

Name: _____ No. _____ Per: _____ Date: _____
 Serafino · Geometry M T W R F

3QR

3ABC – Triangles & Transformations

Classifying Triangles, Congruence, Reflections & Translations

1. Two sides $\triangle XYZ$ are given. State the interval of the possible measures of the third side as a compound inequality.

- | | |
|---------------------------|---------------------------|
| a) $x = 9, y = 5$ _____ | c) $z = 5, y = 8$ _____ |
| b) $y = 11, x = 14$ _____ | d) $x = 15, z = 15$ _____ |

2. State whether the three numbers could be sides of a triangle. If so, classify the triangle by sides and angles.

- | | | | |
|------------------|--------------------|-------------------|------------------|
| a) 7, 5, 4 _____ | b) 13, 5, 12 _____ | c) 6, 12, 4 _____ | d) 8, 2, 8 _____ |
|------------------|--------------------|-------------------|------------------|

3. For each of the following, set up equations and solve. Then find the measure of each angle.

a. $\triangle HPY$ has angles $m\angle H = (2x)^\circ$, $m\angle P = (12x - 20)^\circ$ and $m\angle Y = (4x + 10)^\circ$

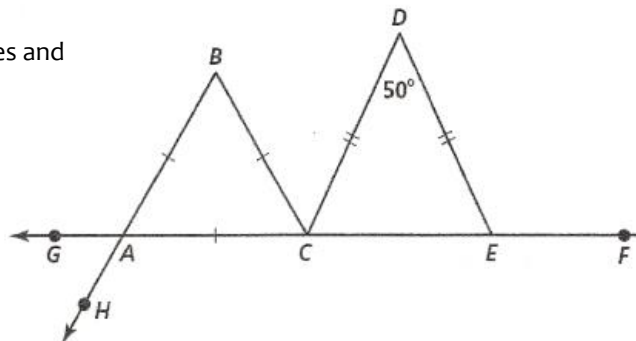
b. $\triangle TNX$ is scalene. The middle angle is 25.8° more than the smaller one. The largest angle is triple the sum of the other two.

c. $\triangle GIV$ is isosceles and has angles $(x + 5)^\circ$ and $(4x - 1)^\circ$.

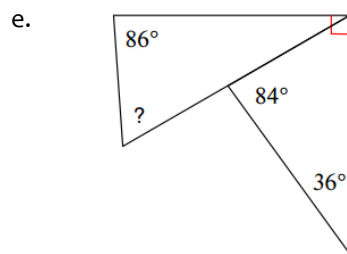
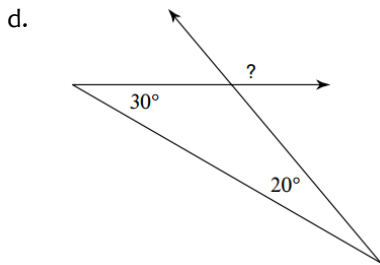
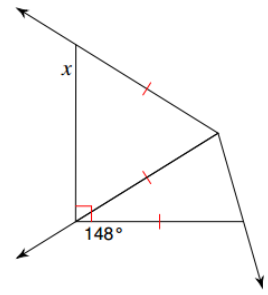
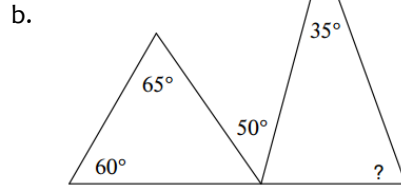
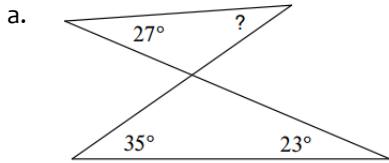
There are two ways you could draw the triangle (acute and obtuse). Draw both triangles, with all the angles.

4. Find the values of the variables. Then classify the triangle by sides and

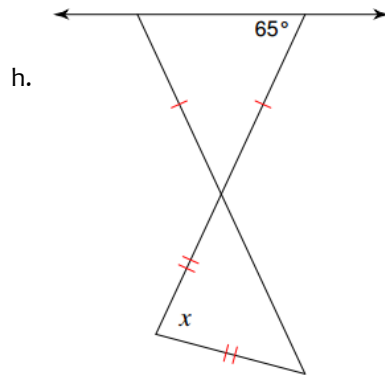
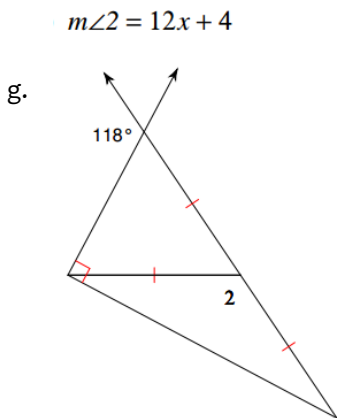
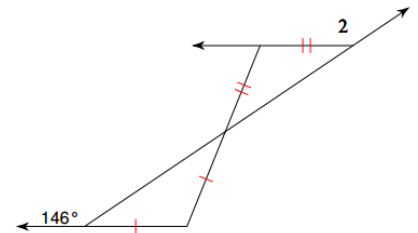
- | | |
|--------------------|--------------------|
| a) $m\angle BCA =$ | d) $m\angle DCE =$ |
| b) $m\angle ACD =$ | e) $m\angle BCD =$ |
| c) $m\angle DEF =$ | f) $m\angle HAC =$ |



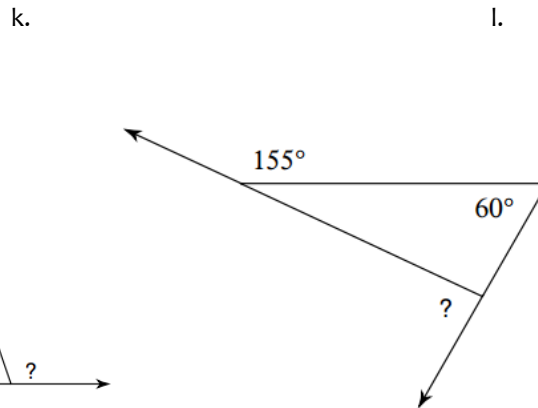
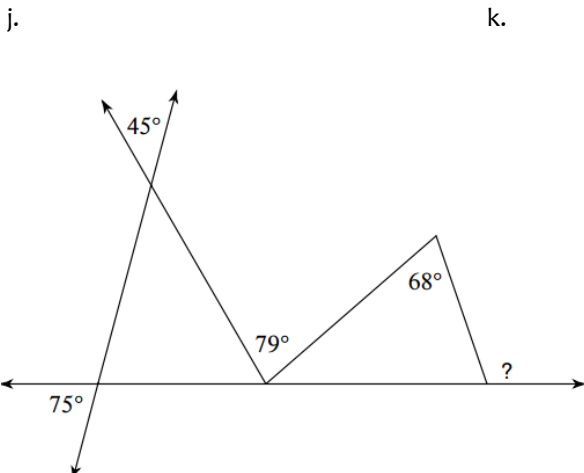
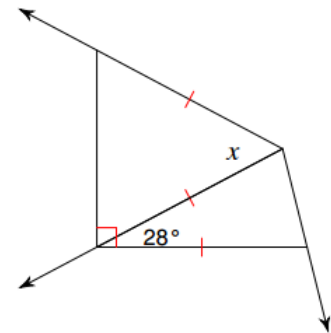
5. Find the measure of the missing angle.



f. $m\angle 2 = 13x + 3$

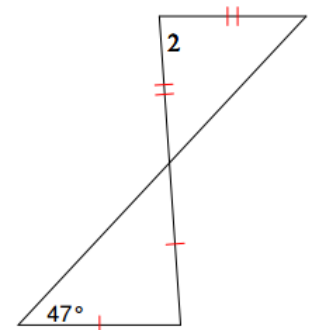


i.

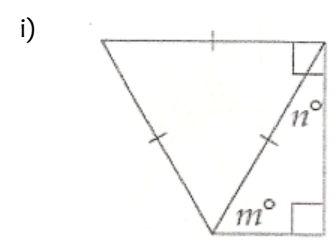
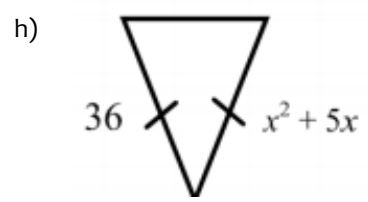
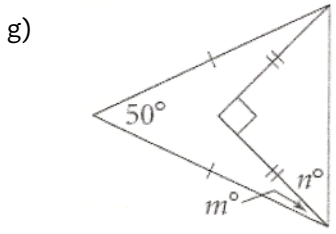
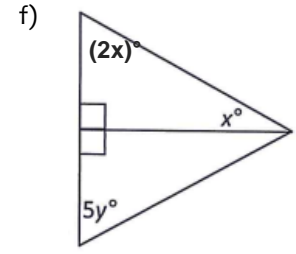
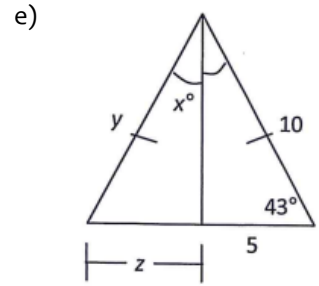
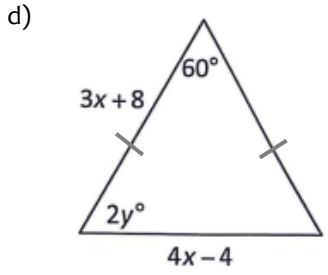
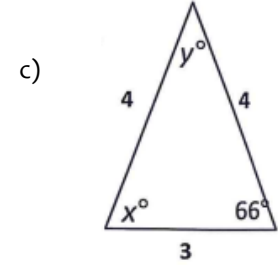
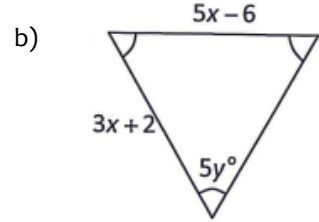
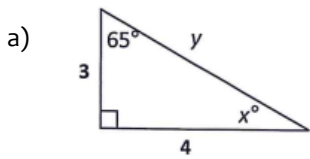


l.

$m\angle 2 = x + 94$

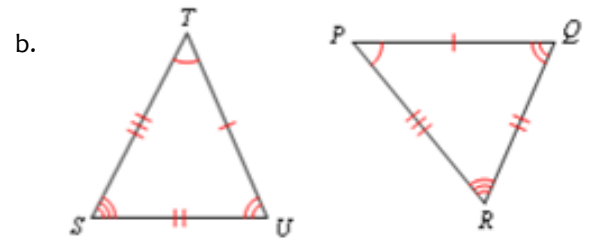
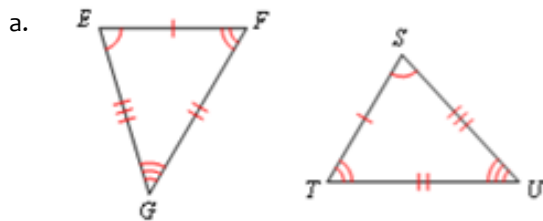


6. Solve for each of the variables:



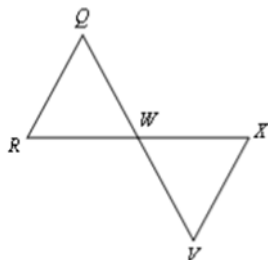
7. Congruent triangles:

Write a congruence statement for the triangles below:

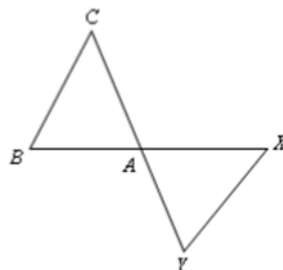


Mark the triangles (angles and sides) so they are congruent, as stated.

c. $\triangle QRW \cong \triangle VWX$



d. $\triangle ABC \cong \triangle AYX$



8. Translate that point!

a. $(5, 2)$ 2 up _____

d. $(4, -2)$ 3 right, 1 down _____

b. $(6, -3)$ 3 left _____

e. $(5, 4)$ 2 left, 5 up _____

c. $(5, 7)$ 9 down _____

f. $(-7, 6)$ 4 right _____

9. Name that line of reflection! Write the equation of the line. If it's an axis, name that axis.

a. $(5, 2) \rightarrow (2, 5)$ _____

g. $(4, -2) \rightarrow (4, 2)$ _____

b. $(6, -3) \rightarrow (-6, -3)$ _____

h. $(5, 4) \rightarrow (3, 4)$ _____

c. $(-3, 1) \rightarrow (3, -1)$ _____

i. $(5, 0) \rightarrow (0, -5)$ _____

d. $(2, 0) \rightarrow (2, 2)$ _____

j. $(1, 6) \rightarrow (-1, 6)$ _____

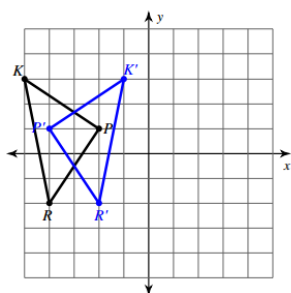
e. $(5, 7) \rightarrow (9, 7)$ _____

k. $(-2, 6) \rightarrow (-2, 8)$ _____

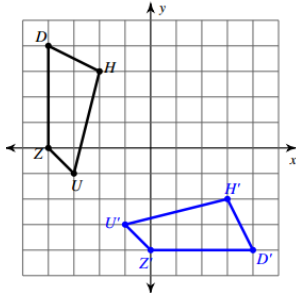
f. $(-10, 2) \rightarrow (-2, 10)$ _____

l. $(0, -4) \rightarrow (0, 4)$ _____

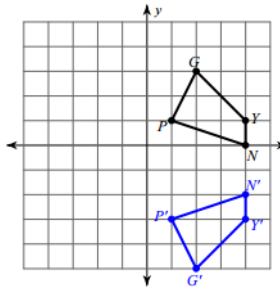
m. _____



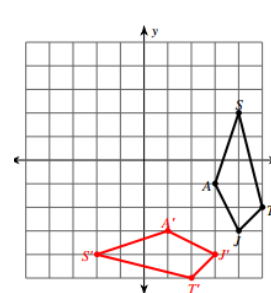
n. _____



q. _____



p. _____



10. Reflect that point!! Write the equation of the line. If it's an axis, name that axis.

a. $(5, 2)$ in y -axis _____

f. $(4, -2)$ in $y = -x$ _____

b. $(6, -3)$ in $y = -x$ _____

g. $(5, 4)$ in $y = -1$ _____

c. $(-3, 1)$ in $y = 2$ _____

h. $(5, 0)$ in $x = 7$ _____

d. $(2, 0)$ in x -axis _____

i. $(1, 6)$ in $y = x$ _____

e. $(5, 7)$ in $x = 2$ _____

j. $(5, 5)$ in $y = x$ _____

11. Transform the preimage point as directed, then use that point in the next transformation.

Preimage Point A(6 , -2)	Preimage Point B(-2 , 0)	Preimage Point C(3 , 1)
↓	↓	↓
Reflect over y-axis (,)	Reflect over x = 0 (,)	Reflect over x-axis (,)
↓	↓	↓
Shift 5 left, 6 up (,)	Shift right 10 (,)	Shift 10 right, 4 down (,)
↓	↓	↓
Reflect over x = -2 (,)	Reflect over y = 2 (,)	Reflect over x = 3 (,)
↓	↓	↓
Reflect over y = x (,)	Reflect over y = -x (,)	Reflect over y = -x (,)
↓	↓	↓
Shift down 3, right 1 (,)	Shift up 2 (,)	Left 4 (,)
↓	↓	↓
IMAGE POINT: A'(,)	IMAGE POINT: B'(,)	IMAGE POINT: C'(,)

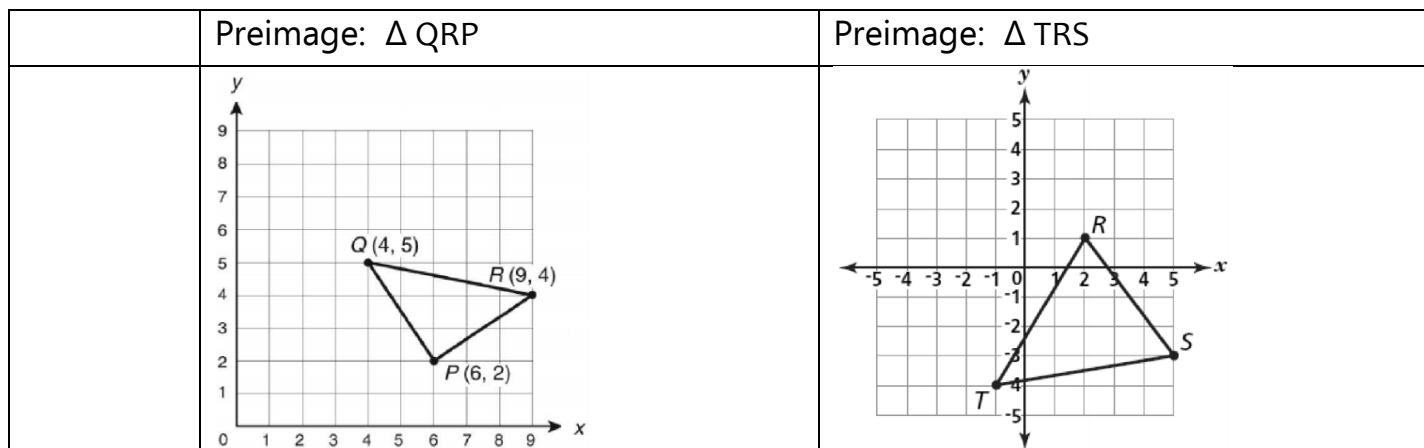
Check your answers before continuing!

Classify $\triangle ABC$.

Classify $\triangle A'B'C'$.

ONLY DO THIS PAGE IF YOU NEED EXTRA PRACTICE CLASSIFYING AND TRANSFORMING!!!!

12. Transforming Triangles



Classify: Classify the triangles by its sides and angles.

Sides		
Angles		

Reflect: Write the coordinates of the vertices of the image after reflecting in the given line.
Always go back and use the ORIGINAL points.

y-axis		
x = -2		
y = 0		
y = x		
y = 6		
y = -2		
Y = -x		

Translations: Write the coordinates of the vertices of the image after translating as instructed.
Always go back and use the ORIGINAL points.

$(x, y) \rightarrow (x - 1, y + 6)$		
$(x, y) \rightarrow (x, y - 2)$		
Right 5 units		
Left 4 units, up 7		