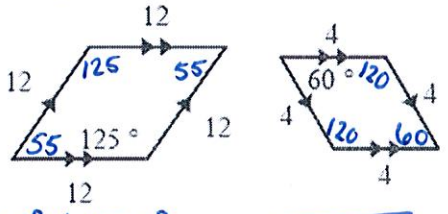
Name: _____ Date: _____

Scale Factor & Similarity

- Figures that are similar have the same shape but not necessarily the same ___size___.
- Two polygons are similar if and only if their corresponding angles are ___≅___ and their corresponding sides are ___proportional___.
- A similarity ratio (scale factor) is the ratio of the lengths of the ___corresponding___ sides of two similar polygons.
- Scale factor = $k = \frac{\text{new}}{\text{old}}$

Are these figures similar?

1.

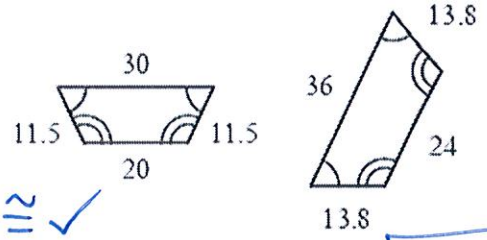


$125° \neq 120°$

∠s are not ≅

no!

2.



∠s ≅ ✓

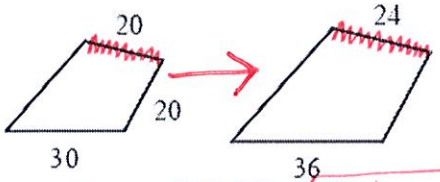
$\frac{11.5}{13.8} = \frac{11.5}{13.8} = \frac{20}{24} = \frac{30}{36}$

$5/6 = 5/6 = 5/6 = 5/6$ ✓

yes!

What is the scale factor from left to right?

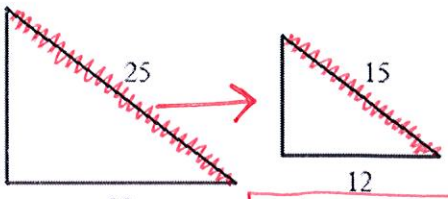
3.



$\frac{24}{20} = \frac{6}{5}$

K>1 ... enlargement (gets bigger)

4.

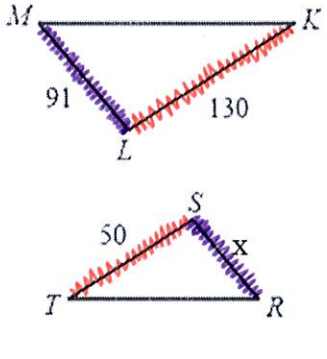


$\frac{15}{25} = \frac{3}{5}$

K<1 ... reduction (gets smaller)

Solve for x.

5. $\Delta KLM \sim \Delta TSR$

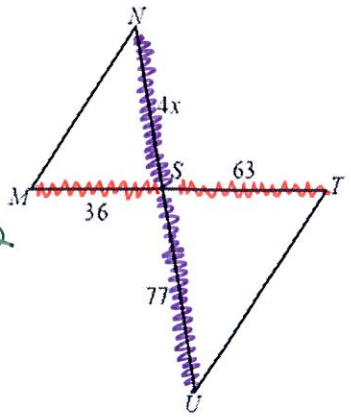


$\frac{91}{130} = \frac{x}{50}$

$\frac{130x}{130} = \frac{4550}{130}$

x = 35

6. $\Delta STU \sim \Delta SMN$



$\frac{4x}{36} = \frac{77}{63}$

$252x = 2772$

x = 11

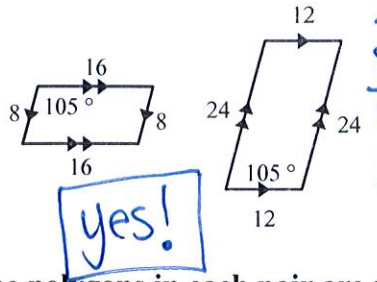
Geometry Name _____

3.1 Back of Notes

Date _____

State if the polygons are similar.

1)



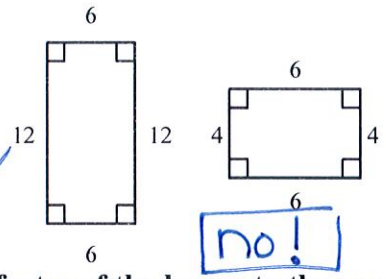
$\angle$s $\cong$ ✓

$\frac{8}{12} = \frac{8}{12} = \frac{16}{24} = \frac{16}{24}$

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

yes!

2)



$\angle$s $\cong$ ✓

$\frac{6}{4} = \frac{6}{4} = \frac{12}{6} = \frac{12}{6}$

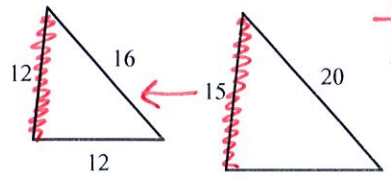
$\frac{3}{2} = \frac{3}{2} \neq 2 \neq 2$ ✗

no!

The polygons in each pair are similar. Find the scale factor of the larger to the smaller figure.

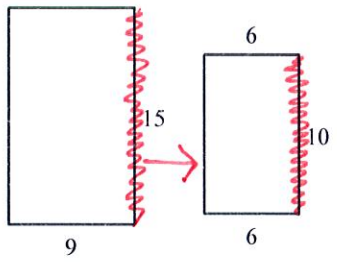
k old new

3)



$\frac{12}{15} = \boxed{\frac{4}{5}}$

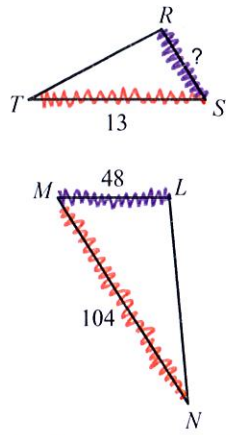
4)



$\frac{10}{15} = \boxed{\frac{2}{3}}$

Find the missing length. The triangles in each pair are similar.

5) $\triangle LMN \sim \triangle RST$

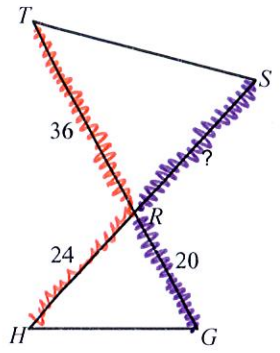


$\frac{x}{13} = \frac{48}{104}$

$104x = 624$

$\boxed{x = 6}$

6) $\triangle RST \sim \triangle RGH$



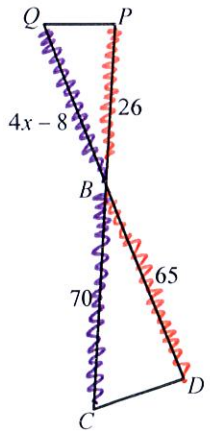
$\frac{x}{36} = \frac{20}{24}$

$24x = 720$

$\boxed{x = 30}$

Solve for *x*. The triangles in each pair are similar.

7) $\triangle BCD \sim \triangle BQP$



$\frac{4x-8}{26} = \frac{70}{65}$

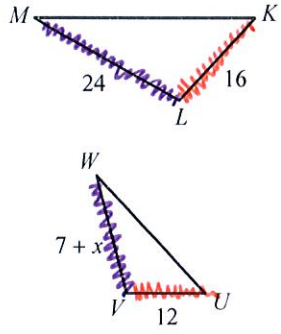
$65(4x-8) = 1820$

$260x - 520 = 1820$

$260x = 2340$

$\boxed{x = 9}$

8) $\triangle KLM \sim \triangle UVW$



$\frac{7+x}{12} = \frac{24}{16}$

$16(7+x) = 288$

$112 + 16x = 288$

$16x = 176$

$\boxed{x = 11}$