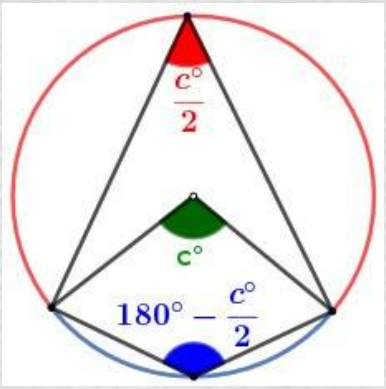
Online Class – X – 19 **04 / 08 / 2021**

2 . Circles – Class 7

To view class



Angles formed by an arc on the circle are

1. **Central angle of an arc**
2. **Angle on the alternate arc**
3. **Angle within the arc**

Assignment Answer

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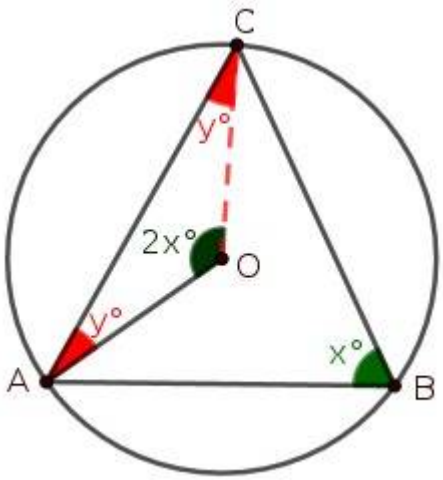
Q5)

Ans) Join OC

Let $\angle ABC = x^0$ and $\angle OAC = y^0$

Then $\angle AOC = 2x^0$

and $\angle OCA = y^0$



In ΔAOC,

$$2x^0 + y^0 + y^0 = 180^0$$

$$2x^0 + 2y^0 = 180^0$$

$$2(x^0 + y^0) = 180^0$$

$$\therefore x^0 + y^0 = \frac{180^\circ}{2} = 90^0$$

So, $\angle OAC + \angle ABC = 90^0$

Construction 1

a) Draw an angle of size $22\frac{1}{2}^0$

Ans)

Steps

Step1. Draw circle of radius 3cm (Any radius can be taken)

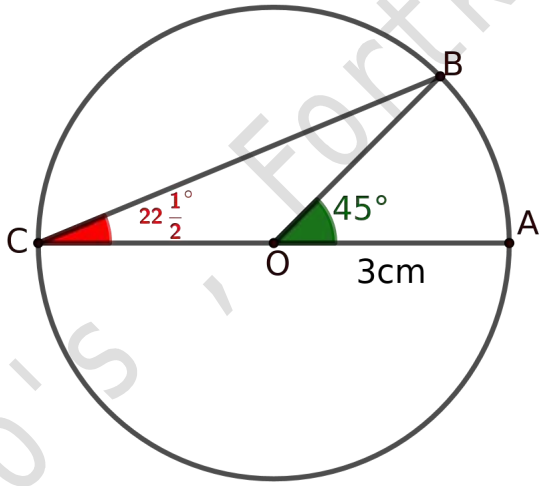
Step2. Draw radius OA

Step3. Measure 45^0 angle at O (Double of $22\frac{1}{2}^0$ is 45^0)

Step4. Draw OB

Step5. Extend AO to meet the circle at C

Step6. Join CB , we get ∠BCO as $22\frac{1}{2}^0$



b) Draw an angle of size $11\frac{1}{4}^0$.

Ans)

Steps

Step1. Draw circle of radius 3cm (Any radius can be taken)

Step2. Draw radius OA

Step3. Measure 45^0 angle at O (Double of $22\frac{1}{2}^0$ is 45^0)

Step4. Draw OB

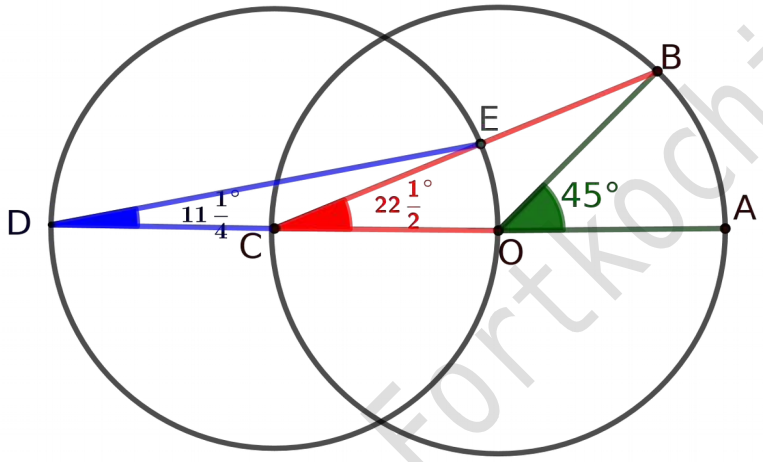
Step5. Extend AO to meet the circle at C

Step6. Join CB , we get ∠BCO as $22\frac{1}{2}^0$

Step7. With C as centre draw circle of radius 3cm .

Step8. Extend OC to meet the circle at D

Step9. Join DE , we get ∠EDC as $11\frac{1}{4}^0$



Construction 2

a) Draw a triangle of circum radius 3 centimetres and two of the angles 50 ° and 60 ° .

Ans)

Steps

Step1. Draw circle of radius 3cm

Step2. Draw radius OC

Step3. Measure 100^0 angle at O ***(Double of 50^0 is 100^0)***

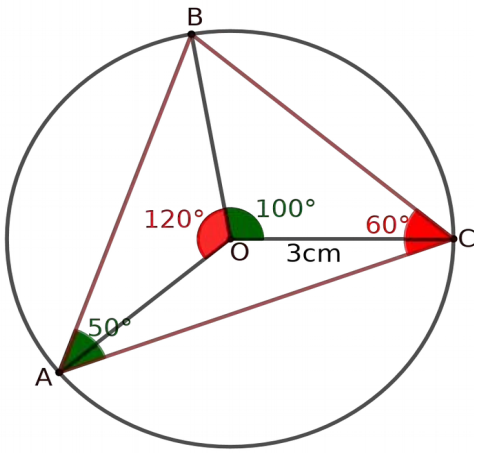
Step4. Draw OB

Step5. Measure 120^0 angle at O ***(Double of 60^0 is 120^0)***

Step6. Draw OA

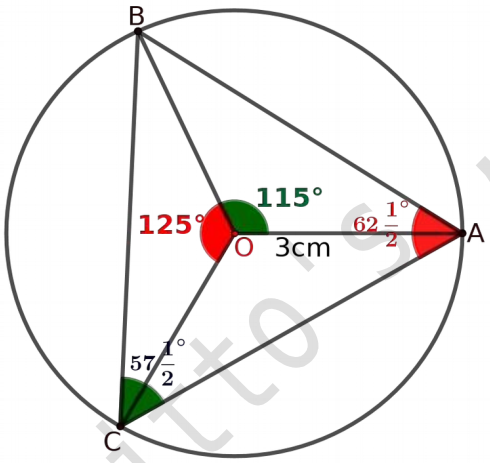
Step7. Join AB, BC, AC

Step8.We get Δ ABC with ∠A = 50^0, ∠C = 60^0



b) Draw a triangle of circumradius 3 centimetres and two of the angles $57\frac{1}{2}^{0}$ and $62\frac{1}{2}^{0}$.

Ans)



***Double of* $57\frac{1}{2}^{\circ}$ *is* 115^{0}**

***Double of* $62\frac{1}{2}^{\circ}$ *is* 125^{0}**

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Q3)

In each problem below, draw a circle and a chord to divide it into two parts such that the parts are as specified;

i) All angles on one part 80°.

ii) All angles on one part 110°.

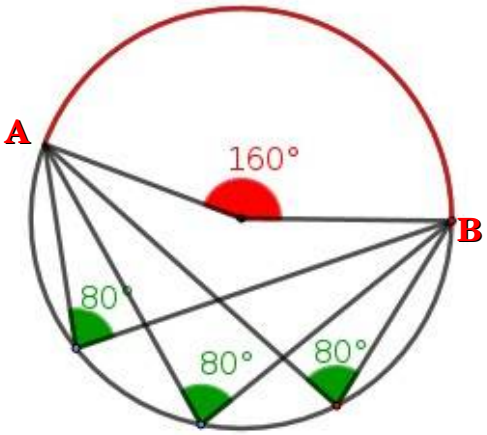
iii) All angles on one part half of all angles on the other.

iv) All angles on one part, one and a half times the angles on the other.

Ans)

i) Given all angles on one part 80°.

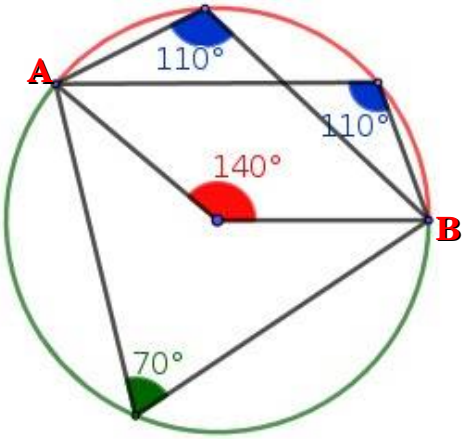
So the central angle of arc AB is double of $80^0 = 160^0$



Draw a circle .
Draw arc AB with central angle 160°.
All angles on one part of arc AB will be 80° .

ii) Given all angles on one part 110°

If angle on an arc is 110° , then
angle on its alternate arc is 180° – 110° = 70°
Central angle of arc AB is 2 × 70° = 140°



Draw a circle .
Draw arc AB with central angle 140°.
All angles on one part of the arc AB will be 70° and
All angles on the other part will be 110°.

iii) Given all angles on one part is half of all the angles on the other part.

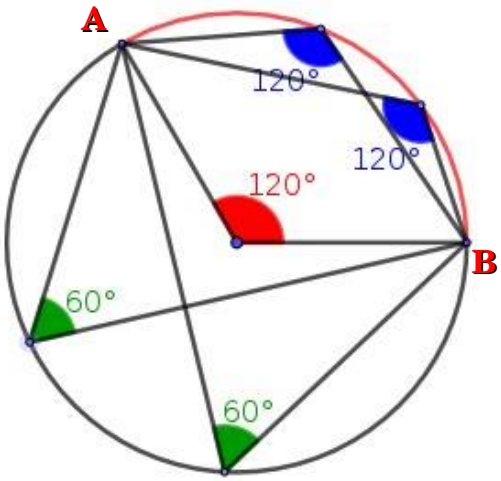
So, if angle on one part is x° ,then angle on other part is 2x°.

We have x° + 2x° = 180°

3x° = 180°

$$x^\circ = \frac{180^\circ}{3} = 60^\circ$$

Angle on one part is 60° .
So central angle of arc AB is 2 × 60° = 120°
If angle on an arc is 60° , then
angle on its alternate arc is 120° .



Draw a circle .
Draw arc AB with central angle 120°.
All angles on one part of the arc will be 60° and
All angles on the other part will be 120°.

iv) Given all angles on one part is one and a half times the angles on the other part.
So , if angle on one part is x° ,
then angle on the other part is $1\frac{1}{2}x^\circ = \frac{3}{2}x^\circ$

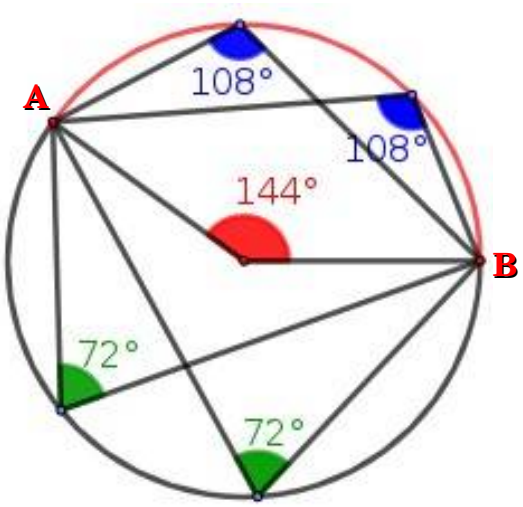
We have $x^\circ + \frac{3}{2}x^\circ = 180^\circ$

$$\frac{5x}{2} = 180^\circ$$

$$5x^\circ = 180^\circ \times 2 = 360^\circ$$

$$x^\circ = \frac{360^\circ}{5} = 72^\circ$$

Angle on one part is 72° .
So central angle of arc is 2 × 72° = 144°
If angle on an arc is 72° , then
angle on its alternate arc is 180°– 72° = 108°



Draw a circle .
Draw arc AB with central angle 144°.
All angles on one part of the arc will be 72° and
All angles on the other part will be 108°.