6.2 Proportions

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Proportions: 2 equivalent Ratios.

└ Fraction

$$\frac{20}{40} \overset{\div 2}{=} \frac{10}{20} \overset{\div 2}{=} \frac{5}{10} \overset{\div 5}{=} \frac{1}{2}$$

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A proportion is an equation of the form

$$\frac{a}{b} = \frac{c}{d},$$

which states 2 Ratios are equivalent (equal)

Means + Extremes

$b + c$ $\qquad$ $a + d$

$$\frac{a}{b} = \frac{c}{d}$$

$$ad = bc$$

cross multiplication

ad: Extremes

bc: Means

The product of the Means is equal to the product of the Extremes

ex 1)

$$\frac{x}{2} = \frac{65}{26}$$

*Goal: is to get 'x' by Itself!

$$x \cdot 26 = 2 \cdot 65$$

$$\frac{26x}{26} = \frac{130}{26}$$

$$x = 5$$

ex2)

$$\frac{5}{(x+3)} = \frac{3}{(2x-8)}$$

Hint: If there is a plus or minus sign... wrap them in ( )

$$5\cdot(2x-8) = 3(x+3)$$

$$10x - 40 = 3x + 9$$

$$-3x \quad\quad -3x$$

$$7x - 40 = 9$$

$$+40 \quad +40$$

$$7x = 49$$

$$\frac{7x}{7} = \frac{49}{7}$$

$$x = 7$$

ex2)

$$\frac{5}{x+3} = \frac{3}{2x-8}$$

$$\frac{5}{(7)+3} = \frac{3}{2(7)-8}$$

$$\frac{1}{2}\cdot\frac{5}{10} = \frac{3}{6} = \frac{1}{2}$$

ex3) Find 2 Numbers that are in the ratio 3:4, If one is 17 more than the other!

Set up a Por.

1st => $x = 51$

2nd => $x+17 = 68$

$$\frac{3}{4} = \frac{x}{(x+17)}$$

$$3(x+17) = 4x$$

$$3x+51 = 4x$$

$-3x \quad -3x$

$$51 = x$$

O.T.L.

① Pg 181 : Written

1, 6, ~~10~~, 11, 15, 16,

13, 17-19(o)