

Name: Key

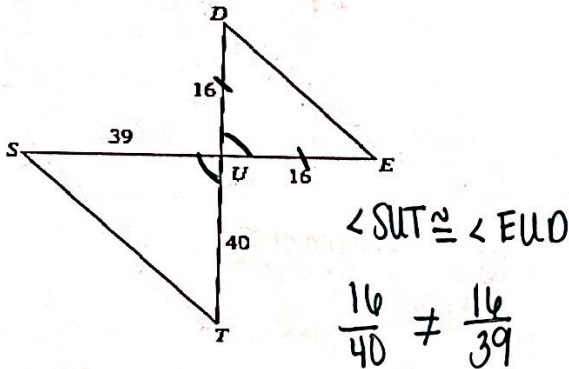
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SIMILAR TRIANGLES AND RELATIONSHIPS

What are the three different ways to prove that triangles are similar?

State if the triangles in each pair are similar. If so, state how you know they are similar and complete the similarity statement.

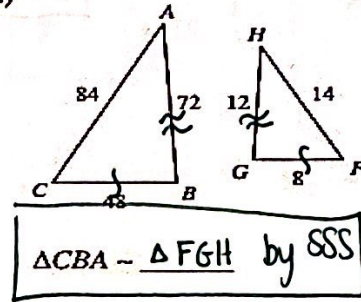
1)



$\Delta UTS \sim$ _____

Not similar

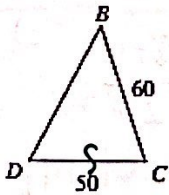
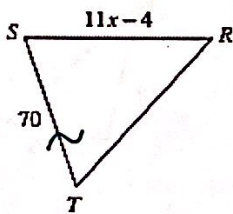
2)



$$\frac{48}{8} = \frac{72}{12} = \frac{84}{14}$$

$$6 = 6 = 6$$

3. $\Delta TSR \sim \Delta DCB$. Solve for x.



$$\frac{70}{50} = \frac{11x - 4}{60}$$

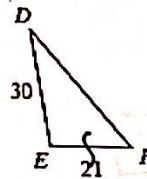
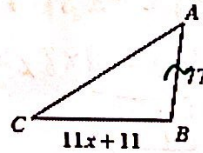
$$50(11x - 4) = 4200$$

$$550x - 200 = 4200$$

$$550x = 4400$$

$$\boxed{x = 8}$$

4. $\Delta ABC \sim \Delta FED$. Solve for x.



$$\frac{77}{21} = \frac{11x + 11}{30}$$

$$21(11x + 11) = 2310$$

$$231x + 231 = 2310$$

$$231x = 2079$$

$$\boxed{x = 9}$$

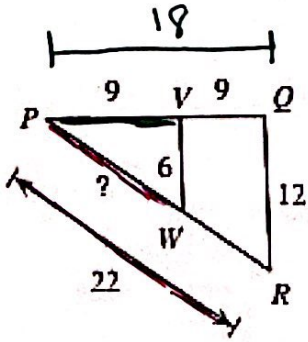
5. State whether a dilation using the scale factor k results in a reduction or an enlargement of the original.

a. $k=3$ enlargement

b. $k=1/3$ reduction

c. $k=5/4$ enlargement

6. Solve for the ?.

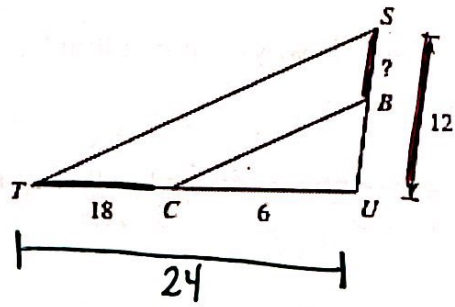


$$\frac{x}{22} = \frac{9}{18}$$

$$18x = 198$$

$$\boxed{x = 11}$$

7. Solve for the ?

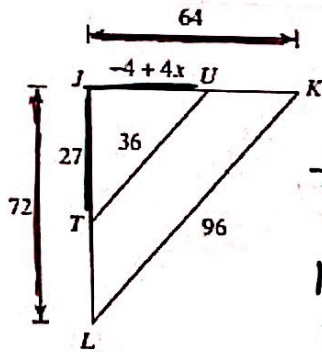


$$\frac{x}{12} = \frac{18}{24}$$

$$24x = 216$$

$$\boxed{x = 9}$$

8. Solve the value of x.



$$\frac{27}{72} = \frac{-4+4x}{64}$$

$$1728 = 72(-4+4x)$$

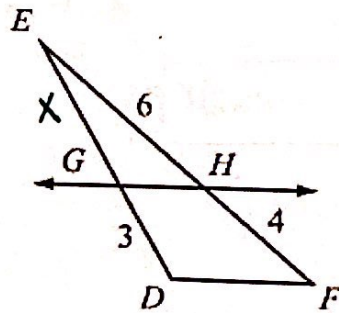
$$1728 = -288 + 288x$$

$$2016 = 288x$$

$$\boxed{7 = x}$$

9. Find the length of EG.

$\overline{GH} \parallel \overline{DF}$.

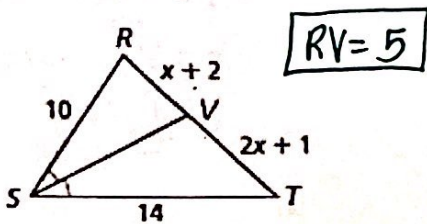


$$\frac{x}{3} = \frac{6}{4}$$

$$4x = 18$$

$$\boxed{x = 4.5}$$

10. Find the length of RV.



$$\frac{10}{x+2} = \frac{14}{2x+1}$$

$$14(x+2) = 10(2x+1)$$

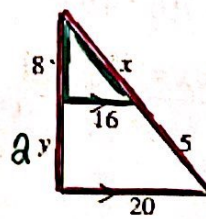
$$14x + 28 = 20x + 10$$

$$18 = 6x$$

$$3 = x$$

$$\boxed{RV = 5}$$

11. Solve for x and y.



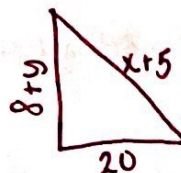
$$\frac{8}{16} = \frac{8+y}{20}$$

$$160 = 16(8+y)$$

$$160 = 128 + 16y$$

$$32 = 16y$$

$$\boxed{2 = y}$$



$$\frac{8}{2} = \frac{x}{5}$$

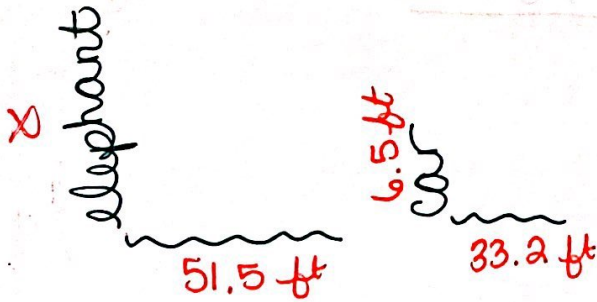
$$2x = 40$$

$$\boxed{x = 20}$$

12. A 6.5 ft. tall car standing next to an adult elephant casts a 33.2 ft. shadow. If the adult elephant casts a shadow that is 51.5 ft. long, then how tall is it?

$$\frac{x}{51.5} = \frac{6.5}{33.2}$$

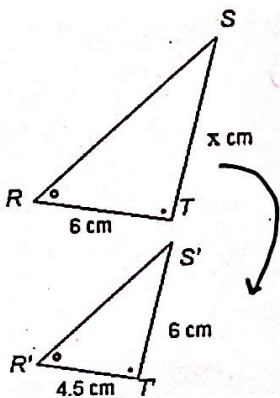
$$x = 10 \text{ ft tall}$$



13. For the following problems, determine the following:

1. Enlargement or Reduction
2. Scale Factor
3. Solution for x

a.



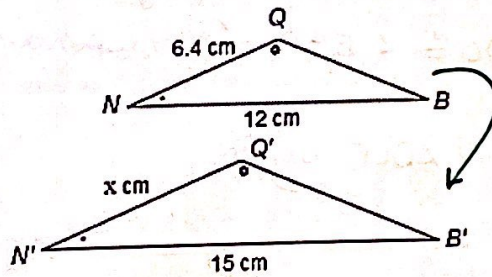
$$\frac{x}{6} = \frac{6}{4.5}$$

$$x = 8$$

$$\frac{4.5}{6} = 0.75$$
~~$$\frac{6}{4.5} = 1.3$$~~

1. Reduction
2. 0.75
3. x = 8

b.



$$\frac{6.4}{x} = \frac{12}{15}$$

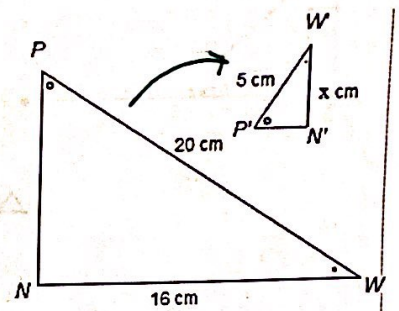
$$x = 8$$

~~$$\frac{12}{15} = 0.8$$~~

$$\frac{15}{12} = 1.25$$

1. Enlargement
2. 1.25
3. x = 8

c.



$$\frac{20}{5} = \frac{16}{x}$$

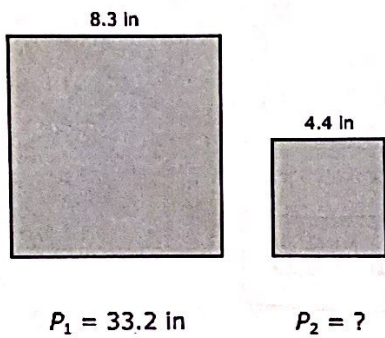
$$x = 4$$

~~$$\frac{20}{5} = 4$$~~

$$\frac{5}{20} = \frac{1}{4}$$

1. Reduction
2. 0.25
3. x = 4

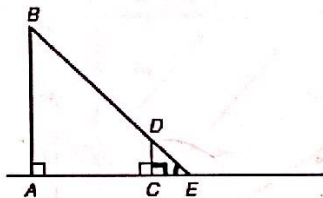
14. The following figures are similar and the sides labeled are corresponding. Find the perimeter of the smaller figure.



$$\frac{\text{length}}{\text{perimeter}} = \frac{8.3}{33.2} = \frac{4.4}{x}$$

$$x = 17.6 \text{ in}$$

15. Explain how $\triangle ABE \sim \triangle DCE$ if you know $\overline{AB} \parallel \overline{CD}$.



- $\angle BAC \cong \angle DCE$ are congruent (right angles)
- $\angle DEC \cong \angle DEC$ (reflexive prop)
- $\angle EDC \cong \angle EBA$ (corresponding \angle 's)

$\triangle ABE \sim \triangle DCE$ by AA