NOTES: Section 11.1 – Proportions

Goals: #1 - I can solve proportions using cross multiplication.







Homework: Section 11.1 Worksheet

Exploration #1: Work with a partner and answer the following questions.

1. Find the value of x that would make the following equivalent fractions. ≥ 3

a.
$$\underbrace{\frac{1}{2} = \frac{x}{8}}_{x + 1}$$

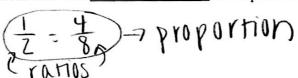
b.
$$\frac{10}{x} = \frac{5}{6}$$

c.
$$\frac{x}{9} = \frac{1}{3}$$

$$X=3$$

Notes:

An equation that states that two YOMOS are equal is a YYOYOYMON.



If two ratios are equal, then their recipro (a) are also equal.

Example: $\frac{1}{7} = \frac{4}{8} \Rightarrow \frac{2}{1} = \frac{8}{4}$

To SOIVE proportions, we will CYOSS MUITPLY

Example #1: Solve the proportion.

$$1. \ \frac{3}{y} \not \succeq \frac{5}{8}$$

$$5y = 3.8$$

$$\frac{5y}{5} = \frac{24}{5}$$

$$y = \frac{24}{5}$$

2.
$$\frac{9}{4} \times \frac{2c}{8}$$

$$\frac{80}{8} = \frac{72}{8}$$

Name:_____

Hour: _____ Date: _____

Example #2: Solve the proportion.

1.
$$\frac{3}{x} \times \frac{x+1}{4}$$

 $X(X+1) = 3.4$
 $X^{2} + X = 12$
 $X^{2} + X - 12 = 0$
 $X^{2} + 4X = 3x - 12 = 0$
 $X(X+4) = 3(X+4) = 0$
 $(X+4)(X-3) = 0$
 $(X+4)(X-3) = 0$
 $(X+4)(X-3) = 0$
 $(X+4)(X-3) = 0$

You practice: Solve the proportion.

1.
$$\frac{x}{4} \times \frac{x-1}{x}$$

 $X(x) = 4(x-1)$
 $X^{2} = 4x - 4$
 $X^{3} - 4x + 4 = 0$
 $X^{2} - 2x - 2x + 4 = 0$
 $X(x-2) - 2(x-2) = 0$
 $(x-2)(x-2) = 0$
 $(x-2)(x-2) = 0$
 $(x-2)(x-2) = 0$
 $(x-2)(x-2) = 0$

$$2.\frac{x+3}{x+5} \times \frac{x-3}{-3}$$

$$(x+5)(x-3) = -3(x+3)$$

$$x^{2}-3x+5x-15 = -3x-9$$

$$x^{2}+2x-15 = -3x-9$$

$$x^{2}+5x-6=0$$

$$x^{2}+6x|-1x-6=0$$

$$x(x+6)-1(x+6)=0$$

$$(x+6)(x-1)=0$$

$$x+6=0$$

$$x-1=0$$

$$x=-6$$

2.
$$\frac{x}{-3} \times \frac{3}{x+6}$$

 $-3 \cdot 3 = x(x+6)$
 $-9 = x^2 + 6x$
 $x^2 + 6x + 9 = 0$
 $x^2 + 3x + 3x + 9 = 0$
 $x(x+3) + 3(x+3) = 0$
 $(x+3)(x+3) = 0$
 $x+3=0$
 $x+3=0$