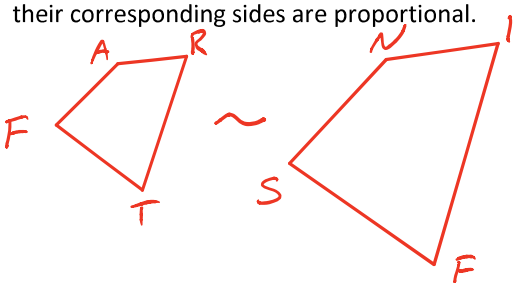
Similarity – Similar Polygons

Notes Section 7.2 Name_____

~ Similar Polygons: Two polygons are similar IFF their corresponding angles are congruent and the measures of their corresponding sides are proportional.



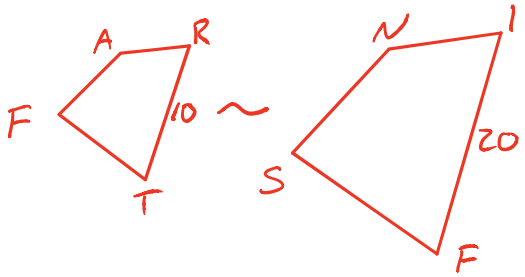
FART ~ SNIF

Iff

$\angle F \cong \angle S,\ \angle A \cong \angle N,\ \angle R \cong \angle I,\ \angle T \cong \angle F$

$\frac{FA}{SN} = \frac{AR}{NI} = \frac{RT}{IF} = \frac{TF}{FS}$

Scale Factor: The ratio of the lengths of two corresponding sides of two similar polygons

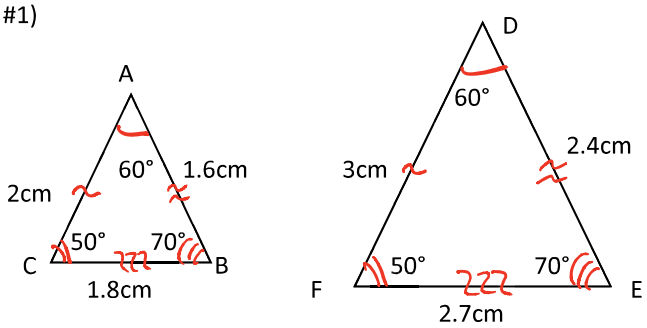


S.F. of FART to SNIF = $\frac{10}{20}$

$= \frac{1}{2}$

Determine whether each pair of figures is similar. Justify your answer.

#1)



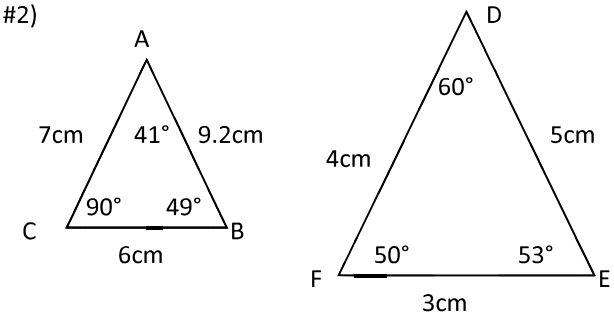
$\frac{2}{3} = \frac{1.6 \cdot 10}{2.4 \cdot 10} = \frac{1.8 \cdot 10}{2.7 \cdot 10}$

$\frac{2}{3} = \frac{16 \cdot \frac{1}{8}}{24 \cdot \frac{1}{8}} = \frac{18 \cdot \frac{1}{9}}{27 \cdot \frac{1}{9}}$

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

ABC ~ DEF because Corresponding angles are congruent and corresponding sides are proportional.

#2)



NO, corresponding angles are not $\cong$

Draw and label a pair of polygons for each. If it is impossible to draw two such figures, write "Mission: Impossible."

#3) two pentagons that are similar

#4) two squares that are not similar

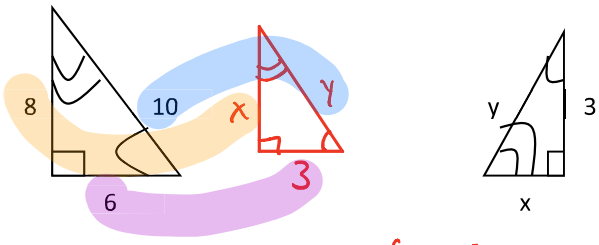
Mission: Impossible

Similarity – Similar Polygons

Notes Section 7.2 Name_____

Two similar polygons are shown. Find the value of x and y.

#5)



$\frac{6}{3} = \frac{8}{x}$

$2 = \frac{8}{x}$

$2x = 8$

$x = 4$

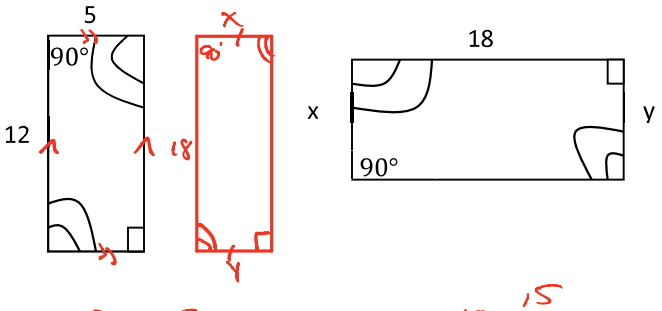
$\frac{6}{3} = \frac{10}{y}$

$2 = \frac{10}{y}$

$2y = 10$

$y = 5$

#6)



$\frac{12}{18} = \frac{5}{x}$

$6 \cdot x\frac{2}{6} = \frac{5}{x} 3 \cdot x$

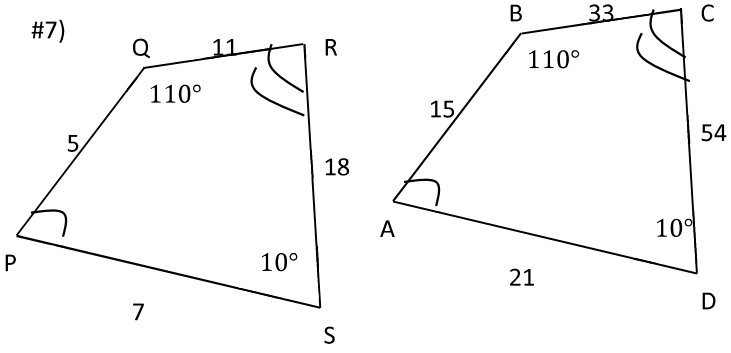
$2x = 15$

$x = \frac{15}{2}$

$y = \frac{15}{2}$

IF quadrilateral PQRS is similar to ABCD, find the scale factor of quadrilateral PQRS to quadrilateral ABCD.

#7)



$SF = \frac{PQRS}{ABCD} = \frac{11}{33} = \frac{1}{3}$

Make a scale drawing using the given scale.

#8) A basketball court is 84 feet by 50 feet. Scale: $\frac{1}{8}$ inch = 2 ft.

Width

$\frac{42}{84} \cdot \frac{\frac{1}{8}\text{ in}}{2\text{ ft}} = \frac{x\text{ in}}{84\text{ ft}} \cdot 84$

$42 \cdot \frac{1}{8} = x$

$\frac{21}{4} = x$

$5\frac{1}{4}\text{ in} = x$

Length

$\frac{25}{50} \cdot \frac{\frac{1}{8}\text{ in}}{2\text{ ft}} = \frac{y\text{ in}}{50\text{ ft}} \cdot 50$

$25 \cdot \frac{1}{8} = y$

$\frac{25}{8} = y$

$3\frac{1}{8}\text{ in} = y$