

Literal Equations and Formulas Guided Notes

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

Examples:

$$ax + by = c$$

$$pqr = t$$

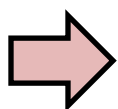
$$x^2 + y = 1$$

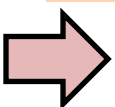
$$y - 3x = z + 2$$

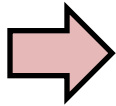
Re-Writing Literal Equations

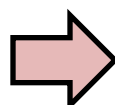
Re-writing a literal equation means expressing the literal equation in the form of a variable mentioned. The properties of equality are used to re-write the equations.

Problem 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**

 $x = 4y + 13$

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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)

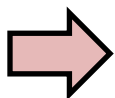
$$C = 2\pi r$$

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

$$S = v \cdot t$$

Problem 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)

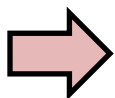
$$S = v \cdot t$$



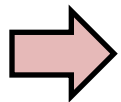
$$\frac{S}{t} = v$$

Re-writing literal equation

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



$$v = 115$$



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