WORKPLACE LINK: Nancy works at a clothing store. A customer wants to know the original price of a pair of slacks that are now on sale for 40% off. The sale price is $16.50. Nancy knows that 40% of the original price subtracted from the original price will equal the sale price. Using $x$ for the original price she writes: $x - 0.4x = 16.50$. Then she solves for $x$.

**Algebra Word Problems**

Many algebra problems are about number relationships. In most word problems, one number is defined by describing its relationship to another number. One other fact, such as the sum or product of the numbers, is also given. To solve the problem, you need to find a way to express both numbers using the same variable.

See how to write an equation about two amounts using one variable.

**Example:** Together, Victor and Tami Vargas earn $33,280 per year. Tami earns $4,160 more per year than Victor earns. How much do Victor and Tami each earn per year?

You are asked to find two unknown amounts. Victor’s earnings: $x$

Represent the amounts using algebra.

Tami’s earnings: $x + 4,160$

Write an equation showing that the sum of the two amounts is $33,280. Solve the equation.

- Combine like terms.
  
  $$x + x + 4,160 = 33,280$$
  
  $$2x + 4,160 = 33,280$$

- Subtract 4,160 from both sides of the equation.
  
  $$2x + 4,160 - 4,160 = 33,280 - 4,160$$
  
  $$2x = 29,120$$

- Divide both sides by 2.
  
  $$\frac{2x}{2} = \frac{29,120}{2}$$

  $$x = 14,560$$

Now go back to the beginning, when you first wrote the amounts in algebraic language. Since $x$ represents Victor’s earnings, you know that Victor earns $14,560 per year. Tami’s earnings are represented by $x + 4,160$. Add: $14,560 + 4,160 = 18,720$. Tami earns $18,720 per year.

**Answer:** Victor earns $14,560, and Tami earns $18,720.

**Check:** Return to the original word problem and see whether these amounts satisfy the conditions of the problem. The sum of the amounts is $33,280, and $18,720 is $4,160 more than $14,560. The answer is correct.

Learn how to apply algebraic thinking to problems about age.

**Example:** Erica is four times as old as Blair. Nicole is three years older than Erica. The sum of their ages is 21. How old is Erica?

The problem concerns three ages. Let $x$ equal Blair’s age.

Represent the amounts using the same variable.

Blair’s age: $x$

Erica’s age: $4x$

Nicole’s age: $4x + 3$

Write an equation showing the sum equal to 21.

$$x + 4x + 4x + 3 = 21$$
Solve the equation. 

\[ x + 4x + 4x + 3 = 21 \]

The variable \( x \) is equal to 2, but that doesn’t answer the question posed in the problem. The problem asks you to find Erica’s age, which is equal to 4x, or 4(2).

**Answer:** Erica is **8 years old**.

*Check:* Blair is 2, Erica is 8, and Nicole is 11. The ages total 21.

Learn how to write equations for consecutive number problems.

**Example:** The sum of three consecutive numbers is 75. Name the numbers.

**Consecutive numbers** are numbers in counting order. To solve problems of this type, let \( x \) equal the first number. The second and third numbers can be expressed as \( x + 1 \) and \( x + 2 \).

Write an equation. 

\[ x + x + 1 + x + 2 = 75 \]

Solve. 

\[ 3x + 3 = 75 \]

\[ 3x = 72 \]

\[ x = 24 \]

**Answer:** The numbers are **24, 25, and 26**.

*Check:* The numbers are consecutive, and their sum is 75.

**SKILL PRACTICE**

For each problem, write an equation and solve. Check your answer.

1. Name two numbers if one number is 3 more than twice another, and their sum is 57.
2. Erin is 8 years less than twice Paula’s age. The sum of their ages is 40. How old is Erin?
3. Lyle and Roy do landscaping. They recently earned $840 for a project. If Lyle earned $4 for every $1 earned by Roy, how much of the money went to Lyle?
4. The sum of four consecutive numbers is 626. Find the four numbers.
5. A movie theater sold 5 times as many children’s tickets as adult tickets to an afternoon show. If 132 tickets were sold in all, how many were children’s tickets?
6. Together, Grace and Carlo spent $51 on a gift. If Grace contributed twice as much money as Carlo, how much did Carlo spend?
7. Fahi’s age is \( \frac{3}{4} \) of Mia’s age. The sum of their ages is 91. How much older is Mia than Fahi?
8. The sum of two consecutive odd numbers is 64. Name the numbers. (*Hint:* Let \( x \) represent the first number and \( x + 2 \) the second number.)
9. One number is 8 more than \( \frac{1}{2} \) of another number. The sum of the numbers is 23. What are the numbers?
10. Adena, Julius, and Tia volunteered to read to children at the public library. Julius worked two hours less than Tia. Adena worked twice as many hours as Julius. Altogether they worked 58 hours. How many hours did Adena work?

(1) 14  (4) 42
(2) 16  (5) 46
(3) 28

Answers and explanations start on page 329.
COMMUNITY LINK: For a grant application, Jodi is sketching the proposed landscaping plan for a new community center. The plan calls for a rectangular garden. Jodi needs the dimensions of the rectangle to draw the plan. She knows that the length is two times the width and that the perimeter is 126 meters. Jodi writes an equation to find the dimensions.

More Algebra Word Problems

Many algebra problems are about the figures that you encounter in geometry. To solve these problems, you will need to combine your understanding of geometry and its formulas with your ability to write and solve equations.

Learn how to solve for the dimensions of a rectangle.

Example: In the situation above, Jodi is given the perimeter of a rectangle. She also knows that the length is twice as many meters as the width. Using the formula for finding the perimeter of a rectangle, find the dimensions of the rectangle.

The formula for finding the perimeter of a rectangle is \( P = 2l + 2w \), where \( l = \) length and \( w = \) width. You will be given a page of formulas when you take the GED Math Test. A copy of that page is printed for your study on page 340 of this book.

When an item on the GED Math Test describes a figure in words alone, your first step should be to make a quick sketch of the figure. Read the problem carefully, and label your sketch with the information you have been given.

In this case, let \( x \) represent the width and \( 2x \) the length.

Now substitute the information you have into the formula and solve.

\[
\begin{align*}
P &= 2l + 2w \\
126 &= 2(2x) + 2(x) \\
126 &= 4x + 2x \\
126 &= 6x \\
21 &= x
\end{align*}
\]

If the width (\( x \)) is 21 meters, then the length (\( 2x \)) must be 42 meters.

Answer: The rectangular garden is \textbf{21 meters wide} and \textbf{42 meters long}.

Check: Make sure the dimensions meet the condition of the problem. Substitute the dimensions into the perimeter formula: \( P = 2(21) + 2(42) = 42 + 84 = 126 \) meters. The answer is correct.

Another common type of algebra problem involves the denominations of coins and bills. In this type of problem, you are told how many coins or bills there are in all. You are also given the denominations of the coins or bills used and the total amount of money. Your task is to find how many there are of each denomination.
Learn how to solve denomination problems by studying this example.

**Example:** Marisa is taking a cash deposit to the bank. She has $10 bills and $5 bills in a deposit pouch. Altogether, she has 130 bills with a total value of $890. How many bills of each kind are in the pouch?

Let \( x \) represent the number of $10 bills in the bag. Next, use the same variable to represent the number of $5 bills. If there are 130 bills in all, then \( 130 - x \) represents the number of $5 bills.

Now you need to establish a relationship between the number of bills and their value. Using the expression above, the total value of the $10 bills is \( 10x \), and the total value of the $5 bills is \( 5(130 - x) \).

Write an equation and solve.

\[
10x + 5(130 - x) = 890 \\
10x + 650 - 5x = 890 \\
5x + 650 = 890 \\
5x = 240 \\
x = 48
\]

\[
130 - x = 82
\]

**Answer:** There are **48 ten-dollar bills** and **82 five-dollar bills**.

*Check:* \((48 \times 10) + (82 \times 5) = 480 + 410 = 890\). The answer is correct.

**Skill Practice**

Solve each problem.

1. The length of a rectangle is 4 inches more than twice its width. If the perimeter of the rectangle is 38 inches, what is its width?

2. The perimeter of a right triangle is 60 cm. Side A is 2 cm less than half of Side B. Side C is 2 cm longer than Side B. Find the lengths of the three sides.

3. A bag contains a total of 200 quarters and dimes. If the total value of the bag’s contents is $41.00, how many quarters and how many dimes are in the bag?

4. A school sold 300 tickets to a basketball game. Tickets were $9 for adults and $5 for children. If the total revenue was $2340, how many of each ticket type were sold?

---

**History Connection**

Seeing a pattern can help you solve algebra problems. Suppose you were asked to find the sum of the whole numbers from 1 to 100. What would you do?

In 1787, ten-year-old Carl Gauss was given this problem. As the other students began adding on their slates, Carl solved the problem mentally. Carl observed that by adding the highest and lowest numbers in the sequence and working toward the middle he could find pairs that equaled 101: \(1 + 100 = 101\), \(2 + 99 = 101\), \(3 + 98 = 101\), and so on. Carl knew there must be 50 pairings in all. He multiplied 101 by 50 and got 5050, the correct sum. Carl Gauss went on to become a famous mathematician.

Apply Carl’s method here. **Find the sum of the even whole numbers from 2 to 40.**
1. \(4^3\)
2. \(b^{11}\)
3. \(10^{10}\)
4. \(m^8\)
5. \(3^3\)
6. \(n^3\)
7. \(x\) (Note: \(x^3 = x\))
8. \(10^3\)
9. \(10^{12}\)
10. \(y^{10}\)
11. \(2^{18}\)
12. \(a^{12}\)
13. \(2.1 \times 10^{-3}\) In standard form, \(2.1 \times 10^{-3} = 0.0021\) and \(3.2 \times 10^{-2} = 0.032\).

14. \(3.6 \times 10^5\) In standard form, \(3.6 \times 10^5 = 360,000\) and \(9.4 \times 10^4 = 94,000\).
15. \(2.09970 \times 10^5\) sq mi
16. \(3,614,000\) sq mi
17. \(25,000,000,000,000\) miles This number is read “25 trillion.”
18. 10 times Since our place value system is based on tens, a difference of 1 in the exponent changes the number by a factor of 10.
19. \(2 \times 10^{-3}\)

1. \(y = 4\)
2. \(x = -2\)
3. \(n = -1\)
4. \(b = 3\)
5. \(a = 30\)
6. \(x = 8\)
7. \(3x + 6 = 42\)
8. \(5x - 9 = -14\)
9. \(32 \div x + 5 = 1\)
10. \(2x - 22 = 4\)

11. Paula’s age
12. Erin’s age

13. First number = \(x\), second number = \(2x + 3\)
14. \(x + 2x + 3 = 57\)
15. \(3x + 3 = 57\)
16. \(3x = 54\)
17. \(x = 18\)
18. Erin is 24.

Paula’s age = \(x\), Erin’s age = \(2x - 8\)
19. \(2x - 8 + x = 40\)
20. \(3x - 8 = 40\)
21. \(3x = 48\)
22. \(x = 16\)

**Skill Practice, page 255**
1. 32
2. 18
3. -60
4. -24
5. 4
6. -25
7. -3
8. Subtracting \(\frac{-4}{2}\) is equivalent to adding \(\frac{4}{2}\) or 2.
9. Subtract inside the parentheses first: \(-6(-5) = 30\)
10. Evaluate the exponent, then add inside the parentheses: \(\frac{(8^2 + 20)}{11} = \frac{(64 + 20)}{11} = \frac{84}{11} = 4\).

**Problem Solver Connection, page 255**
6 - 4 + 2 - 3 = 1 or 6 + (-4) + 2 + (-3) = 1

**Skill Practice, page 257**
1. 9\(a - 3b = -4\)
2. 7\(x - 3\)
3. 3\(x + 42\)
4. 2\(m^2 - 2m + 12\)
5. 13\(a^2 - 3b - 5b^2\)
6. \(x + 2y\) Do the division and multiplication first: \(\frac{4y}{2} = 2y\) and \(2(x - 2y) = 2x - 4y\). Then simplify by combining all like terms.
7. 22
8. 108
9. -4
10. 48
11. 70
12. 42
13. -4
14. 8
15. -2 First find the numerator: \(2x^2 + y = 2(9) + 2 = 20\). Then find the denominator: \(5x - (-5) = 5(-3) + 5 = -10\). Divide: \(-\frac{20}{-10} = -2\).
16. 12,000 Instead of computing fractions of \(p\), you can start by combining terms: \(4p + 1.25p + 0.75p = 6p\). Substitute and solve: 100 \(\times 6p = 100 \times 6 \times 20 = 12,000\).

**Skill Practice, page 259**
1. \(4^3\)
2. \(b^{11}\)
3. \(10^{10}\)
4. \(m^8\)
5. \(3^3\)
6. \(n^3\)
7. \(x\) (Note: \(x^3 = x\))
8. \(10^3\)
9. \(10^{12}\)
10. \(y^{10}\)
11. \(2^{18}\)
12. \(a^{12}\)
13. \(2.1 \times 10^{-3}\) In standard form, \(2.1 \times 10^{-3} = 0.0021\) and \(3.2 \times 10^{-2} = 0.032\).
3. Lyle earned $672.
Roy’s earnings = \( x \), Lyle’s earnings = \( 4x \)
\[
\begin{align*}
4x + x & = 840 \\
5x & = 840 \\
x & = 168
\end{align*}
\]
4. 155, 156, 157, and 158
\[
x + x + 1 + x + 2 + x + 3 = 626 \\
4x + 6 = 626 \\
4x = 620 \\
x = 155
\]
5. 110
adult tickets = \( x \), children’s tickets = \( 5x \)
\[
x + 5x = 132 \\
6x = 132 \\
x = 22
\]
6. $17
Carlo’s contribution = \( x \), Grace’s contribution = \( 2x \)
\[
x + 2x = 51 \\
3x = 51 \\
x = 17
\]
7. Mia is 13 years older than Fahi.
Mia’s age = \( x \), Fahi’s age = \( \frac{3}{4}x \)
\[
\frac{3}{4}x + x = 91 \\
1\frac{1}{4}x = 91 \\
x = 52
\]
Mia is 52 and Fahi is 39.
\[
52 - 39 = 13
\]
8. 31 and 33
\[
x + x + 2 = 64 \\
2x + 2 = 64 \\
2x = 62 \\
x = 31
\]
9. 10 and 13
first number = \( x \), second number = \( 8 + \frac{1}{2}x \)
\[
x + 8 + \frac{1}{2}x = 23 \\
1\frac{1}{2}x + 8 = 23 \\
1\frac{1}{2}x = 15 \\
x = 10
\]
10. (3) 28
Tia’s hours = \( x \), Julius’s hours = \( x - 2 \),
Adena’s hours = \( 2(x - 2) \)
\[
x + x - 2 + 2(x - 2) = 58 \\
x + x - 2 + 2x - 4 = 58 \\
4x - 6 = 58 \\
4x = 64 \\
x = 16
\]
Substitute 16 for \( x \) in the expression for Adena’s hours.

Skill Practice, page 265
1. 5 inches
width = \( x \), length = \( 2x + 4 \)
\[
P = 2l + 2w \\
38 = 2(2x + 4) + 2x \\
38 = 4x + 8 + 2x \\
38 = 6x + 8 \\
30 = 6x \\
5 = x
\]
2. The sides of the triangle measure 10, 24, and 26 cm.
side \( B = x \), side \( A = \frac{1}{2}x - 2 \), side \( C = x + 2 \)
\[
P = a + b + c \\
60 = \frac{1}{2}x - 2 + x + x + 2 \\
60 = \frac{3}{2}x \\
24 = x
\]
Side \( B \) is 24 cm. Substitute 24 cm for \( x \) in the expressions for sides \( A \) and \( C \).
3. 140 quarters and 60 dimes
number of quarters = \( x \)
number of dimes = \( 200 - x \)
\[
0.25x + 0.10(200 - x) = 41 \\
0.25x + 20 - 0.10x = 41 \\
0.15x = 21 \\
x = 140
\]
4. 210 adult tickets and 90 children’s tickets
number of tickets sold to adults = \( x \)
number of tickets sold to children = \( 300 - x \)
\[
9x + 5(300 - x) = 2340 \\
9x + 1500 - 5x = 2340 \\
4x = 840 \\
x = 210
\]

History Connection, page 265
840 There are 20 pairings of even numbers from 2 to 40 that have the same sum. 2 + 40 = 42, 4 + 38 = 42, 6 + 36 = 42, and so on. Multiply: 42 \times 20 = 840.

GED Practice, pages 266–268
1. (2) B Since \( x \) is greater than \(-2\), it must lie to the right of \(-2\). Since \( x \) is less than 0, it must lie to the left of 0. Only point B is both greater than \(-2\) and less than 0.
2. (2) 178 – \((a + 7b)\) The quantity of \( a \) plus \( 7b \) will be a sum, which is to be subtracted from 178.
3. (3) 96 Remembering that two negative numbers multiplied together result in a positive product, your answer is 96.
4. (2) B First convert \(-\frac{25}{7}\) to \(-3\frac{4}{7}\), which you can estimate is a little more than \(-3\frac{4}{7}\). Being a negative number, \(-3\frac{4}{7}\) will be just to the left of \(-3\frac{4}{7}\).
5. (3) $1450 + $120 + $340 = $845 Each deposit represents a positive; the transfer represents a negative.
6. (4) 48 Substitute the known values.
\[
(d = -7 \text{ is extraneous information.}) \\
a = 4(2)(11 - 5) \\
a = 8(6) = 48
\]
7. (5) 2(2y) + 2(3x) The formula for finding the perimeter of a rectangle is \( P = 2l + 2w \).
Substitute 2y for \( l \) and 3x for \( w \).
8. (4) 288 The formula for finding the area of a rectangle is \( A = lw \). The length of the rectangle is 2y or 2(12), which equals 24. The width of the rectangle is 3w or 3(4), which equals 12. Thus, the area of the rectangle is \( A = 24(12) = 288 \).
Solving Set-up Problems

Some items on the GED Math Test ask you to select a correct method for solving a problem instead of finding the solution. These problems do not require calculations. Instead, you need to find an expression that shows the correct numbers, operations, and order of steps.

Think about the method you would use to solve this problem.

Example: Marie earns $16 per hour for overtime hours. She worked 8 hours overtime last week and 6 hours overtime this week. Which expression could be used to find Marie’s overtime pay for the two-week period?

(1) $16 \times 8 \times 6 \\
(2) $16(8 + 6) \\
(3) 8(6) + $16 \\
(4) 6($16 + 8) \\
(5) 8(6) + 8($16)

You’re right if you chose (2) $16(8 + 6). In this expression, $16 (the overtime hourly wage) is multiplied by the sum of 8 and 6 (the total overtime hours worked).

There is another way to work the problem. You could find the overtime pay for each week and add: $16(8) + $16(6). Both choice (2) and this expression yield the same result. Both are correct.

$16(8 + 6) = $16(14) = 224 \\
$16(8) + $16(6) = $128 + $96 = 224$

To solve GED set-up problems, think about how you would calculate an answer to the problem. Put your ideas into words. Then substitute numbers and operations symbols for the words.

Properties of Operations

To recognize the correct setup, you should be familiar with these important properties.

The **commutative property** applies only to addition and multiplication. It means that you can add or multiply numbers in any order without affecting the result.

8 + 9 = 17  \text{ OR } 9 + 8 = 17 \\
7 \times 6 = 42  \text{ OR } 6 \times 7 = 42

The **associative property** works only for addition and multiplication. It means that when you add or multiply more than two numbers, you can group the numbers any way that you like without affecting the result.

(5 + 8) + 10 = 13 + 10 = 23 \\
\text{ OR } 5 + (8 + 10) = 5 + 18 = 23 \\
(6 \times 2) \times 3 = 12 \times 3 = 36 \\
\text{ OR } 6 \times (2 \times 3) = 6 \times 6 = 36
The **distributive property** says that a number outside parentheses can be multiplied by each number inside the parentheses. Then the products are added or subtracted according to the operation symbol.

On the GED Math Test, your setup may not seem to be among the answer choices. Try applying these properties to the choices to see whether the setup is written a different way.

\[
8(8 + 6) = 8(8) + 8(6) \quad 8(14) = 64 + 48 \quad 112 = 112 \\
5(12 - 3) = 5(12) - 5(3) \quad 5(9) = 60 - 15 \quad 45 = 45
\]

### SKILL PRACTICE

Solve each problem.

1. In January, 58 parents attended the PTA meeting. In February, 72 parents attended, and 113 in March. Which expression represents the total attendance for the 3 months?

   (1) \(\frac{58 + 72 + 113}{3}\) \\
   (2) \(3(58 + 72 + 113)\) \\
   (3) \(113 + 72 + 58\) \\
   (4) \(58(72 + 113)\) \\
   (5) \(3(113 - 58) + 72\)

2. Which of the following expressions is the same as \((5 \times 15) - (5 \times 8)\)?

   (1) \(5 \times (15 - 5)\) \\
   (2) \(5(15 \times 8)\) \\
   (3) \(5(15 + 8)\) \\
   (4) \((5 \times 8) \times 15\) \\
   (5) \(5(15 - 8)\)

3. Lamar earned $20,800 last year, and his wife, Neva, earned $22,880. Which expression could be used to find the amount they earned per month last year?

   (1) \(2(22,880 + 20,800)\) \\
   (2) \((22,800 - 20,800) \div 12\) \\
   (3) \(12(22,880 - 20,800)\) \\
   (4) \((22,880 + 20,800) \div 12\) \\
   (5) \((20,800 + 22,800) \div 2\)

4. Alexa sold 12 sweatshirts at $23 each and 28 T-shirts at $14 each. Which expression represents total sales?

   (1) \(12($23) + 28($14)\) \\
   (2) \(12($23 + $14)\) \\
   (3) \(28($14 + $23)\) \\
   (4) \(12 + $23 + 28 + $14\) \\
   (5) \(28(12) + $23($14)\)

---

**Calculator Connection**

Suppose you are solving a set-up problem. You know how to do the math, but you don’t recognize any of the setups offered as answer choices. You may have used a correct, but different, approach. Your calculator can help.

**Example:** Phyllis buys two software programs, each costing $150. There is a $25 rebate on each program. Which expression shows the combined cost?

(1) \(2($150)($25)\) \\
(2) \(2($150) + 2($25)\) \\
(3) \(2($150) - 2($25)\) \\
(4) \$150 - 2($25)\) \\
(5) \$150 - 2($25)\)

**Step 1.** Think about how you would solve this problem. Perhaps you would add and subtract:

\$150 + $150 - 25 - 25\$. Your approach is not among the choices, however.

**Step 2.** Do the math using your approach: $150 + 150 - 25 - 25 = 250$. Now use your calculator to evaluate each setup until you find the one that yields your answer. Which expression is correct?

Answers and explanations start on page 310.
17. (3) 262,000 sq mi The digit 1 is in the thousands place of the number 261,914. The digit to the right is 9. Add 1 to the thousands place and replace the digits to the right with zeros. The number 261,914 rounds to 262,000.

18. (4) 8 hundred thousand The place value for 8 in this number means $8 \times 100,000$, or 800,000.

19. (4) $5,000 - 4,000$ Use front-end estimation by looking only at the value of the first digit.

Subtract the smaller number from the larger.

20. (2) less than Karen Hall. Comparing the values of the numbers given, you will see that $38,054$ (Ed’s commissions) is less than $38,450$ (Karen’s commissions).

21. (3) $1,000$ You can “eyeball” or estimate the difference by looking at the two salaries or rounding them to the nearest thousand: $43,000 - 32,000 = 1,000$.

### PROGRAM 29: PROBLEM SOLVING

#### Basic Operations Review

**Skill Practice, page 47**

1. 1,832
2. $931
3. 1,024
4. (4) $10,608 Multiply: $136 \times 78$
5. 972
6. 11,190
7. 12,288
8. (4) $16,613$ Add: $13,940 + 1,145 + 1,528$

**Skill Practice, page 49**

1. 82
2. 533 r1
3. 900
4. 853 r14
5. 28 chairs Divide: $2,500 \div 89$. Ignore the remainder, since Laurie can’t buy part of a chair.
6. $671$ Subtract: $1,000 - 329$
7. $1,338$ Multiply: $223 \times 6$
8. $1,420$ Multiply to find the cost of the book trucks: $189 \times 5 = 945$. Then add the cost of the cart: $945 + 475 = 1,420$.
9. (2) 690 Divide: $12,500 \div 18 = 694.4$, which rounds to 690.

**Skill Practice, page 51**

You may use any letter for the variable.

1. $25$ $36 + x = 61$ or $x = 61 - 36 = 25$
2. $166$ $624 \div x = 458$
3. 38 hours $h \times 9 = 342$ or $9 \times h = 342$
4. 252 books $b \div 6 = 42$

**Problem Solver Connection, page 51**

To count up from $185$ to $500$, think: $5$ gets me to $190$, $10$ more gets me to $200$. Then I need $300$ to get to $500$. Add: $5 + 10 + 300 = 315$.

### Solving Word Problems

**Skill Practice, page 53**

1. (3) $20,707$ Add: $13,682 + 7,025$
2. (5) Not enough information is given. You would need the amount of the annual goal to find how much the association has left to raise.
3. (2) $6,764$ Subtract: $13,682 - 6,918$

**Skill Practice, page 55**

1. $324$ $36 \times 9 = 324$
2. $179$ $1432 \div 8 = 179$
3. $144$ bottles $432 \div 3 = 144$
4. 440 miles $55 \times 8 = 440$ miles
5. (1) 575 miles per hour Use the formula: $d = rt$. Substitute the values you know: $1725 = r \times 3$. Divide to find the rate: $1725 \div 3 = 575$ miles per hour.

**Science Connection, page 55**

9 psf Divide 1,620 pounds by 180 square feet.

### Solving Multi-Step Problems

**Skill Practice, page 57**

1. 17
2. 31
3. 55
4. 30
5. 63
6. 141
7. 90 miles $(15 \times 2) \times 3 = 90$
8. 82 miles $(15 + 12 + 14) \times 2 = 82$

**Skill Practice, page 59**

1. (3) $113 + 72 + 58$ Add to find the total.
2. (5) $5(15 - 8)$ This problem applies the distributive property.
3. (4) $(22,880 + 20,800) + 12$ Add their annual wages and divide by 12, the number of months in a year.
4. (1) $12(23) + 28(14)$ Apply the cost formula for each item and add the results.

**Calculator Connection, page 59**

(3) $(2150) - 2(225)$ This is the only expression that equals $250$.

**GED Practice, pages 60–62**

1. (5) $21$ Since the shirts each cost the same amount, divide $84$ by 4 shirts. The information about the jeans is unnecessary, or extraneous, for this calculation.
2. (1) $84 + 6$ Divide the number of employees per team into the total number of employees.
3. (1) $8 - 2\frac{1}{2} - 4$ Subtract the morning and the afternoon work periods ($2\frac{1}{2}$ and 4 hours) from the total number of seminar hours (8 hours).
4. (2) $7.00$ Subtract: $35 - 28 = 7$. 

GED Practice, pages 60–62