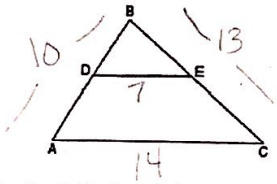
KEY

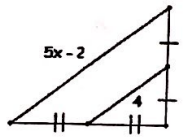
Unit 4 Review

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



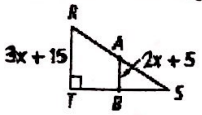
37

2. Solve for x in the figure below



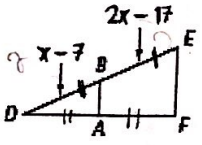
$2(4) = 5x - 2$
$8 = 5x - 2$
$10 = 5x$
$2 = x$

3. Solve for x if AB is a midsegment.



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

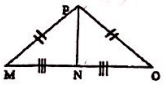
4. Solve for x if AB is a midsegment.



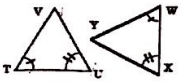
$x - 7 = 2x - 17$
$10 = x$

Station 2: Congruent Triangles

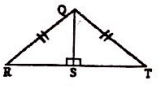
Determine if the triangles are congruent. If yes, make a congruency statement and give the reason why they are congruent. If they are not congruent, write "not congruent".

1. 

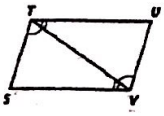
$\Delta MNP \cong \Delta$ ONP by SSS

2. 

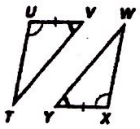
$\Delta TUV \cong \Delta$ similar, not by congruent

3. 

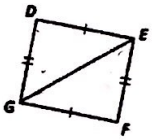
$\Delta QRS \cong \Delta$ QTS by HL

4. 

$\Delta TVS \cong \Delta$ VTU by ASA

5. 

$\Delta TUV \cong \Delta$ WXY by ASA

6. 

$\Delta DEG \cong \Delta$ FGE by SSS

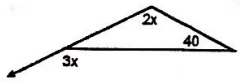
7. **If $\Delta RST \cong \Delta UWV$, complete each pair of congruent parts.**

$\angle R \cong \angle U$ $\quad \overline{LS} \cong \angle W$ $\quad \angle T \cong \angle V$

$\overline{RT} \cong \overline{UV}$ $\quad \overline{RS} \cong \overline{UW}$ $\quad \overline{ST} \cong \overline{WV}$

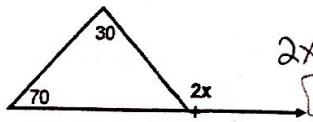
Station 3: Angles in a Triangle

1. Solve for x



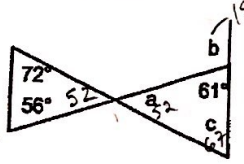
$3x = 2x + 40$
$x = 40$

2. Solve for x

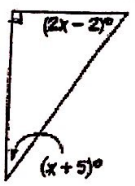


$2x = 100$
$x = 50$

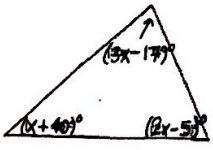
3. Solve for a, b and c



$180 - 61$
$a = 52$
$b = 119$
$C = 67$

4. 

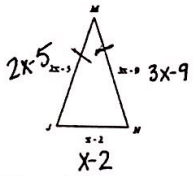
$2x - 2 + x + 5 + 90 = 180$
$3x = 87$
$x = 29$

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 ΔJMN is an isosceles triangle with $\overline{JM} \cong \overline{MN}$.

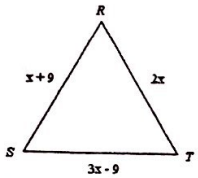


$2x - 5 = 3x - 9$
$4 = x$

$JM =$
$MN =$
$JN =$

X-2

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



$x + 9 = 2x$
$9 = x$

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

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

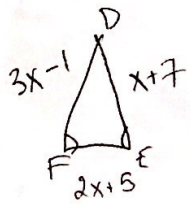
3. **ΔABC is equilateral with $AB = 3x - 2$, $BC = 2x + 4$, and $CA = x + 10$.**

each side = 16

$3x - 2 = 2x + 4$
$x = 6$

$2x + 4 = x + 10$
$x = 6$

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



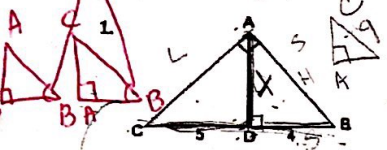
$3x - 1 = x + 7$
$2x = 8$
$x = 4$

$\overline{DE} = \overline{DF} = 11$
$\overline{FE} = 13$

Station 5: Similar Triangles

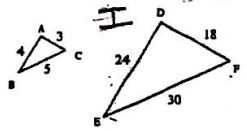
They share Angle B

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. 

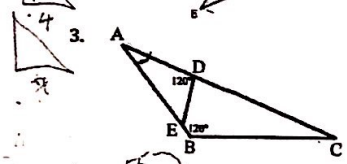
$\Delta ABD \sim \Delta$ CBD by AA enough info

$\frac{4}{x} = \frac{x}{5}$

2. 

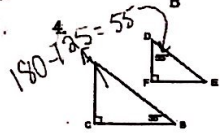
$\Delta DFE \sim \Delta$ ACB by SSS

$\frac{3}{18} = \frac{5}{30} = \frac{4}{24}$

3. 

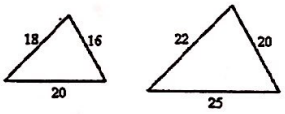
$\Delta DBC \sim \Delta$ ADE by AA

make an A

4. 

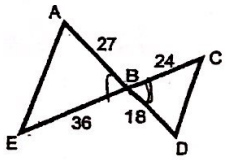
180 − 125 = 55

$\Delta ACB \sim \Delta$ DFE by AA

5. 

$\Delta ABC \sim \Delta$ not similar by

$\frac{18}{22} \neq \frac{16}{20} = \frac{20}{25}$ arguable, but not exact

6. 

$\Delta AEB \sim \Delta$ DCB by SAS

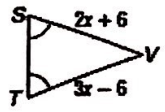
$\frac{27}{24} \times \frac{36}{18}$

$\frac{27}{18} = \frac{36}{24}$ ✓

AB ∼ BD

Station 6: Isosceles Triangles

1. Solve for x



2x + 6 = 3x − 6

12 = x

2. Solve for x

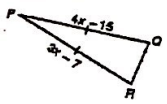
6x = 90

x = 15

3. Solve for x

2(65) = 130 x = 50

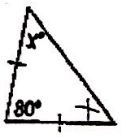
4. Solve for x



4x − 15 = 3x − 7

x = 8

5. Solve for x



2x + 80 = 180

2x = 100

x = 50

6. ΔABC 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!)

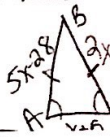
5x − 28 = 2x + 11

3x = 39

x = 13

Base = 13 + 5

= 18



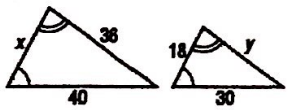
#2-6 are systems questions!

Station 7: Similar Figures

720 = 30x

24 = x

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

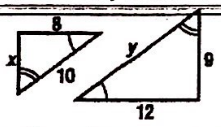


$\frac{x}{18} = \frac{36}{y} = \frac{40}{30}$

1080 = 40y

y = 27

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



$\frac{9}{x} = \frac{12}{8} = \frac{y}{10}$

120 = 8y

y = 15

72 = 12x

x = 6

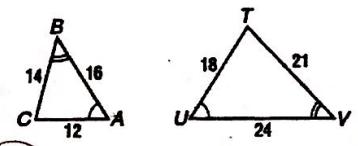
3. For the similar triangles shown, list the corresponding parts, write the similarity statement, and find the scale factor from the first triangle to the second.

Corresponding Angles:

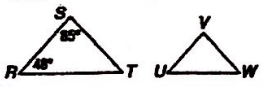
Corresponding Sides:

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

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



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

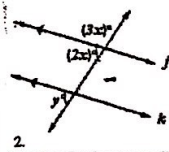


180 − (48 + 85)

= 47°

Station 8: Transversals

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



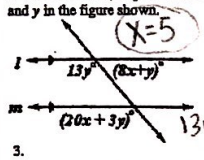
3x + 2x = 180

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 = 5

13y + 8x + y = 180

14y + 8x = 180

14y + 8(2x) = 180

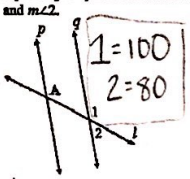
13y = 20x + 3y

10y = 20x

y = 2x

y = 10

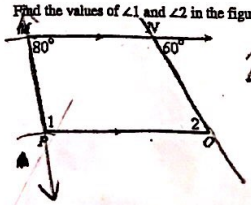
3. If p and q are parallel and $m\angle A = 100$, find the $m\angle 1$ and $m\angle 2$.



1 = 100

2 = 80

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

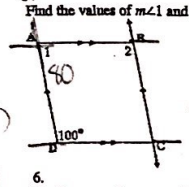


2 = 60°

1 = 100°

(consecutive interior)

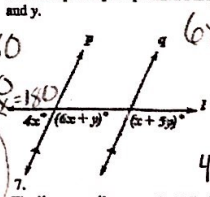
5. Find the values of $m\angle 1$ and $m\angle 2$ in the figure.



∠1 = 80°

∠2 = 100

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



6x + y = x + 5

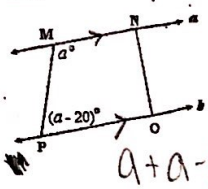
5x = 4y

x = 4/5 y

x = 16

4x + 6x + y = 1

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



10x + y =

10(4/5 y) + y =

9y =

a + a − 20 = 180

2a = 200

a = 100

∠M = 100

∠P = 80