# Geometry Review Chapter 7

1) The measure of three of the angles of a quadrilateral are $40°$, $70°$, and $130°$. What is the measure of the 4th angle?

$\begin{array}{r} 360 \\ -240 \end{array}$  $\boxed{120°}$

2) What is the sum of the measures of the exterior angles, one per vertex, of a dodecagon?

$\boxed{360°}$

3) If the measure of an exterior angle of a regular polygon is $15°$, how many sides does the polygon have?

$E = \dfrac{360}{15} = \boxed{24°}$

4) If a polygon has 33 sides, what is
   a) The sum of the measures of the angles of the polygon?

   $180(33-2)$
   $180(31) = \boxed{5580}$

   b) The number of diagonals of the polygon?

   $\dfrac{33(33-3)}{2} = \dfrac{33(30)}{2} = \boxed{495°}$

   c) The sum of the measures of the exterior angles, one per vertex, of the polygon? $\boxed{360°}$

5) The sum of the measures of the angles of a polygon is $1620°$. How many sides does the polygon have?

$1620 = 180(n-2)$
$9 = n-2$
$\boxed{11 = n}$

6) The number of diagonals in a polygon is 44. How many sides does the polygon have?

$44 = \dfrac{n(n-3)}{2}$   $\begin{array}{l} 88 = n(n-3) \\ 88 = n^2 - 3n \\ 0 = n^2 - 3n - 88 \end{array}$   $\begin{array}{l} (n-11)(n+8) = 0 \\ \boxed{n = 11}, -8 \end{array}$

7) What is the measure of each angle in a regular octagon?

$ext \, \measuredangle = \dfrac{360}{8} = 45$      $int \, \measuredangle = 180 - 45$
$= \boxed{135°}$

8) What is the measure of each exterior angle in a regular dodecagon?

$E = \dfrac{360}{12} = \boxed{30°}$

9) If an interior angle of a regular polygon is $108°$, what is the measure of the exterior angle?

$E = 180 - 108$
$= \boxed{72°}$

10) If each exterior angle of a regular polygon is $60°$, how many sides does the polygon have?

$$60 = \frac{360}{n}$$

$$\boxed{n = 6}$$

11) If each interior angle of a regular polygon is $140°$, how many sides does the polygon have?

$$\text{int } \angle = 140$$
$$\text{ext } \angle = 40°$$

$$40 = \frac{360}{n}$$

$$\boxed{n = 9}$$

12) An exterior angle of a regular polygon is 1/3 the measure of an interior angle of the polygon. How many sides does the polygon have? What is the name of this polygon?

$$\frac{1}{3}x + x = 180$$
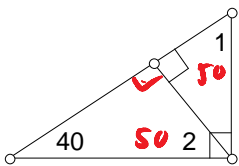
$$\frac{4}{3}x = 180$$

$$x = 135$$
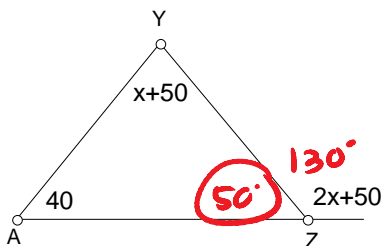
$$\text{ext } \angle = 45°$$

$$45 = \frac{360}{n}$$

$$\boxed{n = 8}$$

13) Given: Diagram as marked
    Find: $m\angle 1$ and $m\angle 2$



$$\boxed{\begin{array}{l} \angle 1 = 50° \\ \angle 2 = 50° \end{array}}$$

40    50  2

14) Given: Diagram
    Find: $m\angle YZA$



Y
x+50
130°
50°
40    2x+50
A        Z
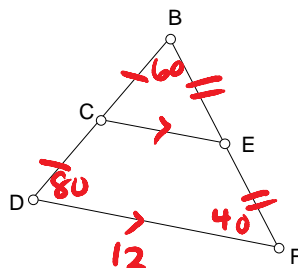
$$2x + 50 = x + 50 + 40$$
$$2x + 50 = x + 90$$
$$x = 40$$

$$\boxed{\angle YZA = 50°}$$

15) Given: C is the midpoint of $\overline{BD}$
    E is the midpoint of $\overline{BF}$
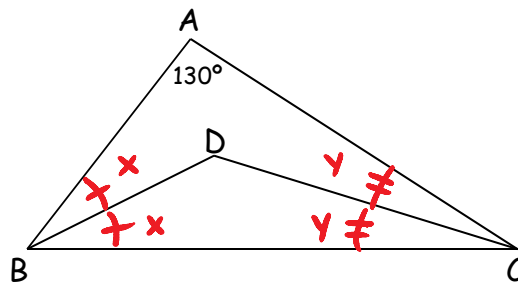    DF = 12
    $m\angle D = 80°$, $m\angle B = 60°$



B
60
C
80
E
D
40
12
F

Find: a. CE  $\boxed{6}$
      b. $m\angle BCE$  $\boxed{80°}$
      c. $m\angle BEC$  $\boxed{40}$

**16) Always, Sometimes, Never**

a. An equiangular triangle is isosceles.  **A**

b. The number of diagonals in a polygon is the same as the number of sides.  **N**

c. An equilateral polygon is regular.  **S**

d. An equiangular polygon is regular. **S**

e.  The exterior angle of a triangle is larger than any interior angle.  **S**

f. If you double the lengths of the sides of a triangle, then you double the measures of all the interior angles.  **N**

17)  In $\triangle ABC$, $m\angle A = 130^\circ$, and $\angle ABC$ and $\angle ACB$ have been bisected.  Find $m\angle D$.
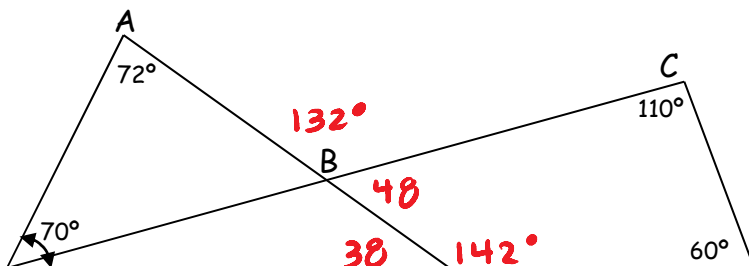


$$\frac{2x+2y}{2} = \frac{50}{2}$$

$$x + y = 25$$

$$x + y + \angle D = 180$$

$$25 + \angle D = 180$$

$$\boxed{\angle D = 155}$$

18)  The sum of five of the six angles of a hexagon is $650^\circ$.  What is the measure of the sixth angle?

$180(6-2)$

$180(4)$

$720^\circ$

$720 - 650 = \boxed{70^\circ}$

19) Find $m\angle ABC$.



$72^\circ$

$132^\circ$

$110^\circ$

$48$

$70^\circ$

$38$   $142^\circ$   $60^\circ$

$$\boxed{m \angle ABC = 132^\circ}$$

20) In a regular polygon, the measure of one exterior angle is 2 times as much as one interior angle. How many diagonals does this figure have?

$2x + x = 180$    ext $x = 120$
$3x = 180$
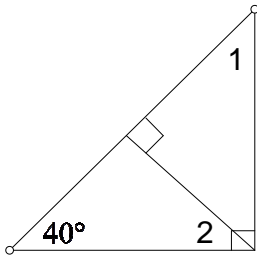$x = 60$        $120 = \dfrac{360}{n}$

$n = 3$

$\textcircled{0}$ - it is a triangle!
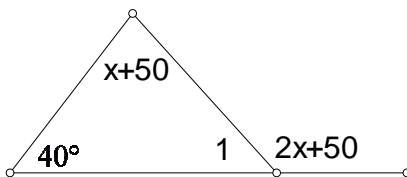
21) Find the measure of angles 1 and 2.



40°   2

REPEAT ☺

$\angle 1 = 50°$
$\angle 2 = 50°$

22) Find the measure of angle 1.



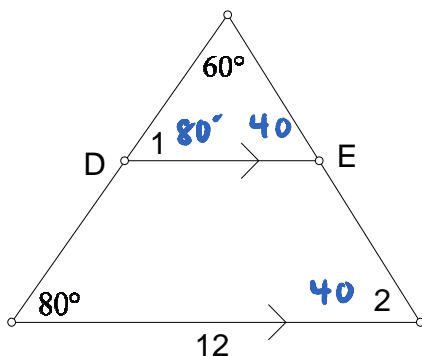x+50

40°   1   2x+50

REPEAT!

$50°$

23) Find the measure of angle 3.



30°

3

70°
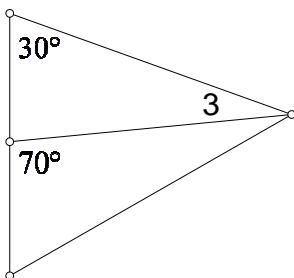
$70 = \angle 3 + 30$
$40 = \angle 3$

24) Find the measure of angles 1 and 2.



60°

1  80°  40

D           E

80°       40  2

12

REPEAT