



The City School

MATHEMATICS WORKSHEET NO. 6

Class: 8

Topic: Angle properties of polygons/Constructions

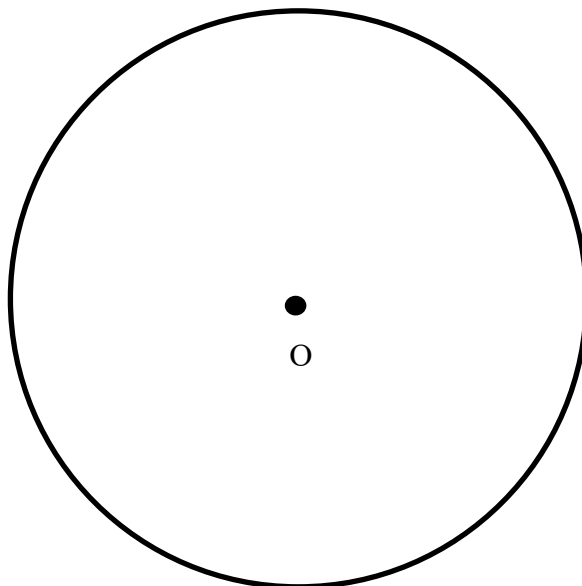
Construct a **regular polygon** using angle properties of polygons.

Steps of constructions:

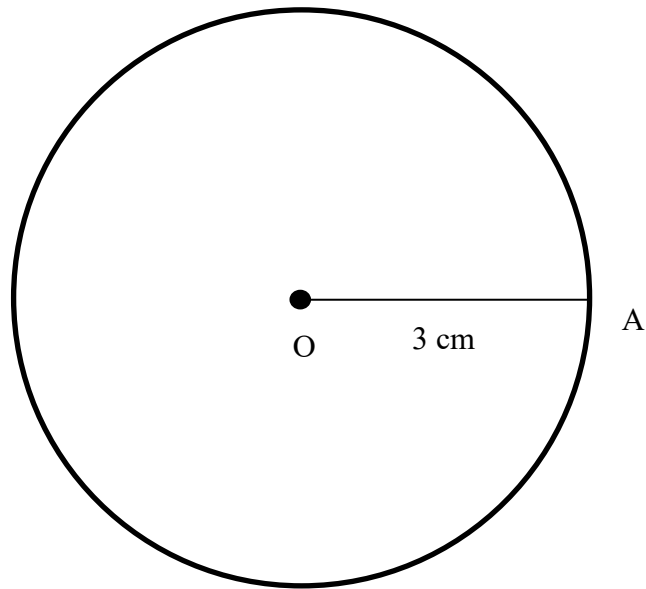
- 1- Draw a circle of radius r cm with centre 'O'
 - 2- Draw and mark the radius $OA = r$ cm.
 - 3- Calculate the central angle of the polygon as follows:
$$c^{\circ} = \text{central angle} = \text{exterior angle} = \frac{360^{\circ}}{n}$$
; n = number of sides of a polygon
 - 4- Construct angle $AOB = c^{\circ}$.
 - 5- With 'B' as centre and radius equal to AB draw an arc BC on the circumference of the circle. Continue marking arcs on the circumference of the circle till you reach the point A.
- (Hint: Number of arcs will be equal to the number of sides of the polygon.)
- 6- Join points A and B with a straight line and so on and so forth.
 - 7- ABCDE... is the required regular polygon.

Example: Draw a regular hexagon.

Step1: Draw a circle of radius 3 cm with centre 'O'



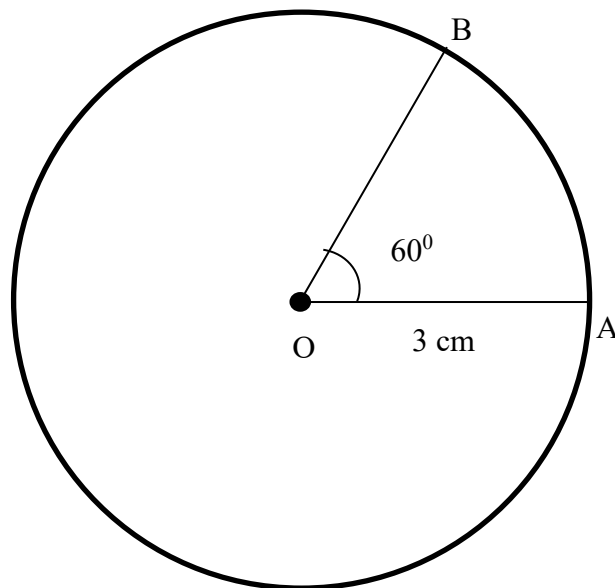
Step2: Draw and mark the radius OA = 3 cm.



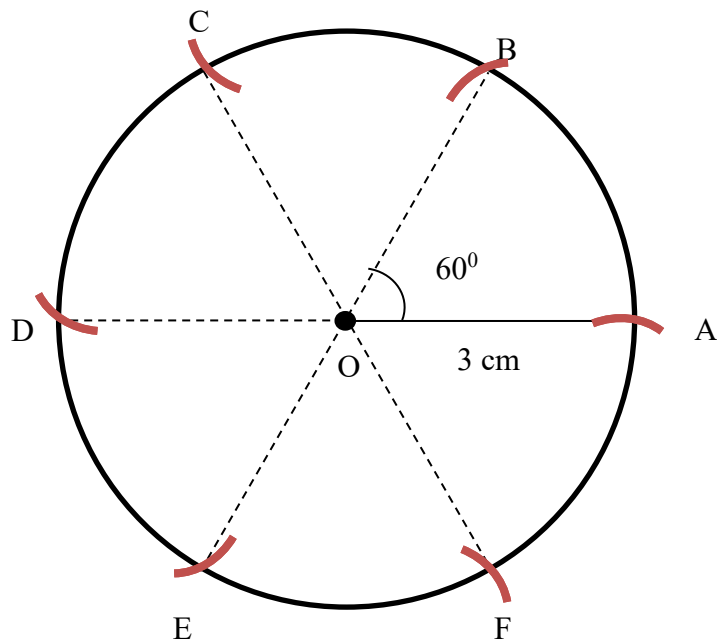
Step3: Calculate the central angle of the polygon as follows:

$$c^{\circ} = \text{central angle} = \text{exterior angle} = \frac{360^{\circ}}{6} = 60^{\circ}$$

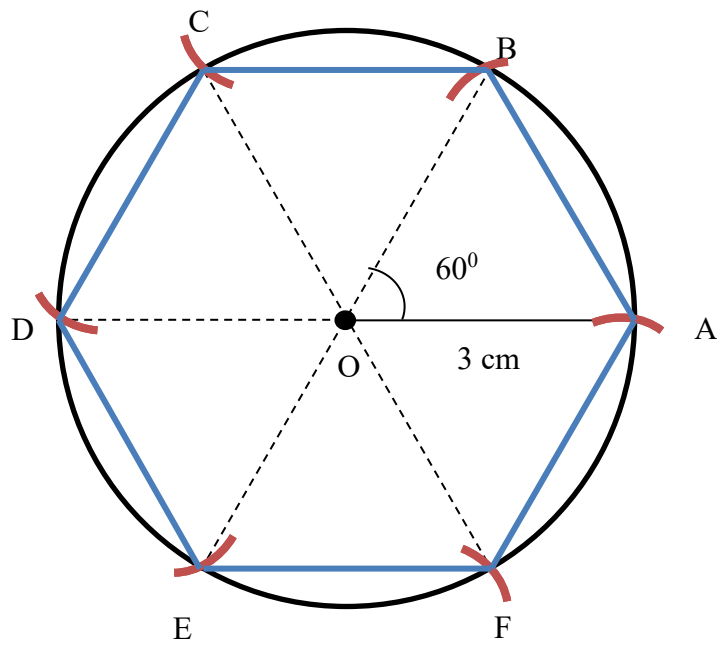
Step4: Construct angle AOB = 60°.



Step5: With 'B' as centre and radius equal to AB draw an arc BC on the circumference of the circle. Continue marking arcs on the circumference of the circle till you reach the point A.



Step6: Join points A and B with a straight line and so on and so forth.



Step 7: ABCDEFA is the required hexagon.

Practice Questions:

- 1- Draw a regular **triangle**.

2- Draw a regular **quadrilateral**.

3- Draw a regular **pentagon**.

4- Draw a regular **hexagon**.

5- Draw a regular **octagon**.