Class-Notes L1 – Proportions, Similarity and Scale Factor Date_____Period_____

Ratio: A comparison of two numbers.

$\frac{a}{b}$ OR $a:b$

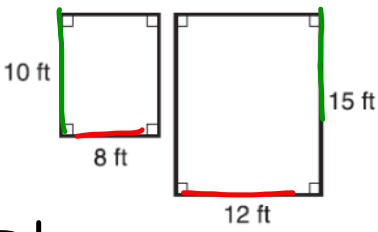
Ex 1: Find the ratio of ∠A to ∠B in the linear pair if $m\angle B = 140°$.

$\frac{m\angle A}{m\angle B} = \frac{40 \div 10}{140 \div 10} = \frac{4}{14} = \frac{2}{7}$

Proportion: An equation that sets two ratios equal.

Ex 2: Write a proportion for the corresponding sides of the rectangles below.

$\frac{2}{2} = 1$



$\frac{ft}{ft} = 1$

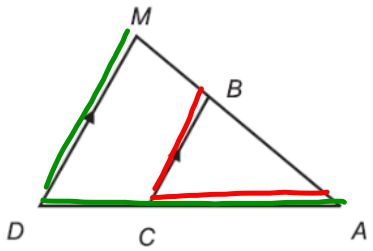
$\frac{\text{SMALL}}{\text{LARGE}}$: $\frac{10\,ft}{15\,ft} = \frac{8\,ft}{12\,ft}$

$\frac{2}{3} = \frac{2}{3}$

Ex 3: Complete each proportion.

ΔABC

ΔAMD



$\frac{AB}{BM} = \frac{AC}{CD}$

$\frac{AD}{AC} = \frac{AM}{AB}$

$\frac{CB}{DM} = \frac{AC}{AD}$

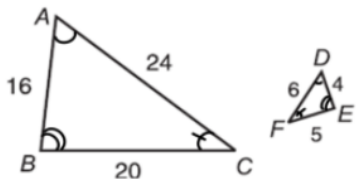
Scale Factor: The ratio of lengths of two corresponding sides of similar figures.

Ex 4: Give the scale factor of the small rectangle to the big rectangle in example 2.

SCALE FACTOR IS $\frac{2}{3}$ OR $2:3 \rightarrow 1:1.5$

Similar Figures: Two figures that have all corresponding angles congruent and all corresponding sides proportional.

Ex 5: A) List all of the corresponding angles for the triangles below. Then list the corresponding sides in a proportion.



$\measuredangle A \cong \measuredangle D$

$\measuredangle B \cong \measuredangle E$

$\measuredangle C \cong \measuredangle F$

$\frac{AB}{DE} = \frac{BC}{EF} = \frac{AC}{DF}$

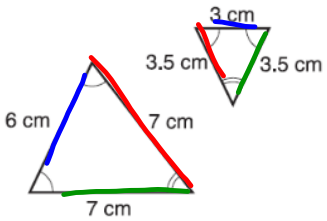
B) Write a similarity statement for the triangles above. Then give the scale factor for the triangles.

"IS SIMILAR TO"

$\triangle ABC \sim \triangle DEF$

Ex 6: Determine if the polygons are similar. Justify your answer.

YES :) ALL RATIOS ARE EQUAL

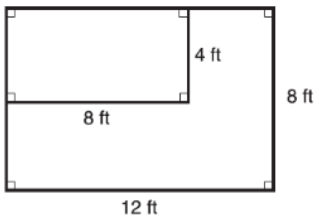


$\frac{7 \times 2}{3.5 \times 2} = \frac{7}{3.5} = \frac{6}{3}$

$\frac{14}{7} = \frac{14}{7} = \frac{2}{1}$

$\boxed{\frac{2}{1} = \frac{2}{1} = \frac{2}{1}}$

Ex 7: Determine if the polygons are similar. Justify your answer.



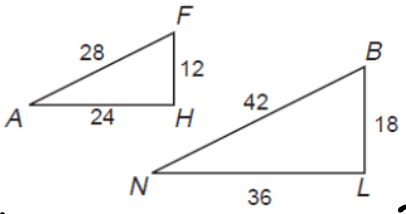
$\frac{4}{8} = \frac{8}{12}$

$\frac{1}{2} \neq \frac{2}{3}$

NOT SIMILAR: RATIOS $\neq$

S : L

Ex 8: Determine the scale factor of ΔFHA to ΔBLN and of Δ BLN to Δ FHA.



$\frac{\Delta FHA}{\Delta BLN} \rightarrow \frac{28}{42} = \frac{24}{36} = \frac{12}{18}$

$\frac{4}{6} = \frac{4}{6} = \frac{2}{3}$

$\frac{2}{3} = \frac{2}{3} = \frac{2}{3}$

SF. ΔFHA TO ΔBLN IS $\frac{2}{3}$ OR 2:3

ΔBLN TO ΔFHA IS $\frac{3}{2}$ OR 3:2