Answers to Problems 1 & 2 on Pg 48

1. \[ 23 \times 6 = 138 \]
2. \[ 76 \times 5 = 380 \]

Answers to Problems 2, 3, & 5 on Pg 49

1. Solve.
   a. \( (3 \times 4) + (18 + 3) = \frac{18}{15} \)
   b. \( [7 \times (2 + 3)] - 20 = 6 \)
   c. \( 2 \times (81 \div 9) + (9 \div 3) = 6 \)

2. Write a 6-digit number with 6 in the ones place, 3 in the thousands place, 1 in the hundreds place, 8 in the ten-thousands place, and 0 in the tens place. \[ 83106 \]

3. Which expressions show 3,248 in expanded form?
   Fill in the circle next to all that apply.
   A. \( 32 \times 1,000 + 4 \times 10 + 8 \times 1 \)
   B. \( 3 \times 1,000s + 2 \times 100s + 4 \times 10s + 8 \times 1s \)
   C. \( 3 \times 1,000 + 2 \times 100 + 4 \times 10 + 8 \times 1 \)
   D. \( 3 \times 10^3 + 2 \times 10^2 + 4 \times 10^1 + 8 \times 10^0 \)

4. Find the volume of the prism.
   Use the formula \( V = l \times w \times h \).
   \[ \text{Volume} = 2 \times 2 \times 4 = 16 \text{ units}^3 \]

5. Write in exponential notation.
   a. \( 10 \times 10 \times 10 \times 10 = 10^4 \)
   b. \( 10 \times 10 \times 10 = 10^3 \)
   c. \( 10 \times 10 \times 10 \times 10 \times 10 \times 10 = 10^{11} \)

6. Asher used 5 apples to make an apple pie. To make a jar of applesauce he needed twice as many apples as he needed for the pie plus two more. Write an expression that models how many apples Asher needed for the applesauce.
   Sample answer:
Answers to Problems 1 & 2 on Pg 51

### Problem 1
Solve.
1. \(3 \times 100 = \boxed{300}\)
2. \(6 \times 1,000 = \boxed{6,000}\)
3. \(8 \times 10,000 = \boxed{80,000}\)
4. \(3 \times \boxed{100,000} = 300,000\)
5. \(5 \times \boxed{1,000,000} = 5,000,000\)

### Problem 2
Write each number in exponential notation.
1. \(100 = \boxed{10^2}\)
2. \(10,000 = \boxed{10^4}\)
3. \(1,000,000 = \boxed{10^6}\)
4. \(100,000 = \boxed{10^5}\)
5. \(100,000,000 = \boxed{10^8}\)

Answers to Problems 1, 5, & 6 on Pg 53

### Problem 1
Complete.
1. \(4 \times 3 = \boxed{12}\)
2. \(3 \times 10^3 = \boxed{3,000}\)
3. \(4 \times \boxed{3,000} = 12,000\)
4. \(4 \times 3 \times \boxed{10^3} = 12,000\)
5. or 1,000

### Problem 2
The figure below is a mathematical model of a blanket fort Sue built in her bedroom. Use the model to estimate the volume of the fort.

- **Volume**: About 70 cubic feet
- **Dimensions**: 5 ft x 5 ft x 3 ft

### Problem 3
Make an estimate and solve.
\[492 \div 4 = ?\]

Answers vary.

\[
\begin{array}{ccc}
4 & 9 & 2 \\
\times & 4 \\
\_ & 1,968
\end{array}
\]

### Problem 4
Insert grouping symbols to make the number sentences true.
1. \(5 + \left(4 - \_\right) = 10\)
2. \(45 \div \left(_\div \_\right) = 3\)
3. \(2 \div \left(\_ + \_\right) = 10\)

### Problem 5
Which 6-digit numbers have 2 in the ones place, 7 in the thousands place, and 9 in the hundred-thousands place?
- 942,147
- 749,124
- 947,142
- 447,142
- 927,442

### Problem 6
Fill in the missing digits.

\[
\begin{array}{cc}
2 & 7 \\
\times & 4 \\
\_ & 3 \_ 4
\end{array}
\]
Answers to Problems 1 through 3 on Pg 54

**Example:** $76 \times 24 = ?$

**Estimate:** $80 \times 20 = 1,600$

$$\begin{array}{c}
2 \\
7 \\
6
\end{array} \quad \begin{array}{c}
2 \\
4
\end{array} \quad \begin{array}{c}
3 \\
0 \\
4
\end{array}$$ $+$ $\begin{array}{c}
1, 5 \\
2 \\
0
\end{array}$ $\begin{array}{c}
1, 8 \\
2 \\
4
\end{array}$

1. $31 \times 43 = ?$
   **Estimate:** $30 \times 40 = 1,200$

$$\begin{array}{c}
3 \\
1
\end{array} \quad \begin{array}{c}
4 \\
3
\end{array}$$ $+$ $\begin{array}{c}
1, 2 \\
4 \\
0
\end{array}$ $\begin{array}{c}
1, 3 \\
3 \\
3
\end{array}$

2. $26 \times 16 = ?$
   **Estimate:** $25 \times 20 = 500$

$$\begin{array}{c}
3 \\
2 \\
6
\end{array} \quad \begin{array}{c}
1 \\
6
\end{array}$$ $+$ $\begin{array}{c}
1, 5 \\
6
\end{array}$ $\begin{array}{c}
4 \\
1 \\
6
\end{array}$

3. $87 \times 46 = ?$
   **Estimate:** $90 \times 50 = 4,500$

$$\begin{array}{c}
2 \\
4
\end{array} \quad \begin{array}{c}
8 \\
7
\end{array}$$ $+$ $\begin{array}{c}
3, 4 \\
8 \\
0
\end{array}$ $\begin{array}{c}
4, 0 \\
0 \\
2
\end{array}$

4. Explain how your estimate helps you check whether your answer in Problem 1 makes sense.

Answers to Problems 1 & 2 on Pg 55

1. Complete. Use exponential notation for parts d and e.
   a. $8 \times 10^2 = 800$
   b. $3 \times 10^3 = 3,000$
   c. $5 \times 10^4 = 50,000$
   d. $2 \times \_10^6 = 2,000,000$
   e. $7 \times \_10^5 = 700,000$

2. Complete the table.

<table>
<thead>
<tr>
<th>Standard Notation</th>
<th>Exponential Notation</th>
</tr>
</thead>
<tbody>
<tr>
<td>10,000</td>
<td>$10^4$</td>
</tr>
<tr>
<td>100,000</td>
<td>$10^5$</td>
</tr>
<tr>
<td>10,000,000</td>
<td>$10^7$</td>
</tr>
<tr>
<td>1,000,000</td>
<td>$10^6$</td>
</tr>
</tbody>
</table>
Answers to Problems 1 through 6 on Pg 56

1. \(627 \times 34 = ?\)
   Estimate: \(600 \times 30 = 18,000\)

2. \(148 \times 8 = ?\)
   Estimate: \(148 \times 10 = 1,480\)

Sample estimates given.

3. \(72 \times 110 = ?\)
   Estimate: \(70 \times 100 = 7,000\)

4. \(436 \times 65 = ?\)
   Estimate: \(400 \times 70 = 28,000\)

5. \(72 \times 110 = 7,920\)

6. A photo of a building is 18 centimeters tall. The real building is 842 times as tall. How tall is the building?
   Estimate: \(20 \times 900 = 18,000\)

Answer: 18,000 paper clips

Answer: 16,056 centimeters

7. What strategy did you use to solve Problem 3? Explain why you chose that strategy.
Answers to Problems 1, 3, & 6 on Pg 57

1. Complete.
   a. \(7 \times 2 = \boxed{14}\)
   b. \(2 \times 10^2 = \boxed{200}\)
   c. \(7 \times 10^2 = \boxed{700}\)
   d. \((7 \times 10^2) \times (2 \times 10^3) = \boxed{140,000}\)
   e. \(700 \times 200 = \boxed{140,000}\)

2. The figure below is a mathematical model of Remy's toy train car. Use the model to estimate the volume of the train car.
   - Volume: About \(83\) cm³

3. Make an estimate and then solve.
   Estimates vary.
   a. \(
   \begin{array}{ccc}
   2 & 8 & 7 \\
   \times & q & \\
   \hline
   2,583 & 
   \end{array}
   \)
   b. \(
   \begin{array}{ccc}
   4 & 1 & \\
   \times & 1 & 7 \\
   \hline
   697 & 
   \end{array}
   \)

4. Insert grouping symbols to make the number sentences true.
   a. \(36 \div (6 - 5) = 36\)
   b. \(25 \times (8 - 3) = 125\)
   c. \((2 + 36) \div (12 - 10) = 19\)
   d. \(2 + [36 \div (12 - 5)] = 8\)

5. Write a 7-digit number with
   - 5 in the hundred-thousands place,
   - 2 in the tens place,
   - 4 in the millions place,
   - 6 in the ten-thousands place, and
   - 0s in the other places.
   \(\boxed{4,560,020}\)

Answers to Problems 1 & 2 on Pg 59

1. It took 32 minutes for Tara to walk to the store, 56 minutes to do her shopping, and 32 minutes to walk home. How many hours was Tara gone? Sample answer: \((32 + 56 + 32) / 60\) (number model)
   - Answer: 2 hours

2. Make an estimate and solve.
   Estimates vary.
   a. \(
   \begin{array}{ccc}
   3 & 1 & 2 \\
   \times & 2 & 3 \\
   \hline
   7,176 & 
   \end{array}
   \)
   b. \(
   \begin{array}{ccc}
   4 & 9 & 6 \\
   \times & 3 & 2 \\
   \hline
   15,872 & 
   \end{array}
   \)
Answers to Pg 62

Choose the best answer.

Write an expression that shows how much banana each person got.

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

5 Marcus spent \( \frac{1}{3} \) of his allowance on trading cards and \( \frac{1}{4} \) of his allowance on snacks. Did he spend more on trading cards or snacks?

- Trading cards

6 Write two fractions equivalent to \( \frac{3}{4} \).

\[ \frac{4}{8}, \frac{50}{100}, \frac{3}{12}, \frac{25}{100} \]

Sample answers given.

Solve.

- \( \frac{1}{8} + \frac{1}{8} + \frac{1}{8} = \frac{3}{8} \)
- \( \frac{1}{4} + \frac{1}{4} + \frac{1}{4} = \frac{3}{4} \)
- \( \frac{1}{5} + \frac{3}{5} = \frac{4}{5} \)
- \( \frac{2}{4} + \frac{5}{4} = \frac{7}{4} \)

6 Breille is buying yarn to knit a scarf. She needs to know the area of the scarf she will knit to choose the right package of yarn. What is the area of a scarf that is 4 feet long and \( \frac{1}{2} \) foot wide?

\[ \text{Area} = 2 \text{ square feet} \]

Answers to Problems 1 through 4 on Pg 63

For Problems 1–4, make an estimate. Then use partial-quotients division to solve. Show your work on the computation grid. Sample estimates given.

1 \[ 234 \div 11 \rightarrow ? \]
   
   Estimate: \[ 200 \div 10 = 20 \]
   
   Answer: \[ 21 \text{ R}3 \]

2 \[ 825 \div 15 \rightarrow ? \]
   
   Estimate: \[ 800 \div 20 = 40 \]
   
   Answer: \[ 55 \text{ R}0 \]

3 \[ 3,518 \div 30 \rightarrow ? \]
   
   Estimate: \[ 3,600 \div 30 = 120 \]
   
   Answer: \[ 117 \text{ R}8 \]

4 \[ 6,048 \div 54 \rightarrow ? \]
   
   Estimate: \[ 6,000 \div 60 = 100 \]
   
   Answer: \[ 112 \text{ R}0 \]
Answers to Problems 3 & 4 on Pg 64

3. True or false?
   In the number 23,916:
   a. the digit 3 is worth 3,000.  
      ○ true  ○ false
   b. the digit 9 is worth 90.  
      ○ true  ○ false
   c. the digit 2 is worth 20,000.  
      ○ true  ○ false
   d. the digit 1 is worth 100.  
      ○ true  ○ false

4. Fill in the missing digits.
   a. 4 [1]  
      2 8 2
      x 6
      1, 6 [9] 2
   b. [4] 3  
      3 8 6
      x 5
      1, [9] 3 0

Answers to Problems 1 through 4 on Pg 65

For Problems 1–4, make an estimate. Then use partial-quotients division to solve. Show your work. You can make lists of multiples on Math Masters, page TA10 to help you.

Sample estimates given.

1. 1,647 / 28 → ?
   Estimate: 1,500 / 30 = 50
   Answer: 58 R23

2. 4,319 / 42 → ?
   Estimate: 4,200 / 42 = 100
   Answer: 102 R35

3. 2,628 / 36 → ?
   Estimate: 2,800 / 40 = 70
   Answer: 73 R0

4. 9,236 / 41 → ?
   Estimate: 8,000 / 40 = 200
   Answer: 225 R11

Answers to Problems 3 & 4 on Pg 67

3. Write the value of the boldface digit in each number.
   a. 390 40
      8,000
   b. 8,042 8,000
      5,000
   c. 35,047 35,000
      5,000
   d. 232,591 30,000
      30,000
   e. 497,214 400,000

4. Fill in the missing digits.
   a. 2 [1]  
      4 5 3
      x 4
      1, 8 [1] 2
   b. [2]  
      3 2 7
      x 3
      q 8 [1]