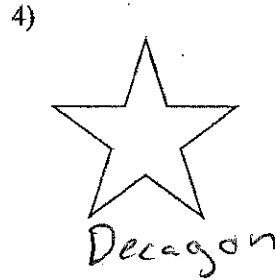
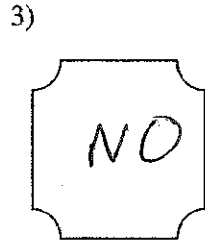
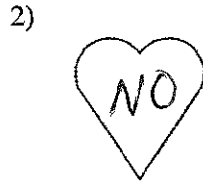
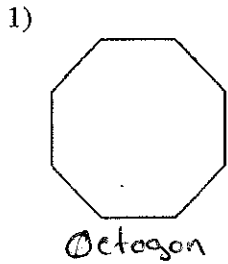


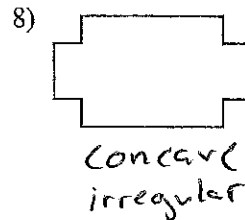
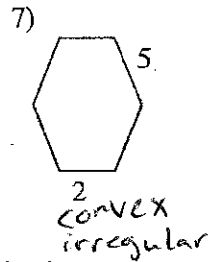
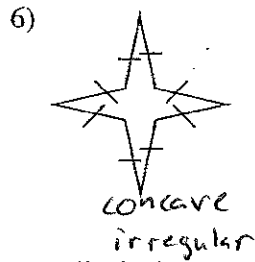
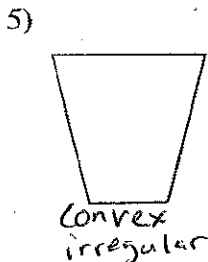
Polygons – Assignment

Answers

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



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



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

A. Concave equilateral pentagon



B. Concave trapezoid

NOPE

C. Irregular Equilateral triangle

NOPE

D. Convex irregular heptagon



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

A A. An equiangular triangle is a regular convex polygon

S B. A convex pentagon is a regular polygon

S C. A equilateral dodecagon is equiangular

A D. A concave polygon is irregular.

A E. Regular octagons are similar polygons.

A F. A dodecagon has 12 sides.

A 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	900	128.6	360	51.4
20-gon	3240	162	360	18
pentagon	540	108	360	72
Decagon	1440°	144	360	36
12-gon	1800	150	360	30
hexagon	720	120	360	60
nonagon	1260	140	360	40°
36-gon	6120	170	360	10
Triangle	180	60°	360	120
Quadrilateral	360	90	360	90°

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

13-gon

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

$\frac{360}{15}$ 24-gon

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

Pentagon

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

22-gon

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

$\frac{360}{24}$ 15-gon

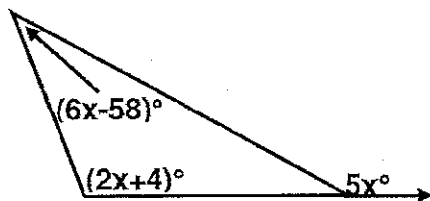
17) If each of the interior angles is 135° , what is the name of the polygon?

$\frac{360}{45}$ Octagon

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

$\frac{360}{40}$ Nonagon

19) Solve for x



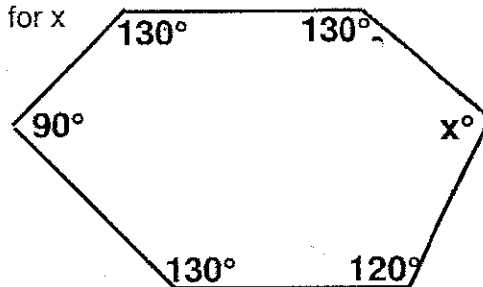
$$5x = 6x - 58 + 2x + 4$$

$$5x = 8x - 54$$

$$3x = 54$$

$$x = 18$$

20) Solve for x

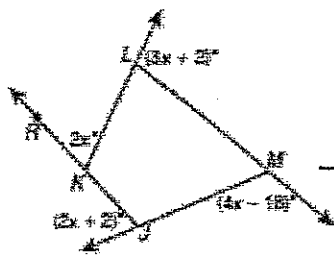


$$90 + 130 + 130 + 130 + 120 + x = 720$$

$$x + 600 = 720$$

$$x = 120$$

21) Find the measure of $\angle FKL$.



$$\begin{aligned} 2x \\ 3x + 2 \\ 4x - 18 \\ 2x + 2 \\ \hline 11x - 14 = 360 \\ 11x = 374 \\ x = 34 \end{aligned}$$

- A 34° C 86°
 B 68° D 148°

22)

Three interior angles of a convex heptagon measure 125° , and two of the interior angles measure 143° . Which are possible measures for the other two interior angles of the heptagon?

- F 48° and 48° H 100° and 116°
 G 39° and 109° J 89° and 159°

$$5 \cdot 180 = 900$$

$$\begin{aligned} 125 + 125 + 125 + 143 + 143 + x + y \\ 661 + x + y = 900 \\ x + y = 239 \end{aligned}$$

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

$$360 = 360$$

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?

$$75^\circ, 72^\circ, 66^\circ$$

$$x = 25$$

$$\begin{aligned} 3x + 3x + 2x + 22 + 2x + 22 + x + 41 = 360 \\ 11x + 85 = 360 \end{aligned}$$

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

Repeat

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

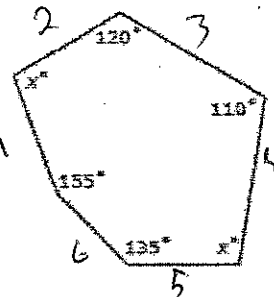
- A 28
 B 106
 C 170
 D 174

$$\begin{aligned} 20x - 20 = 540 \\ 20x = 560 \\ x = 28 \end{aligned}$$

27)

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

$$\begin{aligned} 4 \times 180 \\ 720 \end{aligned}$$



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

- A 15°
 B 30°
 C 45°
 D 60°

$$\frac{360}{12}$$

A $120^\circ + 110^\circ + x^\circ + 135^\circ + 155^\circ + x^\circ = 720^\circ$

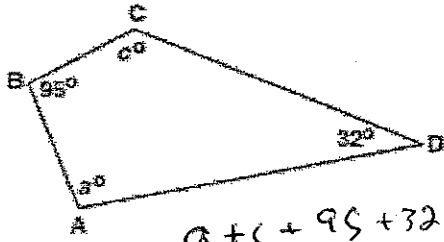
B $120^\circ + 110^\circ + x^\circ + 135^\circ + 155^\circ + x^\circ = 540^\circ$

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 $m\angle a + m\angle c$?



$$a + c + 95 + 32 = 360$$

$$a + c = 233$$

- A 53°
- B 137°
- C 180°
- D 233°**

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?

$$\text{exterior } \angle = x$$

$$\text{interior } \angle = 2x$$

$$x + 2x = 180$$

$$x = 60$$

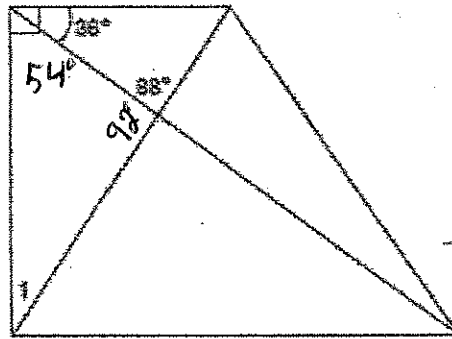
$$\frac{360}{60} = \boxed{6}$$

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

$$\frac{360}{120}$$

32) What is $m\angle 1$?



$$180$$

$$- 92$$

$$= 88$$

- A 34°**
- B 56°
- C 64°
- D 92°

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

- A 30°
- B 60°**
- C 120°
- D 180°

$$\frac{360}{6}$$