

1. What is an algebraic expression for each word phrase?

a. the sum of 5 and a number x

$x + 5$ or $5 + x$

c. 4 more than twice a number y

$2y + 4$ or $4 + 2y$

2. What is the algebraic expression for each word phrase?

a. three less than 8 times a number p

$8p - 3$

c. 12 divided by q to the fifth power

$\frac{12}{q^5}$

3. What word phrase can you use to represent the algebraic expression $3a - 4$?

4 less than 3 times a number a .

b. 3 less than a number n

$n - 3$

d. 2 minus the quotient of 6 and r

$2 - \frac{6}{r}$

b. 7 decreased by 9 times e

$7 - 9e$

4. **Do you understand?** The table shows how the cost of hiring a tutor depends on how many hours the work takes.

a. What is a rule for the total cost, in words?

To get the cost, multiply the number of hours by 15 and add 10.

b. What is a rule for the total cost, as an algebraic expression?

$Cost = 15h + 10$

Hours	Cost
1	\$25
2	\$40
3	\$55
4	\$70
5	\$85

Handwritten annotations: A bracket on the left side of the table spans rows 2 through 5. Brackets on the right side of the table indicate the difference in cost between consecutive rows: \$15 between rows 1-2, 2-3, 3-4, and 4-5.

1. What is the simplified form of each expression?

$$\begin{aligned} \text{a. } 3^4 &= 3 \cdot 3 \cdot 3 \cdot 3 \\ &= \boxed{81} \end{aligned}$$

$$\text{b. } \left(\frac{3}{4}\right)^2 = \frac{3 \cdot 3}{4 \cdot 4} = \boxed{\frac{9}{16}}$$

2. What is the simplified form of each expression?

$$\begin{aligned} \text{a. } 24 - 2(9 - 7)^3 \\ &= 24 - 2(2)^3 \\ &= 24 - 2(8) \\ &= 24 - 16 \\ &= \boxed{8} \end{aligned}$$

$$\begin{aligned} \text{b. } 2[3^2 - (10 + 2) \div 4] &= 2[9 - (12) \div 4] \\ &= 2[9 - 3] \\ &= 2(6) \\ &= \boxed{12} \end{aligned}$$

3. What is the value of $3a(b^2 - c)^2$ for $a = 10$, $b = 4$, and $c = 12$?

$$\begin{aligned} &= 3(10) - (4^2 - 12)^2 \\ &= 30 - (16 - 12)^2 \\ &= 30 - (4)^2 = 30 - 16 = \boxed{14} \end{aligned}$$

4. **Do you understand?** Tamera spent $\frac{1}{4}$ of her school budget on notebooks. If she had a budget of \$60.00, how much will she have left to spend?

$$\frac{1}{4}(60) = 15 \qquad 60 - 15 = 45$$

Tamera will have \$45 left to spend.

1. Simplify: $\sqrt{\frac{64}{49}} = \frac{\sqrt{64}}{\sqrt{49}} = \boxed{\frac{8}{7}}$

2. **Do you understand?** A classroom has an area of 350 square feet. If the classroom is shaped like a square, what is the approximate length of each side? $\sqrt{350} \approx 18.7$

Each side is about 18.7 ft long.

3. To which subsets of the real numbers does the number 0 belong?

whole, integer, rational

4. Write an inequality to compare the numbers $2\frac{3}{4}$ and $\sqrt{10}$.

$$2\frac{3}{4} < 3.1$$

-1.33, 1.7, -3, -4.9, 2.1

5. Order the numbers $-\frac{4}{3}$, $\sqrt{3}$, -3 , $-\sqrt{24}$ and 2.1 from least to greatest.

$$-\sqrt{24}, -3, -\frac{4}{3}, \sqrt{3}, 2.1$$

1-4 Properties of Real Numbers**Write the name of the property illustrated:**

Commutative Prop of Addition,
 Commutative Prop of Multiplication,
 Associative Prop of Addition,
 Associative Prop of Multiplication,
 Zero Prop of Multiplication,
 Distributive Prop,
 Multiplication Prop of -1,
 Identity Prop of Multiplication,
 Identity Prop of Addition

1. $a + b + c + 0 = a + b + c$

Identity Property of Addition

2. $-1(-5) = 5$

Multiplication Property of -1

3. $x \cdot (-1) = (-1) \cdot x$

Commutative Property of Multiplication**Simplify:**

$$\begin{aligned}
 4. \quad & -(2x - 3) \\
 & = -1(2x - 3) \\
 & = \boxed{-2x + 3}
 \end{aligned}$$

$$\begin{aligned}
 5. \quad & -3(x^2 + x - 2) \\
 & = \boxed{-3x^2 - 3x + 6}
 \end{aligned}$$

NO CALCULATOR

Show all your work clearly!

1. Find each sum.

a. $-5 + (-3) = \boxed{-8}$

b. $-16 + 12 = \boxed{-4}$

2. Find each difference.

a. $7 - (-5) = 7 + 5 = \boxed{12}$

b. $-2 - (5) = \boxed{-7}$

3. Evaluate $-2a - 5b - c$ for $a = -1$, $b = 2$ and $c = -3$

$$\begin{aligned} & -2(-1) - 5(2) - (-3) \\ & = 2 - 10 + 3 \\ & = -8 + 3 = \boxed{-5} \end{aligned}$$

4. What is the value of $\frac{a}{b}$ when $a = -\frac{2}{3}$ and $b = \frac{4}{5}$?

$$\frac{-\frac{2}{3}}{\frac{4}{5}} = -\frac{2}{3} \cdot \frac{5}{4} = -\frac{10}{12} = \boxed{-\frac{5}{6}}$$

5. Find each product or quotient.

a. $\frac{2}{9} \div \frac{4}{3}$

$$\frac{2}{9} \cdot \frac{3}{4} = \frac{6}{36} = \boxed{\frac{1}{6}}$$

b. $\left(-\frac{5}{12}\right) \div \left(\frac{10}{6}\right)$

$$\begin{aligned} & -\frac{5}{12} \cdot \frac{6}{10} = -\frac{30}{120} \\ & = \boxed{-\frac{1}{4}} \end{aligned}$$

c. $\frac{3}{4} \left(2\frac{1}{3}\right) = \frac{3}{4} \cdot \frac{7}{3} = \frac{21}{12}$

$$= \boxed{\frac{7}{4}}$$

6. A miner starts 50 feet below the ground. Then he went 20 feet lower, came back up 35 feet, and then back down 5 more. What integer describes his depth?

$$\begin{aligned} & \downarrow \\ & -50 - 20 + 35 - 5 \\ & = -70 + 35 - 5 \\ & = -35 - 5 \\ & = \boxed{-40} \end{aligned}$$

Simplify:

$$\begin{aligned} 1. \quad & 7x - (-2x + 5) + 1 \\ & = 7x + 2x - 5 + 1 \\ & = \boxed{9x - 4} \end{aligned}$$

$$\begin{aligned} 2. \quad & 5y - 3 - (y - 4) \\ & = 5y - 3 - y + 4 \\ & = \boxed{4y + 1} \end{aligned}$$

$$3. \quad -2m^2 + 6m + 5m^2 - 4$$

$$\boxed{3m^2 + 6m - 4}$$

$$4. \quad -2(5x - 3) + (3x - 1)$$

$$\begin{aligned} & = -10x + 6 + 3x - 1 \\ & = \boxed{-7x + 5} \end{aligned}$$

$$5. \quad 3(x^2 - xy + 4y) - (x^2 + 2xy - 6y)$$

$$= 3x^2 - 3xy + 12y - x^2 - 2xy + 6y$$

$$= \boxed{2x^2 - 5xy + 18y}$$

1. Is (3, 21) a solution of the equation $y = x^2 + 5x$? Show how you know.

$$21 = (3)^2 + 5(3) ?$$

$$21 = 9 + 15$$

$$21 \neq 24$$

NO

2. Vince earns \$8.50 an hour at a fast-food restaurant.

a) Fill in the chart that represents this situation.

# hours	Total \$
1	8.50
3	25.50
4	34.00
6	51.00

$$1 \times 8.50 = 8.50$$

$$\frac{25.50}{8.50} = 3$$

$$4 \times 8.50 = 34.00$$

$$\frac{51.00}{8.50} = 6$$

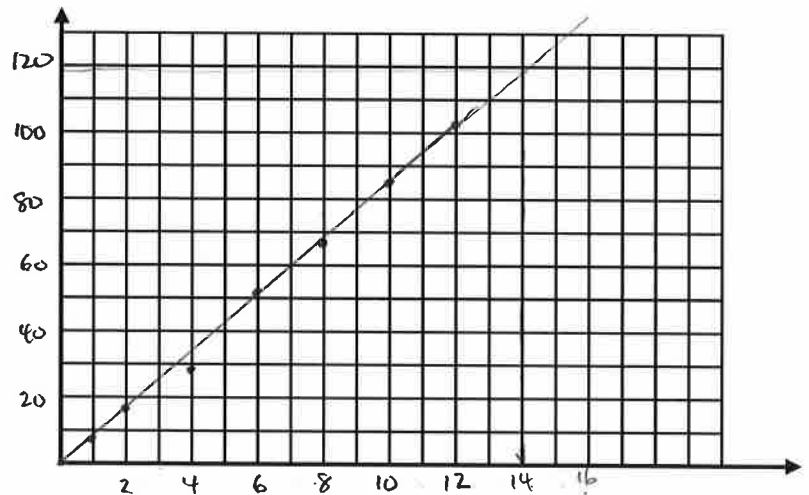
b) Write an equation to represent this situation.

Let x = # hours of working

Let y = total \$ made during that time

$$y = 8.50x$$

c) Make a graph of this situation on the grid below. Be sure to label clearly!



d) How many hours did Vince work if he was paid \$119?

Vince worked for 14 hours.

$$\frac{119}{8.5} = 14$$