Section 8-1

Proportions

Name: NOTES

Date: _____ Period: _____

Essential Question

What is a ratio and proportion and how do I solve a proportion?

Ratio

A Comparison of TWO quantities.

Three ways to write a ratio:

1. A to B
2. $a:b$: means "is to"
3. $\frac{a}{b}$ $b \neq 0$

Proportion

A statement that two ratios are equal.

$\frac{a}{b} = \frac{c}{d}$ $a:b$ as $c:d$ (a is to b as c is to d)

Cross-Product Method or "FISHY METHOD"

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

Example #1

$\frac{x}{5} = \frac{12}{7}$

$7x = (12)(5)$

$\frac{7x}{7} = \frac{60}{7}$

$x \approx 8.6$

Example #2

$\frac{5}{z} = \frac{20}{3}$

$(5)(3) = 20z$

$\frac{15}{20} = \frac{20z}{20}$

$\frac{3}{4} = z$ or $z = .75$

Example #3

$\frac{x+3}{8} = \frac{x}{4}$

$(x+3)(4) = (8)(x)$

or $4(x+3) = 8x$

$4x+12 = 8x$

$-4x \quad -4x$

$12 = 4x$

$x = 3$

$\frac{(3+3)}{8} = \frac{3}{4}$

$\frac{6}{8} = \frac{3}{4}$ yes

Example #4

$\frac{2}{7} = \frac{x-5}{x}$

$2x = 7(x-5)$

$2x = 7x - 35$

$-7x \quad -7x$

$\frac{-5x}{-5} = \frac{-35}{-5}$

$\boxed{x = 7}$

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

$= \frac{2}{7} = \frac{2}{7}$ yes

#5 Sue can buy 2 pair of shoes for $60. How many pairs of shoes can she buy for $90?

$\frac{\text{pairs}}{\$} \quad \frac{2}{60} = \frac{x}{90}$

$(2)(90) = 60x$

$\frac{180}{60} = \frac{60x}{60}$

$\boxed{3 = x \text{ pair}}$

#6 Mrs. Lutz drove 200 miles in 5 hours. How long will it take her to drive 600 miles at the same speed.

$\frac{\text{miles}}{\text{hours}} \quad \frac{\quad}{\quad} = \frac{\quad}{\quad}$