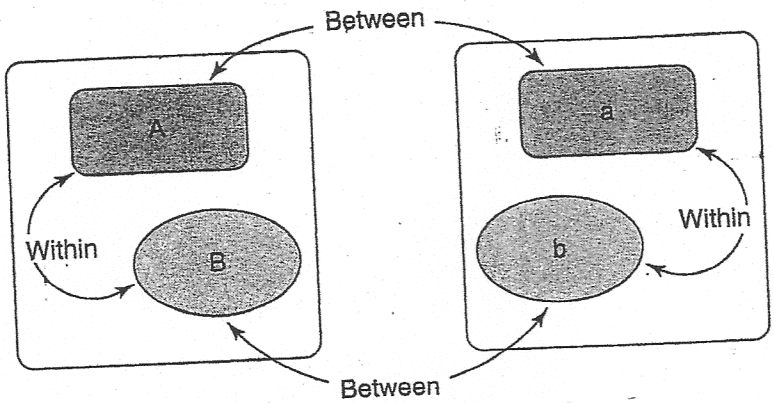
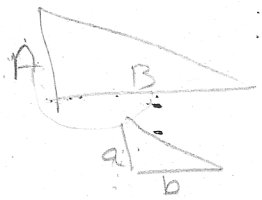
Name _____ Period _____

PROPORTIONS

A proportion is an equation that shows two ratios to be equal.

Given a proportional situation, the two between ratios and the two within ratios will be the same.





$\frac{A}{a} = \frac{B}{b}$ between

$\frac{A}{B} = \frac{a}{b}$ within

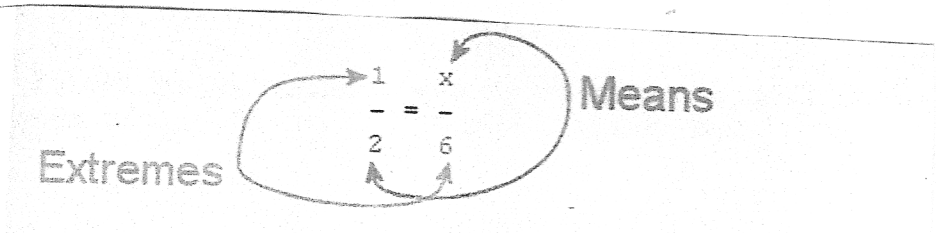
Within: $\frac{A}{B} = \frac{a}{b}$ **Between:** $\frac{A}{a} = \frac{B}{b}$

Proportions can be shown in fraction form ex. $\frac{2}{3} = \frac{4}{6}$

or in colon form. ex. 2:3 = 4:6

There are two parts of the proportion, the means and the extremes, based on their arrangement in the proportion. The extremes are the very first number, and the very last number. Notice they are at the extreme

beginning and the extreme end. The means are the second and third numbers. They are in the middle, just like an average.



The product of the means is equal to the product of the extremes.

This property is extremely useful when one of the means or one of the extremes is UNKNOWN.

Example:

$\frac{1}{2} = \frac{x}{6}$ to solve: $2 \cdot x = 1 \cdot 6$ $2x = 6$

$x = 3$

There are 2 ways to tell if ratios are proportional:

1) Compare the ratios in simplest form. $\frac{1}{3}$ and $\frac{7}{21}$

The simplest forms are equal which means the ratios are proportional.

2) If the cross products are equal, then the ratios are proportional.

$\frac{6}{9}$ and $\frac{8}{12}$ $6 \cdot 12 =$ $8 \cdot 9 =$

Since the cross products are equal, the ratios are proportional.