that is 3.6 meters long. He cuts the rope into two pieces. One piece is 1.925 meters long. How long is the other piece of the rope?

7. What is the value of the underlined digit below?

65,280,193,977
1. The table shows the amount of fish caught by three fishing boats.

<table>
<thead>
<tr>
<th>Fishing Totals</th>
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<th>Pounds of Fish</th>
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The *Mary B.* caught about 12 times as much fish as the *Sea Raider*. About how many pounds of fish did the *Sea Raider* catch?

- A. About 500 pounds
- B. About 600 pounds
- C. About 5,000 pounds
- D. About 6,000 pounds

2. The *Clear Skies* sold the same amount of its fish to 28 seafood restaurants. If they sold all their fish, how many pounds did each restaurant buy?

- A. 128 pounds
- B. 117 pounds
- C. 110 pounds
- D. 101 pounds

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- A. 1,629 pounds
- B. 1,729 pounds
- C. 2,639 pounds
- D. 2,761 pounds

4. A paper factory makes 8,423 sheets of paper in 45 minutes. How many sheets of paper does the factory make in 1 minute? Round to the nearest hundredth if necessary.

187.18 sheets

5. Lila rolls a number cube two times. The first time she gets a 3. List all the possible outcomes of Lila’s two rolls.

- 3, 1
- 3, 2
- 3, 3
- 3, 4
- 3, 5
- 3, 6

6. Nat has a rope that is 3.6 meters long. He cuts the rope into two pieces. One piece is 1.925 meters long. How long is the other piece of the rope?

1.675 m

7. What is the value of the underlined digit below?

65,208,193,977

two hundred million
The product of 7 and one of the following numbers is 2,842:
398; 400; 406; 506; 4,006.
Use estimation, number sense, or mental math to choose the number. Explain your thinking.
1. What is the extra information in the following problem?
   Theo bought two books published in 2005 for $7.99 each. He received $4.02 in change. How much money did he give the clerk?
   
   A  the number of books Theo bought  
   B  when the two books were published  
   C  the amount of change Theo received  
   D  the amount of money Theo gave the clerk

2. What missing information do you need to solve the following problem?
   On vacation, Abby spent 1 hour every morning and 2 hours every afternoon at the beach. How many hours did she spend at the beach while on vacation?
   
   A  how many days she was on vacation  
   B  how much time she spent swimming  
   C  what time she went to the beach every day  
   D  when she returned from the beach in the afternoon

3. Writing to Explain  What is the missing information in the problem below? Provide possible information and use it to solve the problem.
   Emilio’s family spent $35.50 on admission to the aquarium. There are 5 people in his family. A child admission costs $5.50. What is the cost of an adult admission?
1. What is the extra information in the following problem?
   Theo bought two books published in 2005 for $7.99 each. He received $4.02 in change. How much money did he give the clerk?
   
   A the number of books Theo bought  
   B when the two books were published  
   C the amount of change Theo received  
   D the amount of money Theo gave the clerk

2. What missing information do you need to solve the following problem?
   On vacation, Abby spent 1 hour every morning and 2 hours every afternoon at the beach. How many hours did she spend at the beach while on vacation?
   
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   D when she returned from the beach in the afternoon

3. **Writing to Explain** What is the missing information in the problem below? Provide possible information and use it to solve the problem.
   Emilio’s family spent $35.50 on admission to the aquarium. There are 5 people in his family. A child admission costs $5.50. What is the cost of an adult admission?

   **See student samples at the right.**
Problem Solving: Missing or Extra Information

Aiko bought 6 red balloons and 11 clear balloons for a party. During the party, 3 clear balloons burst but none of the red balloons did. How many clear balloons did Aiko have after the party?

Read and Understand

What do you know?
- Aiko bought 6 red balloons.
- Aiko bought 11 clear balloons.
- Three clear balloons burst during the party.
- No red balloons burst during the party.

What are you trying to find?
The number of clear balloons remaining after the party

Plan and Solve

Draw a picture of what you know.

Solve the problem.

\[11 - 3 = 8\]

Write the answer in a complete sentence.
Aiko had 8 clear balloons after the party.

Look Back and Check

Is your answer correct?
Yes, \[8 + 3 = 11\]

Look back at the items listed in “What you know.”

1. What information helped you solve the problem?

2. What information did NOT help you solve the problem?

Name ____________________
Aiko bought 6 red balloons and 11 clear balloons for a party. During the party, 3 clear balloons burst but none of the red balloons did. How many clear balloons did Aiko have after the party?

Read and Understand
What do you know? Aiko bought 6 red balloons.
Aiko bought 11 clear balloons.
Three clear balloons burst during the party.
No red balloons burst during the party.

What are you trying to find? The number of clear balloons remaining after the party

Plan and Solve
Draw a picture of what you know.

Solve the problem. 11 − 3 = 8
Write the answer in a complete sentence. Aiko had 8 clear balloons after the party.

Look Back and Check
Is your answer correct? Yes, 8 + 3 = 11

1. What information helped you solve the problem?
   the number of clear balloons Aiko bought;
   the number of clear balloons that burst
2. What information did NOT help you solve the problem?
   the number of red balloons Aiko bought;
   no red balloons burst
Problem Solving: Missing or Extra Information

Decide if each problem has extra or missing information. Solve if possible.

1. It takes 4 hours to drive from Boston to New York. Jordan has a meeting in New York at 2:00 P.M. Can she arrive at her meeting on time?

2. Franco hikes 4 miles each day for 5 days. He carries 100 ounces of water with him. It takes him 1 hour to hike 4 miles. How many hours did he hike in 5 days?

3. Write a Problem Write a real-world problem that gives extra information. Under the problem write what the extra information is.

4. Critical Thinking Jorge buys T-shirts for $4 each and paints designs on them. He sells the designed T-shirts for $7 each. What information is needed to find how much profit he makes in one week?
   A  The price of T-shirts at a store
   B  The color of the T-shirts that he buys
   C  The types of designs he draws on the T-shirts
   D  The number of T-shirts he sells in one week

5. Explain It Krista can type 60 words per minute. She wrote an essay by hand in 5 hours, and it is now 4 pages long and has 500 words in it. She wants to type up her essay. About how long will it take to type her essay? Write what the extra or missing information is. Then solve if possible.
Problem Solving: Missing or Extra Information

Decide if each problem has extra or missing information. Solve if possible.

1. It takes 4 hours to drive from Boston to New York. Jordan has a meeting in New York at 2:00 P.M. Can she arrive at her meeting on time?
   **Missing information about where Jordan is and when she is leaving for the meeting.**

2. Franco hikes 4 miles each day for 5 days. He carries 100 ounces of water with him. It takes him 1 hour to hike 4 miles. How many hours did he hike in 5 days?
   **He hikes 5 hours. Extra information: how much water he carries with him**

3. Write a Problem Write a real-world problem that gives extra information. Under the problem write what the extra information is.
   **Check students’ work. Answers will vary.**

4. Critical Thinking Jorge buys T-shirts for $4 each and paints designs on them. He sells the designed T-shirts for $7 each. What information is needed to find how much profit he makes in one week?
   - A The price of T-shirts at a store
   - B The color of the T-shirts that he buys
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5. Explain It Krista can type 60 words per minute. She wrote an essay by hand in 5 hours, and it is now 4 pages long and has 500 words in it. She wants to type up her essay. About how long will it take to type her essay? Write what the extra or missing information is. Then solve if possible.
   **Extra info: Wrote it in 5 hours and is 4 pages long. It will take her between 8 and 9 minutes to type her essay.**
Information:
Omitted or Spare?

Decide if each problem has extra or missing information. Solve if possible. Or provide possible information needed to solve the problem, and then solve it.

1. Karen is baking bread for her 5th-grade class. Each loaf can be cut into 8 slices. How many loaves should Karen bake if each student is served 2 slices?

2. Robert spelled 23 words correctly and 6 words incorrectly in his first spelling contest, 36 words correctly and 5 words incorrectly in his second spelling contest, and 29 words correctly and 4 words incorrectly in his third spelling contest. How many words did Robert spell correctly in all?

3. Carolina kayaked down the Hudson River for 4 days. She paddled 6 miles in the morning and 9 miles in the afternoon. The temperature ranged from 88° to 92° on her trip. How many total miles did Carolina paddle on her kayak trip?
Information: Omitted or Spare?

Decide if each problem has extra or missing information. Solve if possible. Or provide possible information needed to solve the problem, and then solve it.

1. Karen is baking bread for her 5th-grade class. Each loaf can be cut into 8 slices. How many loaves should Karen bake if each student is served 2 slices?
   **Missing information:** How many students are in Karen’s class. Sample answer:
   **If there are 36 students in Karen’s class, she will need to bake 9 loaves of bread.**

2. Robert spelled 23 words correctly and 6 words incorrectly in his first spelling contest, 36 words correctly and 5 words incorrectly in his second spelling contest, and 29 words correctly and 4 words incorrectly in his third spelling contest.
   How many words did Robert spell correctly in all?
   **88 words correctly. Extra information:** how many words Robert spelled incorrectly

3. Carolina kayaked down the Hudson River for 4 days. She paddled 6 miles in the morning and 9 miles in the afternoon. The temperature ranged from 88° to 92° on her trip. How many total miles did Carolina paddle on her kayak trip?
   **60 miles. Extra information:** the temperature range during her trip
Name

Mark the best answer.

1. Fifteen workers picked 1,050 apples in one hour. How many apples did each worker pick on average? (5-7)
   A 7
   B 10
   C 70
   D 100

2. Which of the following is the best way to estimate $742 \div 81$ using compatible numbers? (5-2)
   A 720 divided by 80
   B 745 divided by 85
   C 750 divided by 75
   D 750 divided by 90

3. Joaquin is baking cookies for his class. Each cookie sheet can hold 12 cookies and he bakes 11 sheets of cookies. If there are a total of 44 students in his class, which of the following can be used to find out how many cookies each student will get? (5-3)
   A $11 \times 12 \div 44 = 88$ cookies
   B $11 \times 12 \div 44 = 3$ cookies
   C $44 \div 11 \div 12 = 40$ cookies
   D $44 \div 11 \div 12 = 16$ cookies

4. A florist has ordered 632 roses for Valentine's Day. If the roses are divided into 50 bouquets how many roses will each bouquet have, and how many roses will be left over? (5-4)
   A 12 per bouquet with none left over.
   B 13 per bouquet with 3 left over.
   C 13 per bouquet with 32 left over.
   D 12 per bouquet with 32 left over.

5. Which of the following is another way to think of $46,000 \div 70$? (5-1)
   A 46,000 tens $\div$ 70 tens
   B 4,600 tens $\div$ 7 tens
   C 460 tens $\div$ 7 tens
   D 46 tens $\div$ 7 tens
1. Fifteen workers picked 1,050 apples in one hour. How many apples did each worker pick on average? (5-7)
   A 7  
   B 10  
   C 70  
   D 100

2. Which of the following is the best way to estimate $742 \div 81$ using compatible numbers? (5-2)
   A $720 \div 80$  
   B $745 \div 85$  
   C $750 \div 75$  
   D $750 \div 90$

3. Joaquin is baking cookies for his class. Each cookie sheet can hold 12 cookies and he bakes 11 sheets of cookies. If there are a total of 44 students in his class, which of the following can be used to find out how many cookies each student will get? (5-3)
   A $11 \times 12 - 44 = 88$ cookies  
   B $11 \times 12 \div 44 = 3$ cookies  
   C $44 + 11 \div 12 = 40$ cookies  
   D $44 \div 11 + 12 = 16$ cookies

4. A florist has ordered 632 roses for Valentine’s Day. If the roses are divided into 50 bouquets how many roses will each bouquet have, and how many roses will be left over? (5-4)
   A 12 per bouquet with none left over.  
   B 13 per bouquet with 3 left over.  
   C 13 per bouquet with 32 left over.  
   D 12 per bouquet with 32 left over.

5. Which of the following is another way to think of $46,000 \div 70$? (5-1)
   A 46,000 tens $\div 70$ tens  
   B 4,600 tens $\div 7$ tens  
   C 460 tens $\div 7$ tens  
   D 46 tens $\div 7$ tens
Use mental math to find the quotients.

1. \(490 \div 70\) _____

2. \(3,000 \div 30\) _____

3. \(450 \div 3\) _____

4. \(56,000 \div 800\) _____

Estimate each quotient using compatible numbers

5. \(456 \div 78\) _____

6. \(386 \div 13\) _____

7. \(450 \div 47\) _____

8. \(268 \div 18\) _____

Estimate each quotient.

9. \(776 \div 20\) _____

10. \(345 \div 70\) _____

11. \(401 \div 10\) _____

12. \(998 \div 40\) _____

Find the quotient. Round the answer to the nearest hundredth.

13. \(4,578 \div 74\) _____

14. \(7,203 \div 11\) _____

15. \(9,001 \div 55\) _____

16. \(607 \div 36\) _____

17. \(4,906 \div 22\) _____

18. \(3,097 \div 45\) _____

19. \(760 \div 15\) _____

20. \(312 \div 11\) _____

21. \(435 \div 56\) _____
Use mental math to find the quotients.

1. \(490 \div 70 = 7\)
2. \(3,000 \div 30 = 100\)
3. \(450 \div 3 = 150\)
4. \(56,000 \div 800 = 70\)

Estimate each quotient using compatible numbers

5. \(456 \div 78\)
   
   \[480 \div 80 = 6\]
6. \(386 \div 13\)
   
   \[390 \div 13 = 30\]
7. \(450 \div 47\)
   
   \[450 \div 50 = 9\]
8. \(268 \div 18\)
   
   \[270 \div 18 = 15\]

Divide.

9. \(23 \div 48 = 2\) R2
10. \(42 \div 678 = 16\) R6
11. \(12 \div 78 = 6\) R6
12. \(13 \div 87 = 6\) R9

Estimate each quotient.

13. \(776 \div 20\)
   
   \[800 \div 20 = 40\]
14. \(345 \div 70\)
   
   \[350 \div 70 = 5\]
15. \(401 \div 10\)
   
   \[400 \div 10 = 40\]
16. \(998 \div 40\)
   
   \[1,000 \div 40 = 25\]

Find the quotient. Round the answer to the nearest hundredth.

17. \(4,578 \div 74 = 61.86\)
18. \(7,203 \div 11 = 654.82\)
19. \(9,001 \div 55 = 163.65\)
20. \(607 \div 36 = 16.86\)
21. \(4,906 \div 22 = 223\)
22. \(3,097 \div 45 = 68.82\)
23. \(760 \div 15 = 50.67\)
24. \(312 \div 11 = 28.36\)
25. \(435 \div 56 = 7.77\)
Use the table for 1 through 5.

<table>
<thead>
<tr>
<th>School Supplies</th>
<th>Paper</th>
<th>Book Bags</th>
<th>Notebooks</th>
<th>Pens</th>
<th>Pencils</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number Sold</td>
<td>616</td>
<td>64</td>
<td>432</td>
<td>572</td>
<td>784</td>
</tr>
</tbody>
</table>

1. Pencils are packaged 16 pencils to a box. How many boxes of pencils did the store sell?  

2. The total sales of bookbags was $1,664. How much did each bookbag cost?  

3. Paper is delivered in cartons of 48 packs of paper each. If the store orders 624 packs of paper, how many cartons will they receive?  

4. Notebooks are packaged in sets of 15 notebooks each. How many sets of notebooks did the store sell?  

5. The store wants to order at least as many pens as they sold. If the pens are sold in boxes of 24 pens each, how many boxes should they order?  

6. School policy states that on field trips, there should be one adult chaperone for every 9 students. If 164 students are attending, how many adult chaperones are needed? Explain how you found your answer.
Use the table for 1 through 5.

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</tr>
</tbody>
</table>

1. Pencils are packaged 16 pencils to a box. How many boxes of pencils did the store sell? **49 boxes**

2. The total sales of bookbags was $1,664. How much did each bookbag cost? **$26 each**

3. Paper is delivered in cartons of 48 packs of paper each. If the store orders 624 packs of paper, how many cartons will they receive? **13 cartons**

4. Notebooks are packaged in sets of 15 notebooks each. How many sets of notebooks did the store sell? **28 R12**

5. The store wants to order at least as many pens as they sold. If the pens are sold in boxes of 24 pens each, how many boxes should they order? **24 boxes; I divided**

\[ 572 \div 24 = 23 \text{ R}20. \] So, they would need to purchase 24 boxes.

6. School policy states that on field trips, there should be one adult chaperone for every 9 students. If 164 students are attending, how many adult chaperones are needed? Explain how you found your answer. **19 chaperones; 164 \div 9 = 18 \text{ R}2.**

One additional chaperone is needed for the extra 2 students.