Algebra 1 Workbook

Simple equations

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SIMPLE EQUATIONS WITH SUBSCRIPTS

1. Give three different examples of the variable Y with a subscript.

2. It takes Peter 6 hours to paint a room and Laura 8 hours to paint that same room. Use the equation below to determine how long it would take for Peter and Laura to paint the room together, where R_1 is the number of hours it takes Peter, R_2 is the number of hours it takes Laura, and T is the number of hours it takes them together.

$$\frac{R_1 R_2}{R_1 + R_2} = T$$

3. Solve for P_2 in the following equation.

$$P_1 R + \frac{P_2}{V} = d$$

4. The profit function for a The Coat Company is given by $P = Rx - C_1 - C_2 x$, where P is the profit, R is the selling price, C_1 is the fixed cost, C_2 is the variable cost, and x is the total number of coats sold. What is the selling price R when $P = 114$, $C_1 = 550$, $C_2 = 3.50$, and $x = 16$?

5. Give an example of a subject besides math that uses variables with subscripts.

6. The volume of the medium size box at the post office is given by

$$V = x_1 \times \frac{x_2}{2} \times \frac{x_3}{9}$$

where V is the volume of the box, x_1 is the length, $x_2/2$ is the width, and $x_3/9$ is the height. Find the height of the box that has a volume of 120 in^3, a length of 4 in, and a width of 5 in.

7. Solve for x_1 in the following equation.

$$\frac{3V}{x_1} = td_0 + 2x_2d_1$$

8. Solve the following equation for Y_2 when $t_1 = 2$, $t_2 = 11$, $D = 1/3$, and $Y_1 = 25$.

$$3t_1 + \frac{15t_2D}{Y_2} = Y_1 - 5$$

EQUATIONS WITH PARENTHESES

1. Simplify the following expression.

$$-(2x^0 + 3^0y) - 3y + x$$

2. Solve for x in the given equation.

$$2(x - 1) - 5(7 + 2x) = -(6 - x)$$

3. Simplify $-(2x^2y)^0$.

4. Simplify $-2x^2y^0$.

5. Solve for a in the given equation.

$$-2(3^0 - a) + 3(a + 7) = -(a^0 + 1)$$

6. What missing number would make the following true?

$$-3(4^0x - 5) = 2x - (3 - x)$$

$$??x + 15 = 3x - 3$$

7. Write out the equation of the first step in solving the following for x.

$$6(1-x)-3(2x+4)=-(5x+7)-10$$

8. What went wrong in the following set of steps?

$$-(6-2x)-3x=7(x-1)$$

$$-6-2x-3x=7x-7$$

9. Solve of y in the given equation.

$$-2^0(9-y)+3(3y-1)=4y^0+1$$

WORD PROBLEMS INTO EQUATIONS

1. Give three different words that mean “addition”.

2. Write 2×5 as a phrase using the word “product”.

3. Write the phrase as an algebraic expression.

   Six more than three times a number

4. Find the value of the expression.

   The quotient of 150 and 5

5. Write the phrase as an algebraic expression.

   Half of five times a number

6. Write $8 - 3$ as a phrase using the word “less”.

7. Find the value of the expression.

3 less than the product of 2 and 7

8. Give three different words that mean “subtraction.”

9. Find the value of the expression.

$\frac{1}{3}$ of 2 more than 7

CONSECUTIVE INTEGERS

1. Write the next five consecutive integers following -4.

2. Give an example of three consecutive negative integers.

3. Write the inequality sign that relates the two integers.

$-6 \qquad -10$

4. Write the previous four consecutive integers before -3.

5. Write the following numbers in ascending order (smallest to largest).

$-1 \qquad 0 \qquad -4 \qquad 2 \qquad -3$

6. Circle the numbers that are not integers.

$-10 \qquad \frac{6}{7} \qquad 3 \qquad 7.34 \qquad \frac{8}{4} \qquad 9.0$

7. Write the following in descending order (largest to smallest).

$-11 \qquad -13 \qquad -5 \qquad 11 \qquad 3$

8. Give an example of two types of numbers that are not integers.


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