



Algebra 1 Workbook

Simple equations

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MATH

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 $P = Rx - C_1 - C_2x$, 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 for 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.

$$-6 \quad -10$$

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

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

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

- 6. Circle the numbers that are not integers.

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



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

-11 -13 -5 11 3

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



