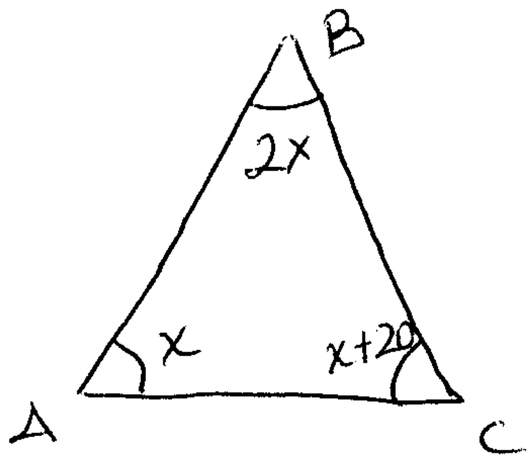
SECTION 2.1 – LINEAR EQUATIONS, FUNCTIONS, AND MODELS

Ex. 1: In triangle ABC, angle B is twice as large as angle A. Angle C measures 20 degrees more than angle A. Find the measures of the angles.

Need to know: the sum of the angles in a triangle is 180 degrees!



$$\hat{A} + \hat{B} + \hat{C} = 180^\circ$$

$$x + 2x + x + 20 = 180^\circ$$

$$4x = 160^\circ$$

$$\hat{A} = x = 40^\circ$$

$$B = 2x = 2(40) = 80^\circ$$

$$C = x + 20 = 40 + 20 = 60^\circ$$

Ex. 2: A private airplane leaves Midway Airport and flies due east at a speed of 180 km/h. Two hours later, a jet leaves Midway and flies due east at a speed of 900 km/h. How many hours until the jet overtakes the private plane?

Need to know: distance = rate × time or $d = rt$.

	Distance	Rate	Time
Jet	$900t$	900	t
Private plane	$180(t+2)$	180	$t+2$

Which plane should be assigned "t" for its time? Does it matter?

Since we want to know when they will have gone the same distance,

$$d_{jet} = d_{p.airplane}$$

$$900t = 180(t+2)$$

$$900t = 180t + 360$$

$$720t = 360$$

$$t = \frac{1}{2}\text{ hr}$$

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Solving Formulas:

Remember, to solve for a variable x means to get it in "$x =$" form. In your answer, the variable that you are solving for cannot appear on both sides of the equation!

Ex. 3: Solve for the indicated variable. Start by clearing fractions.

a) $A = \frac{1}{2}h(b_1 + b_2)$ for b_1

$2A = \cancel{2}\frac{1}{\cancel{2}}h(b_1+b_2)$

$2A = h(b_1+b_2)$

$\frac{2A}{h} = b_1+b_2$

$\boxed{b_1 = \frac{2A}{h} - b_2}$

b) $\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2}$ for R_1

LCD $= RR_1R_2$

$RR_1R_2 \cdot \frac{1}{R} = RR_1R_2 \cdot \frac{1}{R_1} + RR_1R_2 \cdot \frac{1}{R_2}$

$R_1R_2 = RR_2 + RR_1$

$R_1R_2 - RR_1 = RR_2$

$R_1(R_2 - R) = RR_2$

$\boxed{R = \frac{RR_2}{R_2 - R}}$

c) $y = \frac{2x-5}{x+4}$ for x

$y(x+4) = 2x-5$

$yx + 4y = 2x - 5$

$-2x \quad -2x$

$yx - 2x + 4y = -5$

$-4y \quad -4y$

Additional Notes/Written Homework

Recommended Homework:
Section 2.1 - #19, 41, 51, 55, 79, 89, 101

$x(y-2) = -5 - 4y$

$x = \frac{-5-4y}{y-2}$