Name _____ Date _____ Period _____

DIRECTIONS: For #1-9, complete each statement with the best word: *ALWAYS*, *SOMETIMES*, or *NEVER*.

1. If a triangle is isosceles, then it is **never** scalene.

2. If a triangle is equilateral, then it is **always** isosceles.

3. A triangle can **never** have more than one right angle.

4. The measures of the exterior angles of a convex polygon **always** have a sum of 360°.

5. A triangle can **never** have one obtuse angle, one right angle, and one acute angle.

6. If ΔXYZ is equiangular, then $m\angle Z$ is **always** 60°.

7. The measure of an exterior angle of a triangle **always** equals the sum of the measures of the remote interior angles.

8. The sum of the measures of the interior angles of a polygon is **sometimes** equal to the sum of the measures of the exterior angles of the same polygon.

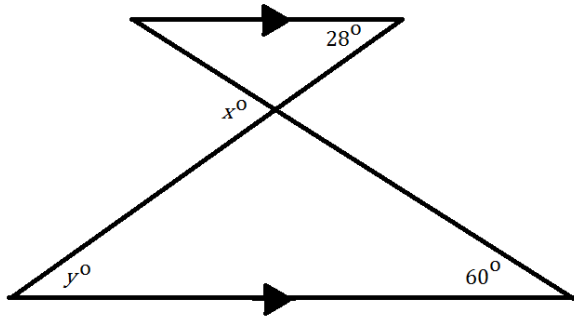9. If a triangle is isosceles, it is **sometimes** equilateral.

DIRECTIONS: For #10-11, find the values of x and y that make $\overline{AB} \parallel \overline{DC}$ **and** $\overline{AD} \parallel \overline{BC}$.
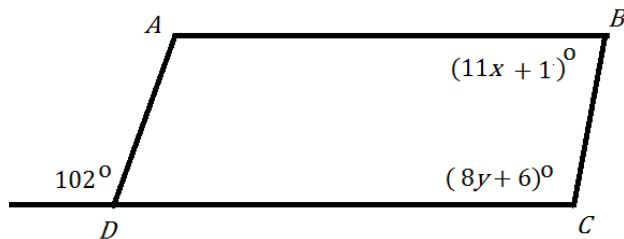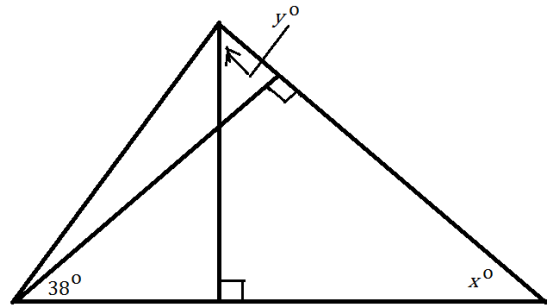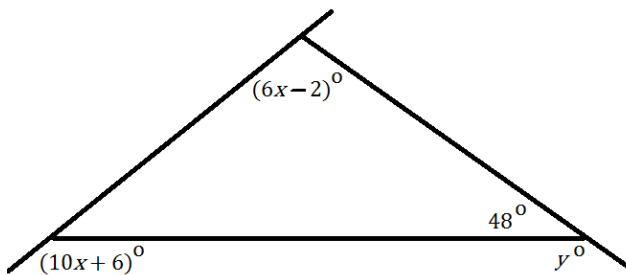

10. $x =$ **7** $y =$ **12**
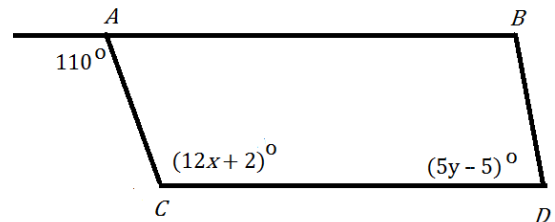
11. $x =$ **9** $y =$ **15**

<u>DIRECTIONS</u>: For #12-15, find the values of x and y.

28°

x^o

y^o 60°

y^o

38° x^o

12. $x = $ **88** $y = $ **28**

13. $x = $ **52** $y = $ 3**8**

$(6x-2)^o$

48°

$(10x+6)^o$ y^o

16° $5x^o$

$3y^o$ 70° 35°
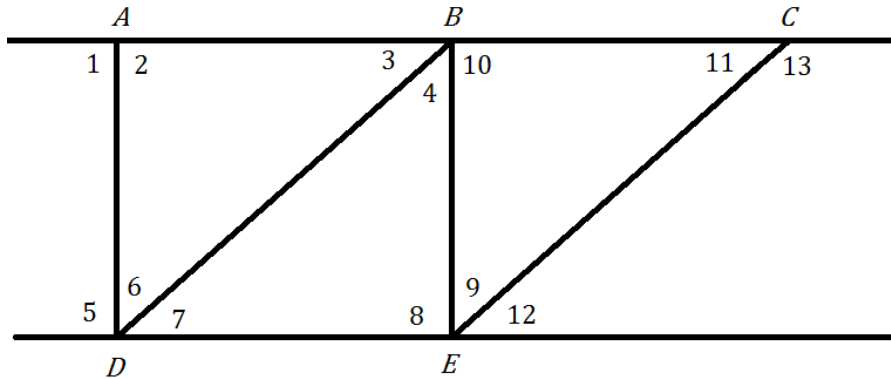
14. $x = $ **10** $y = $ **132**
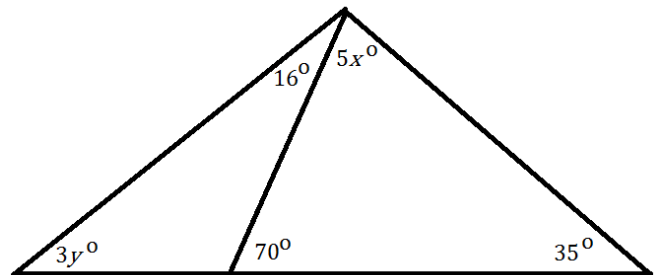
15. $x = $ **15** $y = $ **18**

DIRECTIONS: Use the diagram for #16-21. Choose from the following to best complete each statement:

$\overline{AB} \parallel \overline{DE}$	$\overline{AD} \parallel \overline{BE}$	$\overline{DB} \parallel \overline{EC}$	**No conclusion is possible**

16. If ∡4 ≅ ∡9, then **$\overline{DB} \parallel \overline{EC}$** .

17. If ∡11 ≅ ∡12, then **$\overline{AB} \parallel \overline{DE}$** .

18. If ∡3 ≅ ∡7, then **$\overline{AB} \parallel \overline{DE}$** .

19. If ∡5 ≅ ∡8, then **$\overline{AD} \parallel \overline{BE}$** .

20. If $\overline{AC} \perp \overline{AD}$ and $\overline{AC} \perp \overline{BE}$, then **$\overline{AD} \parallel \overline{BE}$** .

21. If ∡6 ≅ ∡3, then **no conclusion is possible** .

DIRECTIONS: For #22-23, make your drawings in the provided spaces.

22. Draw a convex pentagon   **23.** Draw a nonconvex hexagon

DIRECTIONS: For #24-28, answer the questions.

24. The sum of four of the five angles of a convex pentagon are 78°, 96°, 100°, and 114°. What is the measure of the fifth angle? [Show work]

122°

25. In hexagon $UVWXYZ$, $m\angle U = 150°$, $m\angle V = 120°$, and $m\angle W = 160$. $\angle X$ is twenty degrees less than three times $\angle Z$, and $\angle Y$ is thirty degrees more than three times $\angle Z$. What are the measures of $\angle X$, $\angle Y$, and $\angle Z$?

$m\angle X$ = **100** $m\angle Y$ = **150** $m\angle Z$ = **40**

26. Kari is looking at a regular polygon for which each exterior angle has a measure of 40°. How many sides does this polygon have? What is the measure of each interior angle of this polygon?

Number of sides   **9**   Measure of each interior angle   **140**

27. Shondra is looking at a regular polygon with fifteen sides. What is the measure of each interior angle of this polygon? What is the measure of each exterior angle of this polygon?

Measure of each interior angle   **156** Measure of each exterior angle   **24**

28. Jose is looking at a regular polygon for which each interior angle has a measure of 170°. How many sides does this polygon have? What is the measure of each exterior angle?

Number of sides   **36**   Measure of each exterior angle   **10**

DIRECTIONS: For #29-30, use a compass and a straightedge to complete the constructions. Show all work.

29. Copy this angle   (Video - http://youtu.be/agL9WVapsnM)
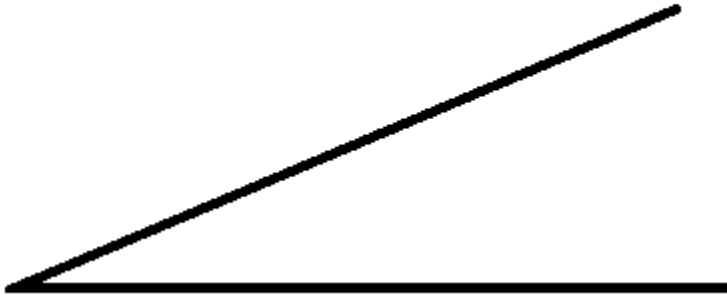
30. Draw a line parallel to line m that goes through the point P.
(Video - https://youtu.be/Jej0hVXKEvQ)

P