

Review Exercises

1. $7^2 =$

2. $\sqrt{36} =$

3. $-9 - -7 =$

4. $16 + -72$

5. $\frac{16 \div -2}{-4 \times -2} =$

6. $7^2 - 5^2 =$

Helpful Hints

It is necessary to follow the correct **order of operations** when simplifying an expression.

1. Evaluate within grouping symbols.
2. Eliminate all exponents.
3. Multiply and divide in order from left to right.
4. Add and subtract in order from left to right.

Examples:

$$\begin{aligned} &3^2(3 + 5) + 3 \\ &= 3^2(8) + 3 \\ &= 9(8) + 3 \\ &= 72 + 3 \\ &= 75 \end{aligned}$$

*A number next to a grouping symbol means multiply.

Sometimes there are no grouping symbols.

$$\begin{aligned} &4 + 12 \times 3 - 8 \div 4 \\ &= 4 + 36 - 2 \\ &= 40 - 2 \\ &= 38 \end{aligned}$$

$$3(2 + 1) = 3 \times (2 + 1)$$

Solve each of the following. Be sure to follow the correct order of operations.

S1. $5 + 9 \times 3 - 4 =$

S2. $8 + 3^2 \times 4 - 6 =$

1. $4(6 + 2) - 5^2 =$

2. $(14 - 6) + 56 \div 2^3 =$

3. $5^2 + (15 + 3) \div 2 =$

4. $7 \times 4 - 9 \div 3 =$

5. $(3 \times 12) \div (9 \div 3) =$

6. $5^2 + 2^3 - 2 \times 3 =$

7. $12 - 6 \div 3 + 4 =$

8. $3^2 - 2^3 + 6 \div 2 =$

9. $(3 + 8 \div 2) \times (2 \times 6 \div 3) =$

10. $9 + [(4 + 5) \times 3] =$

Problem Solving

A running back gained 12 yards. The next play he lost 18 yards, and on the third play he gained five yards. What was his net gain or net loss?

Score

Review Exercises

1. $-2 + 9 =$

2. $-7 - 15 =$

3. $-7 - -15 =$

4. $6 \times -7 =$

5. $-45 \div -9 =$

6. $\frac{-24 \div -2}{18 \div -3} =$

Helpful Hints

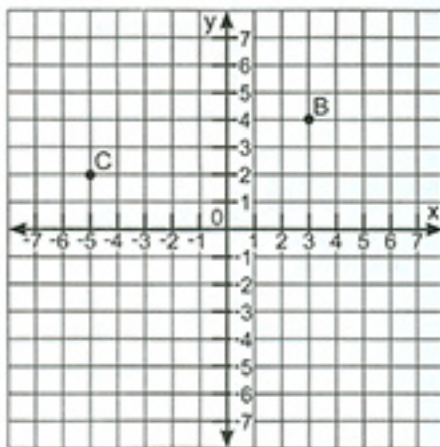
Ordered pairs can be graphed on a coordinate system.

The first number of an ordered pair shows how to move across. It is called the **x-coordinate**.

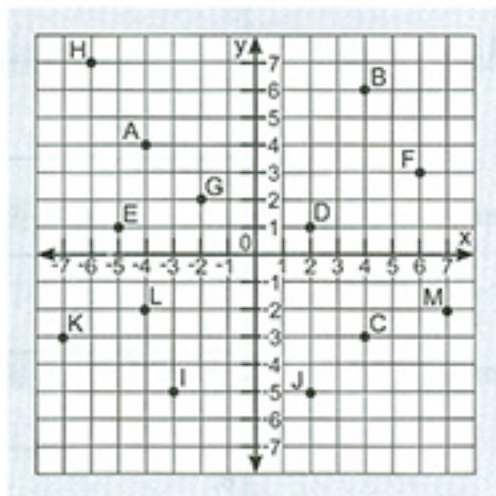
The second number of an ordered pair shows how to move up and down. It is called the **y-coordinate**.

Examples: To locate B, move across to the right to 3 and up 4. The ordered pair is (3,4).

To locate C, move across to the left to -5 and up 2. The ordered pair is (-5,2).



Use the coordinate system to find the point associated with each ordered pair.



S1. D

S2. L

1. F

2. J

3. K

4. E

5. B

6. C

7. I

8. G

9. D

10. H

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

Problem Solving

A shirt that regularly sells for \$30 is on sale for 20% off. How much is the sale price?

Score

Review Exercises

1. $2^5 =$

2. $\sqrt{36} + 4^2 =$

3. $\frac{4^2 + 3^2}{\sqrt{25}} =$

4. $2^3 \times 3^2 =$

5. Write .00017 in scientific notation.

6. Write 213,000 in scientific notation.

Helpful Hints

The **slope** of a line refers to how steep the line is. It is the ratio of **rise** to **run**.

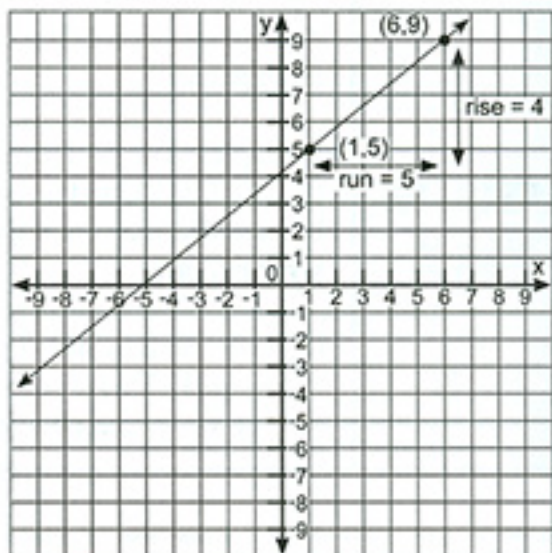
$$\text{slope} = \frac{y_2 - y_1}{x_2 - x_1}$$

Example:

What is the slope of the line passing through the ordered pairs (1, 5) and (6, 9)?

$$\begin{aligned} \text{slope} &= \frac{y_2 - y_1}{x_2 - x_1} && \begin{matrix} x_1 & y_1 & x_2 & y_2 \\ (1, & 5, & 6, & 9) \end{matrix} \\ &= \frac{9 - 5}{6 - 1} \\ &= \left(\frac{4}{5}\right) \end{aligned} \quad \text{The slope is } \frac{4}{5}$$

The run is 5 and the rise is 4.



Find the slope of each line that passes through the given point.

S1. (2, 3), (5, 4)

S2. (3, -2), (5, 1)

1. (4, 3), (2, 6)

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

Score

2. (4, 1), (7, 2)

3. (-2, 1), (-3, 3)

4. (-2, -2), (6, 3)

5. (4, 5), (6, 6)

6. (1, 2), (3, 9)

7. (1, -1), (6, 5)

8. (3, 2), (8, 6)

9. (2, -1), (4, 2)

10. (9, 2), (7, 5)

Problem Solving

In a school the ratio of boys to girls is five to four. If there are 400 boys, how many girls are there in the school?

Review Exercises

- | | | |
|--------------------------------|----------------------------------|---------------------------------|
| 1. List all the factors of 48. | 2. What is the GCF of 16 and 24? | 3. What is the LCM of 6 and 10? |
| 4. $3n = 15$, $n =$ | 5. $\frac{n}{2} = 10$, $n =$ | 6. $-x = 5$, $x =$ |

Helpful Hints

To solve **algebra word problems**, it is necessary to translate words into **algebraic expressions** containing a **variable**. A **variable** is a letter that represents a number. Here are some examples:

Three more than a number $\rightarrow x + 3$

Twice a number $\rightarrow 2x$

The quotient of x and five $\rightarrow \frac{x}{5}$

Seven less than three times a number $\rightarrow 3x - 7$

Twice a number less nine is equal to 15 $\rightarrow 2x - 9 = 15$

The difference between three times a number and eight equals 12 $\rightarrow 3x - 8 = 12$

The sum of a number and -9 is 24 $\rightarrow x + -9 = 24$

Three times a number less six equals twice the number plus 15 $\rightarrow 3x - 6 = 2x + 15$

Twice the sum of n and five $\rightarrow 2(n + 5)$

The difference between four times x and 15 equals twice the number $\rightarrow 4x - 15 = 2x$

Four less than a number $\rightarrow x - 4$

Seven times a number $\rightarrow 7x$

A number decreased by six $\rightarrow x - 6$

Translate each of the following into an equation.

- | | |
|---|-------|
| S1. Seven less than twice a number is 12. | 1. |
| S2. Two more than three times a number equals 30. | 2. |
| 1. The sum of twice a number and five is 14. | 3. |
| 2. The difference between four times a number and six is 10. | 4. |
| 3. Twelve is five less than four times a number. | 5. |
| 4. One-third times a number less four equals twice the number added to eight. | 6. |
| 5. Twice the sum of a number and two equals 10. | 7. |
| 6. The difference between five times a number and three is 17. | 8. |
| 7. Twice a number decreased by six is 15. | 9. |
| 8. Two less than three times a number is seven more than twice the number. | 10. |
| 9. Four more than a number equals the sum of seven and -12 . | Score |
| 10. A number divided by five is 25. | |

Problem Solving

If a car can travel 65 miles per hour, how far can it travel in 3.5 hours?

Review Exercises

1. Write 3.61×10^{-7} as a conventional number.
2. Write .00000127 in scientific notation.
3. Write 729,000,000 in scientific notation.

Helpful Hints

Remember these steps when solving algebra word problems.

1. Read the problem very carefully.
2. Write an equation.
3. Solve the equation and find the answer.
4. Check your answer to be sure it makes sense.

Example: John is twice as old as Susan. The sum of their ages is 42. What is each of their ages?

| | |
|-----------------------|---------------------------|
| Let x = Susan's age | 2x = John's age |
| $x + 2x = 42$ | Susan's age is $x = 14$. |
| $3x = 42$ | John's age is $2x = 28$. |
| $x = 14$ | The sum is 42. |

Solve the algebra word problems.

- S1. Amir is six years older than Kevin. The sum of their ages is 30. Find the age of each.
- S2. A board 44 inches long is cut into two pieces. The long piece is three times the length of the short piece. What is the length of each piece.
1. Bob and Bill together earn \$66. Bill earned \$6 more than twice as much as Bob. How much did each earn?
 2. Steve worked Monday and Tuesday and earned a total of \$212. He earned \$30 more on Tuesday than he did on Monday. How much did Steve earn each day?
 3. Five times Bob's age plus six equals three times his age plus 30. What is Bob's age?
 4. Sixty dollars less than three times Susan's weekly salary is equal to 360 dollars. What is Susan's weekly salary?
 5. Twice John's age less 12 is 48. What is John's age?

1.

2.

3.

4.

5.

Score

Problem Solving

A student has test scores of 90, 96, 84, and 86. What was his average score?