Bellwork: Algebra 1

1. Write down your homework for the night in your planner.

2. Take out your homework from last night and be ready to check.

3. You will need your Algebra Nation book today.

4. On your bellwork page for FRIDAY, answer the following:

The sum of three consecutive numbers is 33 more than the smallest of the numbers. Find the numbers.

x

$x+1$

$x+2$

$3x+3=33+x$

$-x \qquad -x$

$2x+3=33$

$-3 \quad -3$

$2x=30$

15, 16, 17

1. The larger of two numbers is 12 more than the smaller number. If the sum of the two numbers is 74, find the two numbers.

let x = smaller #

let $x+12$ = larger #

$x + x + 12 = 74$

$2x + 12 = 74$

$-12 \quad -12$

$\frac{2x}{2} = \frac{62}{2}$ $x = 31$

31, 43

3. The number of years that Brad has been on the soccer team is 2 less than 5 times the number of years that Scott has. In total, the boys have been on the soccer team for 10 years. How long has Brad been on the soccer team?

let x = Scott's years

let $5x - 2$ = Brad's years

$x + 5x - 2 = 10$

$6x - 2 = 10$

$+2 \quad +2$

$\frac{6x}{6} = \frac{12}{6}$ $x = 2$

8 years

4. There are 10 less trumpet players than saxophone players. The number of saxophone players is 3 times the number of trumpet players. How many trumpet players are there?

let x = saxophone players

let $x - 10$ = trumpet players

$x = 3(x - 10)$

$x = 3x - 30$

$-3x \quad -3x$

$\frac{-2x}{-2} = \frac{-30}{-2}$ $x = 15$

5 trumpet players

6. The length of a rectangle is 4 centimeters more than twice its width. If the perimeter of the rectangle is 86 centimeters, find the dimensions of the rectangle.

let x = width

let $2x + 4$ = length

$2(x) + 2(2x + 4) = 86$

$2x + 4x + 8 = 86$

$6x + 8 = 86$

$-8 \quad -8$

$\frac{6x}{6} = \frac{78}{6}$ $x = 13$

13 cm, 30 cm

8. Find two consecutive numbers whose sum is 115.

let x = 1st consec #
let $x+1$ = 2nd consec #

$x + x+1 = 115$
$2x+1 = 115$
$-1 \quad -1$
$\frac{2x}{2} = \frac{114}{2}$
$x = 57$

57, 58

10. Find two consecutive **even** numbers whose sum is 126.

let x = 1st consec even #
let $x+2$ = 2nd consec even #

$x + x+2 = 126$
$2x+2 = 126$
$-2 \quad -2$
$\frac{2x}{2} = \frac{124}{2}$
$x = 62$

62, 64

11. Find three consecutive numbers whose sum is 84.

let x = 1st consec #
let $x+1$ = 2nd consec #
let $x+2$ = 3rd consec #

$x+x+1+x+2 = 84$
$3x+3 = 84$
$-3 \quad -3$
$\frac{3x}{3} = \frac{81}{3}$
$x = 27$

27, 28, 29

12. Find three consecutive **even** integers such that the sum of the smallest number and twice the middle number is 20 more than the largest number.

let x = 1st consec even #
let $x+2$ = 2nd consec even #
let $x+4$ = 3rd consec even #

$x + 2(x+2) = x+4 + 20$
$x+2x+4 = x+24$
$3x+4 = x+24$
$-x \quad -x$
$2x+4 = 24$
$-4 \quad -4$
$2x = 20 \quad x = 10$

10, 12, 14

Section 2 – Topic 8
Rearranging Formulas

Solve each equation for x.

$2x + 4 = 12$

$-4 \quad -4$

$\frac{2x}{2} = \frac{8}{2}$

$x = 4$

$2x + y = z$

$-y \quad -y$

$\frac{2x}{2} = \frac{z - y}{2}$

$x = \frac{z - y}{2}$

Did we use different properties when we solved the two equations?

Consider the formula for the perimeter of a rectangle: $P = 2l + 2w$.

Sometimes, we might need the formula solved for length.

$P = 2l + 2w$

$-2w \quad -2w$

$P - 2w = 2l$

$\frac{P - 2w}{2} = \frac{2l}{2}$

$\frac{P - 2w}{2} = l$

Let's Practice!

1. Consider the equation $rx - sx + y = z$; solve for x.

$$-y \quad -y$$

$$rx - sx = z - y$$

$$\frac{(r-s)x}{(r-s)} = \frac{z-y}{(r-s)}$$

$$x = \frac{z-y}{(r-s)}$$

$4x - 2x$

$2x$

Try It!

2. Consider the equation $8c + 6j = 5p$; solve for c.

$$-6j \quad -6j$$

$$8c = 5p - 6j$$

$$\frac{8c}{8} = \frac{5p - 6j}{8}$$

$$c = \frac{5p - 6j}{8}$$

3. Consider the equation $\frac{x - c}{2} = d$; solve for c.

$$\cdot 2 \quad \cdot 2$$

$$x - c = 2d$$

$$-x \qquad -x$$

$$-c = 2d - x$$

$$\frac{-c}{-1} = \frac{2d - x}{-1}$$

$$c = \frac{2d - x}{-1}$$

BEAT THE TEST!

1. Isaiah planted a seedling in his garden and recorded its height every week. The equation shown can be used to estimate the height, h, of the seedling after w weeks since he planted the seedling.

$$h = \frac{3}{4}w + \frac{9}{4}$$

Solve the formula for w, the number of weeks since he planted the seedling.

$$h = \frac{3}{4}w + \frac{9}{4}$$

$$-\frac{9}{4} \qquad -\frac{9}{4}$$

$$h - \frac{9}{4} = \frac{3}{4}w$$

$$\frac{3}{4} \qquad \frac{3}{4}$$

$$w = \frac{h - \frac{9}{4}}{\frac{3}{4}}$$

2. Under the Brannock device method, shoe size and foot length for women are related by the formula $S = 3F - 21$, where S represents the shoe size and F represents the length of the foot in inches. Solve the formula for F.

$$S = 3F - 21$$

$$+21 \qquad +21$$

$$S + 21 = 3F$$

$$\frac{S+21}{3} = \frac{3F}{3}$$

$$\frac{S+21}{3} = F$$