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Literal Equations and Formulas

Unit 2 Lesson 5

LITERAL EQUATIONS AND FORMULAS

Students will be able to:

Understand literal equations and re-writing them
to interpret special formulas

Key Vocabulary:

- Literal Equation
- Re-writing a Literal Equation
- Interpreting formulas

LITERAL EQUATIONS AND FORMULAS

A **literal equation** is an equation having two or more variables.

Examples:

$$ax + by = c$$

$$pqr = t$$

$$x^2 + y = 1$$

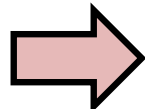
$$y - 3x = z + 2$$

LITERAL EQUATIONS AND FORMULAS

Re-Writing Literal Equations

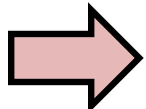
Re-writing a literal equation means expressing the literal equation in the form of a variable mentioned. The properties of equality are used to re-write the equations.

Example 1: Solve the equation $\frac{x-5}{y+2} = 4$ for x .

 $\frac{x-5}{y+2} \times (y+2) = 4 \times (y+2)$ **Multiplication Property of Equality**

 $x - 5 = 4y + 8$ **Distributive Property**

 $x - 5 + 5 = 4y + 8 + 5$ **Addition Property of Equality**

 $x = 4y + 13$

LITERAL EQUATIONS AND FORMULAS

Interpreting Formulas

A formula is an equation stating a relationship among quantities. Formulas can be re-written using the “re-writing literal equations” concept to find the value required in context. Some important formulas used are given below.

- **Area of a rectangle (l = length of rectangle, w =width of rectangle)**

$$A = l \cdot w$$

- **Circumference of a circle (r =radius of the circle)**

$$C = 2\pi r$$

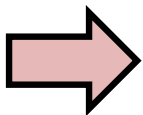
- **Distance traveled (d =distance, t =time, v =velocity)**

$$S = v \cdot t$$

LITERAL EQUATIONS AND FORMULAS

Example 2: A car traveling from city A to city B covered a distance of 230 kilometers in 2 hours. What was the velocity of the car in traveling from city A to city B?
(Assume that the velocity is constant and write the answer in kilometers per hour)

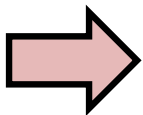
$$S = v \cdot t$$



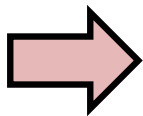
$$\frac{S}{t} = v$$

Re-writing literal equation

$$\frac{230}{2} = v$$



$$v = 115$$



$$v = 115 \text{ kilometers per hour}$$