8^{th} Polygons Solved Questions Paper

1.Q. Find the number of diagonals in an octagon?

Ans: Number Of Diagonals Of Polygon = n(n-3) / 2

Where n is Number Of Sides

Here n = 8

Diagonals= [8(8-3)5]/2 = 20

2.Q. Find the number of sides of a polygon whose each exterior angle is 45^0 .

Ans: Measure of Each Exterior Angle of a Polygon = 360/n

Each Exterior Angle = 45

45 = 360/n

Number of Sides = 360/45 =8

So Number of Sides = 8

3. Q. The sum of the interior angles of a regular polygon is 3 times the sum of its exterior angles. Determine the number of sides of the polygon.

Ans: sum of the interior angles of a regular polygon is 3 times the sum of its exterior angles.

We know that in a regular polygon sum of all the exterior angles = 360°

Therefore, sum of interior angles = 3 × 360° = 1080°

Again, we have sum of interior angles, S = (n - 2)180°, where n is the number of sides of the polygon

⇒ (n - 2)180° = 1080°

⇒ n - 2 = 6

⇒ n = 8

Hence, the polygon of 8 sides is octagon.

4. Q. (a) What is the minimum interior angle possible for a regular polygon? Why?
(b) What is the maximum exterior angle possible for a regular polygon?
Answer: The polygon with minimum number of sides is a triangle, and each angle of an equilateral triangle measures 60°, so 60° is the minimum value of the possible interior angle for a regular polygon. For an equilateral triangle the exterior angle is 180°-60°=120° and this is the maximum possible value of an exterior angle for a regular polygon.

5. Q. Find the measure of each exterior angle of a regular polygon of 9 sides.

Ans: Total measure of all exterior angles = 360
No. of sides = 9
Measure of each exterior angle = 360/9 = 40

6.Q. If the sum of the measures of the interior angles of a polygon equals the sum of the measures of the exterior angles, how many sides does the polygon have?

Ans:The sum of the measures of the interior angles of a polygon with n sides =$(n-2)x180^0$
The sum of the exterior angles of any polygon= 360^0

$(n-2)\ x180^0 = 360^0 \quad \Rightarrow \quad n=2+2=4$

7.Q. The sum of the interior angles of a regular polygon is:(n - 2) × 180° where n is the number of sides of the polygon.

Solution: The sum of its exterior angles of regular polygon= 360°

The exterior angle of a regular polygon

Interior angle of a regular polygon = sum of interior angles ÷ number of sides

8. Q.What is the measure of the each angle of regular Hexagon?

Ans: No. of sides in regular hexagon = 6

The measure of the each angle =$[(2n – 4)x90^0 /n]=[2x6-4]x90^0/6 =720^0 /6 =120^0$

9. Q. Find the number of sides of a polygon whose each interior angle is 156^0 .

Ans each exterior angle = 180 - 1560 = 24^0
Measure of Each Exterior Angle of a Polygon = 360/n

$\Rightarrow 24^0 = 360/n \quad \Rightarrow n = 360/24 =15$

10.Q. Two regular polygons are such that the ratio between their no. of sides is 1:2 and the ratio of measures of their interior angle is 3:4. Find the number of sides of each polygon.

Ans: let the number of sides are x and 2x

then their interior angles will be $[\{(2n-4)/n\}x90^0]$ and $[\{(4n-4)/n\}x90^0]$

A/Q, the ratio of measures of their interior angle = 3:4

$\Rightarrow [\{(2n-4)/n\}x90^0] \div [\{(4n-4)/n\}x90^0] = ¾$

On solving this we get , n=5

So, the numbers of sides are 5 and 2x5=10

