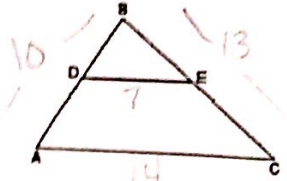


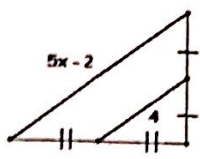
KEY

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



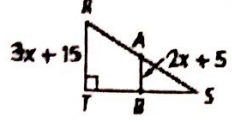
37

2. Solve for x in the figure below



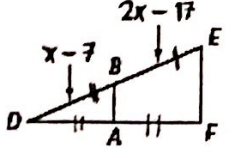
$2(4) = 5x - 2$   
 $8 = 5x - 2$   
 $10 = 5x$   
 $2 = x$

3. Solve for x if AB is a midsegment.



$2(2x+5) = 3x+15$   
 $4x+10 = 3x+15$   
 $x = 5$

4. Solve for x if AB is a midsegment.

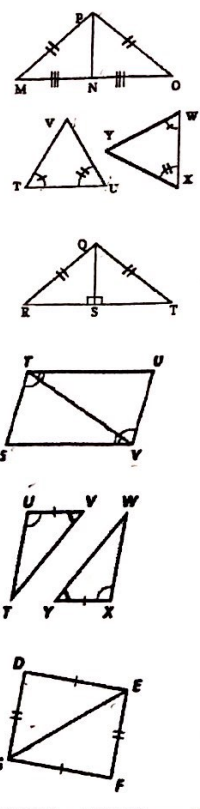


$x - 7 = 2x - 17$   
 $10 = x$

Unit 4 Review

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".

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.



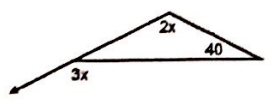
$\triangle MNP \cong \triangle ONP$  by SSS  
 $\triangle TUV \cong \triangle$  similar, not congruent  
 $\triangle QRS \cong \triangle QTS$  by HL  
 $\triangle TVS \cong \triangle VTU$  by ASA  
 $\triangle TUV \cong \triangle WXY$  by ASA  
 $\triangle DEG \cong \triangle FGE$  by SSS

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

$\angle R \cong \angle U$        $\angle S \cong \angle W$        $\angle T \cong \angle V$   
 $\overline{RT} \cong \overline{UV}$        $\overline{RS} \cong \overline{UW}$        $\overline{ST} \cong \overline{WV}$

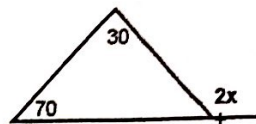
Station 3: Angles in a Triangle

1. Solve for x



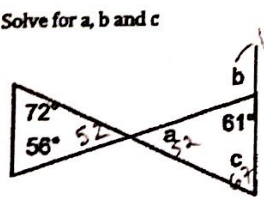
$3x = 2x + 40$   
 $x = 40$

2. Solve for x



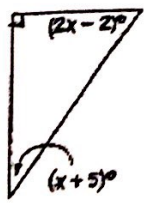
$2x = 100$   
 $x = 50$

3. Solve for a, b and c



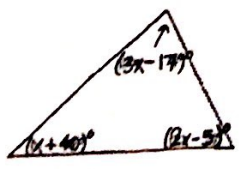
$a = 52$   
 $b = 119$   
 $c = 67$

4.



$2x - 2 + x + 5 + 90 = 180$   
 $3x = 87$   
 $x = 29$

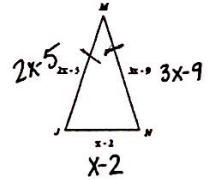
5.



$3x - 17 + x + 40 + 2x - 5 = 180$   
 $6x + 18 = 180$   
 $x = 27$

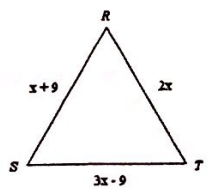
Station 4: Classifying Triangles

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



$2x - 5 = 3x - 9$   
 $4 = x$   
 $JM =$   
 $MN =$   
 $JN =$

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



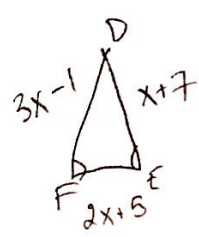
$x + 9 = 2x$        $2x = 3x - 9$   
 $9 = x$        $-x = -9$   
 $x = 9$

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

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

each side =  $16$        $3x - 2 = 2x + 4$        $2x + 4 = x + 10$   
 $x = 6$        $x = 6$

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

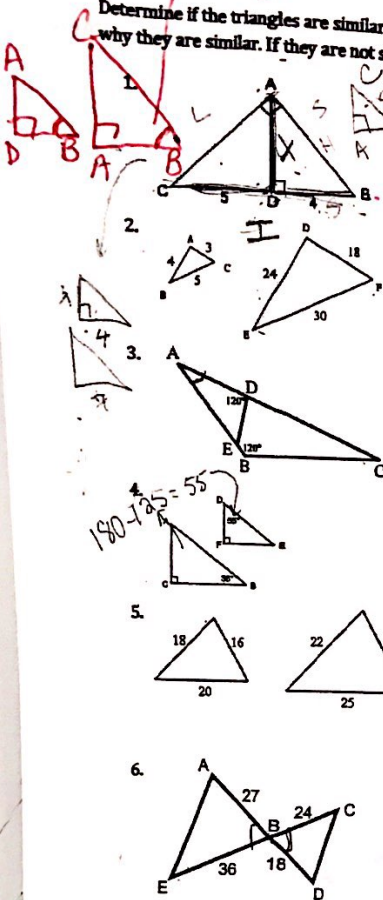


$3x - 1 = x + 7$        $\overline{DE} \cong \overline{DF} = 11$   
 $2x = 8$        $\overline{FE} = 13$   
 $x = 4$

Station 5: Similar Triangles

Station 6: Isosceles 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".



$\triangle ABD \sim \triangle CBA$  by AA  
 $\frac{4}{x} = \frac{x}{5}$

$\triangle DFE \sim \triangle ACB$  by SSS  
 $\frac{3}{18} = \frac{5}{30} = \frac{4}{24}$

$\triangle ABC \sim \triangle ADE$  by AA  
 make an  $\angle$

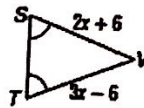
$\triangle ACB \sim \triangle DFE$  by AA

$\triangle ABC \sim \triangle$  not similar  
 $\frac{18}{22} \times \frac{16}{25} = \frac{20}{25}$  available, but not exact

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

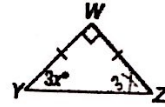
$\frac{27}{18} = \frac{36}{24}$   
 $\frac{27}{18} = \frac{36}{24}$   
 $AB \sim BD$

1. Solve for x



$2x+6 = 3x-6$   
 $12 = x$

2. Solve for x



$6x = 90$   
 $x = 15$

3. Solve for x



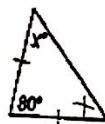
$2(65) = 130$   $x = 50$

4. Solve for x



$4x-18 = 3x-7$   
 $x = 8$

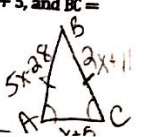
5. Solve for x



$2x + 80 = 180$   
 $2x = 100$   
 $x = 50$

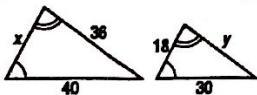
6.  $\triangle ABC$  is an isosceles triangle with vertex angle B,  $AB = 5x - 28$ ,  $AC = x + 5$ , and  $BC = 2x + 11$ . Find the length of the base. (Hint: draw a picture)

$5x - 28 = 2x + 11$   $3x = 39$   
 $x = 13$   
 Base =  $13 + 5 = 18$



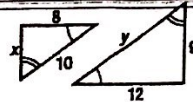
Station 7: Similar Figures

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



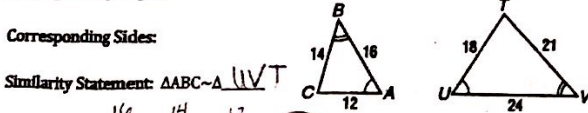
$720 = 30x$   
 $24 = x$   
 $1080 = 40y$   
 $y = 27$   
 $\frac{x}{18} = \frac{36}{y} = \frac{40}{30}$

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



$120 = 8y$   
 $y = 15$   
 $72 = 12x$   
 $x = 6$   
 $\frac{9}{x} = \frac{12}{8} = \frac{y}{10}$

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 Sides:

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

Scale Factor:  $\frac{16}{24} = \frac{14}{21} = \frac{12}{18} = \frac{2}{3}$

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



$180 - (48 + 85)$   
 $= 47^\circ$

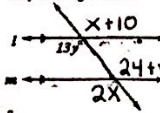
Station 8: Transversals

1. The lines j and k are parallel. Find the values of x and y in the figure shown.



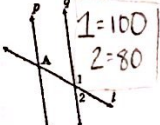
$3x + 2x = 180$   
 $5x = 180$   
 $x = 36$   
 $y = 2(36) = 72$

2. The lines l and m are parallel. Find the values of x and y in the figure shown.



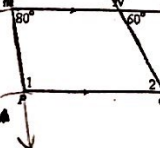
$x + 10 = 2x$   
 $10 = x$   
 $13y = 24 + y$   
 $12y = 24$   
 $y = 2$

3. If p and q are parallel and  $m\angle A = 100$ , find the  $m\angle 1$  and  $m\angle 2$ .



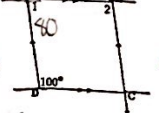
$1 = 100$   
 $2 = 80$

4. Find the values of  $\angle 1$  and  $\angle 2$  in the figure.



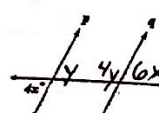
$2 = 60^\circ$   
 $1 = 100^\circ$   
 (alternate exterior interior)

5. Find the values of  $m\angle 1$  and  $m\angle 2$  in the figure.



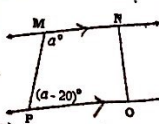
$\angle 1 = 80^\circ$   
 $\angle 2 = 100$

6. The lines p and q are parallel. Find the values of x and y.



$4y + y = 180$   
 $5y = 180$   
 $y = 36$   
 $6x = 4x$   
 $2x = 0$   
 $x = 0$

7. The lines a and b are parallel. Find the  $m\angle M$  and  $m\angle P$ .



$a + a - 20 = 180$   
 $2a = 200$   
 $a = 100$

$m\angle M = 100$   
 $m\angle P = 80$