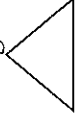

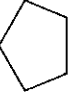
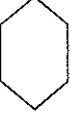




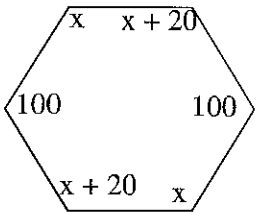
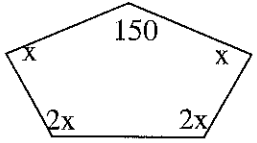


Angles in Polygons Exploration

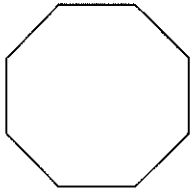
Name of polygon	Number of Sides	Number of Diagonals from a vertex	Number of triangles in polygon	Sum of interior angles	Measure or one interior angle (Regular Only)	Measure of one exterior angle (Regular Only)	Sum of exterior angles
Triangle 							
Quadrilateral 							
Pentagon 							
Hexagon 							
Heptagon 							
Octagon 							
Nonagon 							
Decagon 							
n -gon							

Guided Practice	On Your Own
Find the sum of the interior angles of a regular dodecagon.	Find the sum of the interior angles of an regular 15-gon
Find the sum of the exterior angles of a regular pentagon.	Find the sum of the exterior angles of a regular hendecagon.
Name the regular polygon that each exterior angle has a measure of 30° .	Name the regular polygon that each exterior angle has a measure of 120° .
Name the regular polygon that each interior angle has a measure of 144° .	Name the regular polygon that each interior angle has a measure of 135° .
<p data-bbox="235 892 462 924">Find the value of x</p> 	<p data-bbox="803 892 1031 924">Find the value of x</p> 

Polygons – Assignment

Tell whether each shape is a polygon. If it is a polygon, name it by the number of sides.

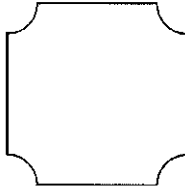
1)



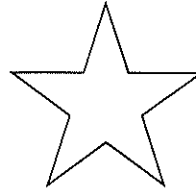
2)



3)

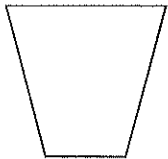


4)

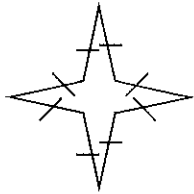


Tell whether each polygon is concave or convex and if it is regular or irregular.

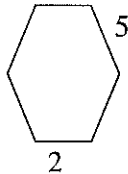
5)



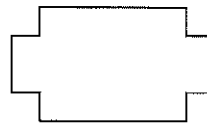
6)



7)



8)



9) Draw the following, or tell why it cannot be drawn.

A. Concave equilateral pentagon

B. Concave trapezoid

C. Irregular Equilateral triangle

D. Convex irregular heptagon

10) Tell whether each statement is Always, Sometimes, or Never true.

A. An equiangular triangle is a regular convex polygon

B. A convex pentagon is a regular polygon

C. A equilateral dodecagon is equiangular

D. A concave polygon is irregular.

E. Regular octagons are similar polygons.

F. A dodecagon has 12 sides.

G. A nine sided polygon is a nonagon.

11) Fill in the chart for the regular polygons.

Polygon	Sum of Interior \angle 's	Each Interior \angle	Sum of Exterior \angle 's	Each Exterior \angle
heptagon				
20-gon				
pentagon				
	1440°			
12-gon				
hexagon				
				40°
36-gon				
		60°		
				90°

12) If the sum of the interior angles is 1980° , what is the name of the polygon?

13) If each of the exterior angles is 15° , what is the name of the polygon?

14) If each of the interior angles is 108° , what is the name of the polygon?

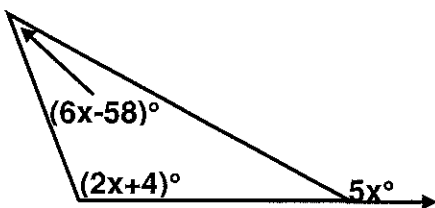
15) If the sum of the interior angles is 3600° , what is the name of the polygon?

16) If each of the exterior angles is 24° , what is the name of the polygon?

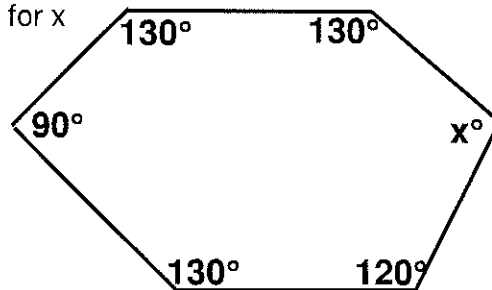
17) If each of the interior angles is 135° , what is the name of the polygon?

18) If each interior angle is 160° , what is the name of the polygon?

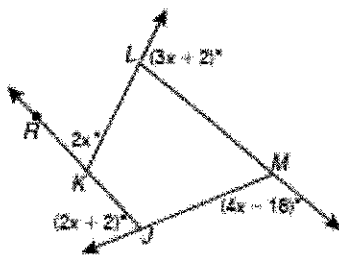
19) Solve for x



20) Solve for x



- 21) Find the measure of $\angle RKL$.



- A 34° C 86°
 B 68° D 148°

- 23) For which polygon does the sum of the measures of the interior angles equal the sum of the measures of the exterior angles?

- (1) hexagon (3) quadrilateral
 (2) pentagon (4) triangle

- 24) A pentagon has two exterior angles that measure $(3x)^\circ$, two exterior angles that measure $(2x + 22)^\circ$, and an exterior angle that measures $(x + 41)^\circ$. If all of these angles have different vertices, what are the measures of the exterior angles of the pentagon?

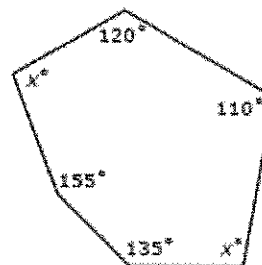
- 25) The sum of the interior angles of a polygon is the same as the sum of its exterior angles. What type of polygon is it?

- A quadrilateral
 B hexagon
 C octagon
 D decagon

- 26) The measures of the interior angles of a pentagon are $2x$, $6x$, $4x - 6$, $2x - 16$, and $6x + 2$. What is the measure, in degrees, of the largest angle?

- A 28
 B 106
 C 170
 D 174

- 27) Which equation could best be used to determine the value of x ?



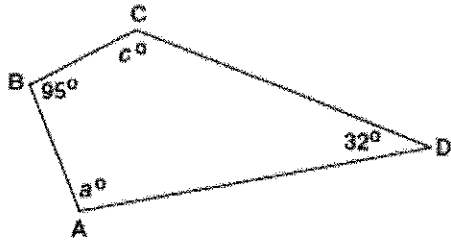
- 28) A regular polygon has 12 sides. What is the measure of each exterior angle?

- A 15°
 B 30°
 C 45°
 D 60°

- A $120^\circ + 110^\circ + x^\circ + 135^\circ + 155^\circ + x^\circ = 720^\circ$
 B $120^\circ + 110^\circ + x^\circ + 135^\circ + 155^\circ + x^\circ = 540^\circ$
 C $120^\circ + 110^\circ + x^\circ + 135^\circ + 155^\circ + x^\circ = 360^\circ$
 D $120^\circ + 110^\circ + x^\circ + 135^\circ + 155^\circ + x^\circ = 180^\circ$

29)

For the quadrilateral shown below, what is $m\angle a + m\angle c$?



- A 53°
- B 137°
- C 180°
- D 233°

31) If the measure of an exterior angle of a regular polygon is 120° , how many sides does the polygon have?

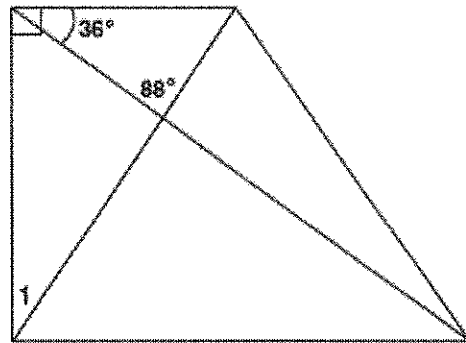
- A 3
- B 4
- C 5
- D 6

33) What is the measure of an exterior angle of a regular hexagon?

- A 30°
- B 60°
- C 120°
- D 180°

30) The measure of one interior angle of a regular polygon is two times the measure of one of its exterior angles. How many sides does this polygon have?

32) What is $m\angle 1$?



- A 34°
- B 56°
- C 64°
- D 92°