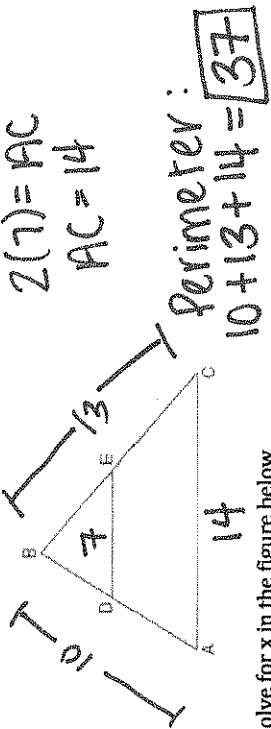
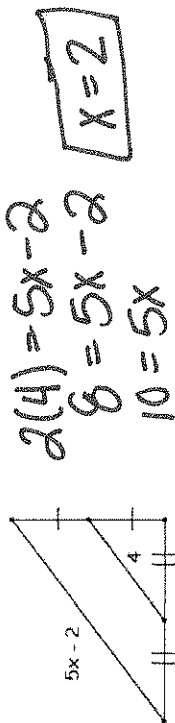


Station 1: Midsegment

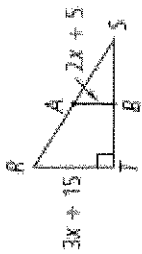
1. In the diagram below of $\triangle ABC$, DE is a midsegment of $\triangle ABC$, $DE = 7$, $AB = 10$, and $BC = 13$. Find the perimeter of $\triangle ABC$.



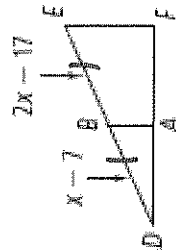
2. Solve for x in the figure below



3. Solve for x if AB is a midsegment.



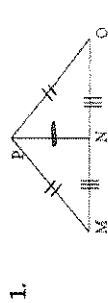
4. Solve for x if AB is a midsegment.



Station 2: Congruent Triangles

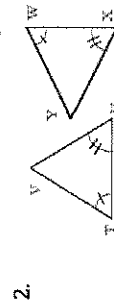
Determine if the triangles are congruent. If yes, make a congruency statement and give the reason why they are congruent. If they are not congruent, write "not congruent".

$\triangle MNP \cong \triangle ONP$ by SSS



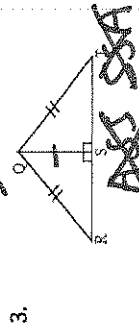
$\triangle TUV \cong \triangle$ by _____

Not \cong

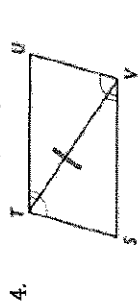


$\triangle QRS \cong \triangle$ by _____

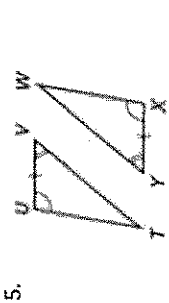
Not \cong



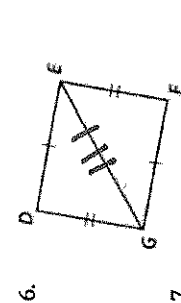
$\triangle TVS \cong \triangle VTU$ by ASA



$\triangle TUV \cong \triangle WXY$ by ASA



$\triangle DEG \cong \triangle FGE$ by SSS



If $\triangle RST \cong \triangle UWV$, complete each pair of congruent parts.

$\angle R \cong \angle U$

$\overline{RT} \cong \overline{UV}$

$\frac{\angle S}{RS} \cong \frac{\angle W}{RW}$

$\frac{RS}{RS} \cong \frac{RW}{RW}$

$\angle T \cong \angle V$

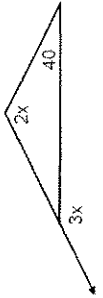
$\frac{ST}{ST} \cong \frac{WV}{WV}$

Station 3: Angles in a Triangle

1. Solve for x

$$2x + 40 = 3x$$

$$x = 40$$

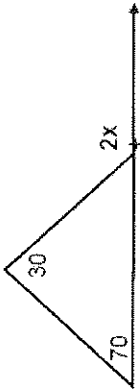


2. Solve for x

$$70 + 30 = 2x$$

$$100 = 2x$$

$$x = 50$$



3. Solve for a, b and c

$$72 + 56 + a = 180$$

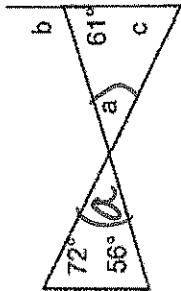
$$a = 52$$

$$180 - 61 = b$$

$$b = 119$$

$$61 + 52 + c = 180$$

$$c = 67$$



4.

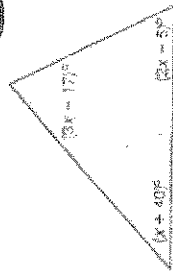


$$2x - 2 + x + 5 = 90$$

$$3x + 3 = 90$$

$$x = 29$$

5.



$$3x - 17 + x + 40 + 2x - 5 = 180$$

$$6x + 18 = 180$$

$$x = 27$$

Station 4: Classifying Triangles

1. Find x, JM, MN, and JN if $\triangle JMN$ is an isosceles triangle with $\overline{JM} \cong \overline{MN}$.



$$2x - 5 = 3x - 9$$

$$x = 4$$

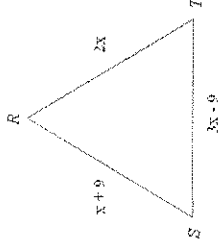
$$JN = 4 + 2 = 6$$

$$JM = 2(4) - 5 = 3$$

$$MN = 3$$

2. Find x and the measure of each side of equilateral triangle RST.

$$x + 9 = 2x \text{ or } 2x = 3x - 9 \text{ or } 3x - 9 = x + 9$$



$$\text{all } \rightarrow x = 9$$

$$RT = RS = ST = 18$$

Find x and the measure of each side of the triangle.

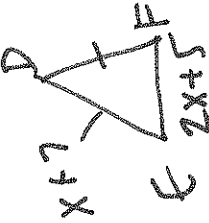
3. $\triangle ABC$ is equilateral with $AB = 3x - 2$, $BC = 2x + 4$, and $CA = x + 10$.

$$3x - 2 = 2x + 4$$

$$x = 6$$

$$AB = BC = CA = 16$$

4. $\triangle DEF$ is isosceles, $\angle D$ is the vertex angle, $DE = x + 7$, $DF = 3x - 1$, and $EF = 2x + 5$.



$$x + 7 = 3x - 1$$

$$x = 4$$

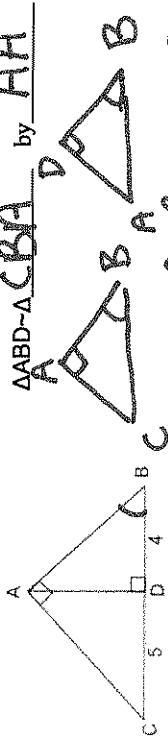
$$DE = DF = 11$$

$$EF = 13$$

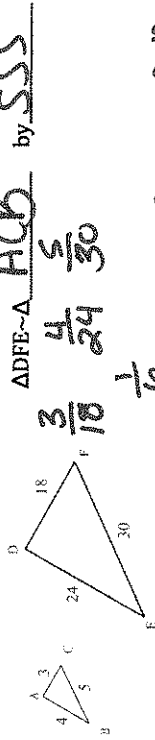
Station 5: Similar Triangles

Determine if the triangles are similar. If yes, make a similarity statement and give the reason why they are similar. If they are not similar, write "not similar".

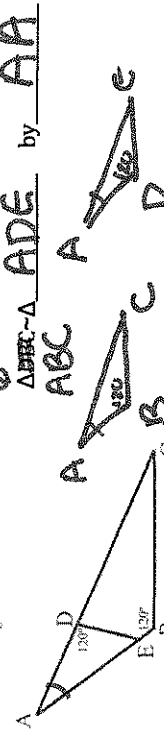
1. $\triangle ABD \sim \triangle CBA$ by AA



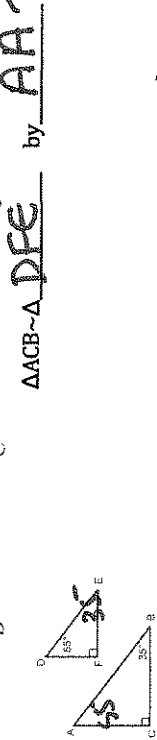
2. $\triangle DFE \sim \triangle ACB$ by SSS



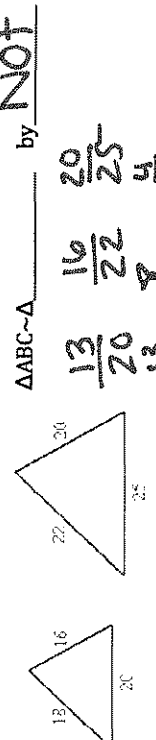
3. $\triangle ABC \sim \triangle ADE$ by AA



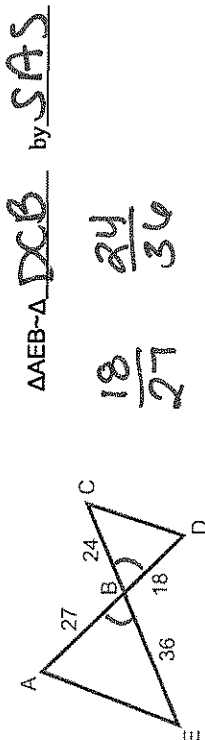
4. $\triangle ACB \sim \triangle DFE$ by AA



5. $\triangle ABC \sim \triangle DEF$ by NOT



6. $\triangle AEB \sim \triangle DCB$ by SAS



Station 6: Word Problems

1. 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?

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

$$x = 10.08$$

2. If a 42.9 ft tall flagpole casts a 253.1 ft long shadow then how long is the shadow that a 6.2 ft tall woman casts?

$$\frac{42.9}{6.2} = \frac{253.1}{x}$$

$$x = 36.6$$

3. A model house is 12 cm wide. If it was built with a scale of 3 cm : 4 m then how wide is the real house?

~~3/4 = 12/x~~
SKIP

4. A 6 ft tall tent standing next to a cardboard box casts a 9 ft shadow. If the cardboard box casts a shadow that is 6 ft long then how tall is it?

$$\frac{6}{x} = \frac{9}{6}$$

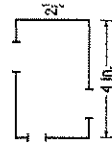
$$x = 4$$

5. **FARMING** The ratio of goats to sheep at a university research farm is 4:7. The number of sheep at the farm is 28. What is the number of goats?

$$\frac{4(x)}{7(28)} = \frac{x}{28}$$

$$x = 16 \text{ goats}$$

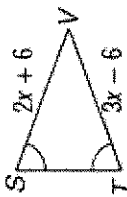
6. **INTERIOR DESIGN** Graham used the scale drawing of his living room to decide where to place furniture. Find the dimensions of the living room if the scale in the drawing is 1 inch = 4.5 feet.



SKIP

Station 7: Isosceles Triangles

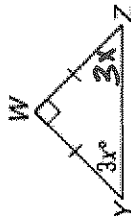
1. Solve for x



$$2x + 6 = 3x - 6$$

$$x = 12$$

2. Solve for x



$$3x + 3x + 90 = 180$$

$$x = 15$$

3. Solve for x



$$x + 6x + 6x = 180$$

$$x = 50$$

4. Solve for x



$$4x - 15 = 3x - 7$$

$$x = 8$$

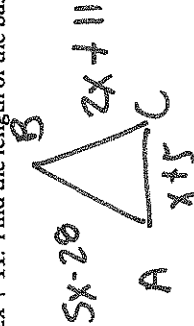
5. Solve for x



$$x + x + 80 = 180$$

$$x = 50$$

6. $\triangle ABC$ is an isosceles triangle with vertex angle B, $AB = 5x - 28$, $AC = x + 5$, and $BC = 2x + 11$. Find the length of the base. (Hint-draw a picture!)



$$5x - 28 = 2x + 11$$

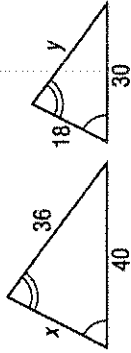
$$3x = 39$$

$$x = 13$$

$$AC = 13 + 5 = 18$$

Station 8: Similar Figures

1. Solve for x and y in the following similar figures.



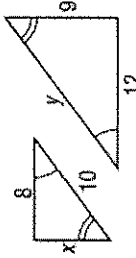
$$\frac{x}{18} = \frac{40}{30}$$

$$x = 24$$

$$\frac{36}{y} = \frac{40}{30}$$

$$y = 27$$

2. Solve for x and y in the following similar figures.



$$\frac{x}{9} = \frac{8}{12}$$

$$x = 6$$

$$\frac{10}{y} = \frac{8}{12}$$

$$y = 15$$

3. For the similar triangles shown, list the corresponding parts, write the similarity statement, and find the scale factor from the first triangle to the second.

Corresponding Angles:

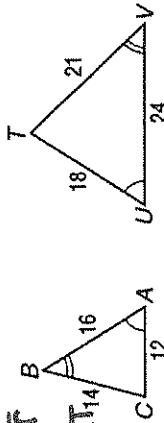
$\angle A \cong \angle U$, $\angle B \cong \angle V$, $\angle C \cong \angle T$

Corresponding Sides:

$\overline{AB} \cong \overline{UV}$, $\overline{BC} \cong \overline{VT}$, $\overline{AC} \cong \overline{UT}$

Similarity Statement: $\triangle ABC \sim \triangle UVT$

Scale Factor: 2:3 or 3:2



4. If $\triangle RST \sim \triangle UVW$, find $m\angle W$.



$$m\angle W = 47^\circ$$