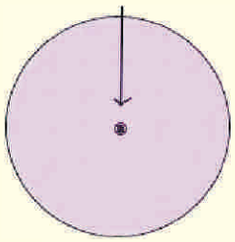
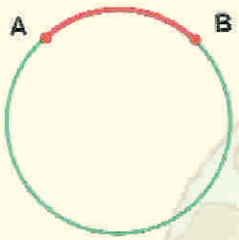
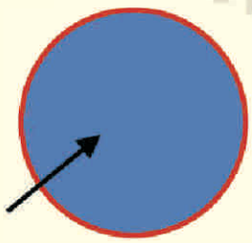
CHAPTER-10

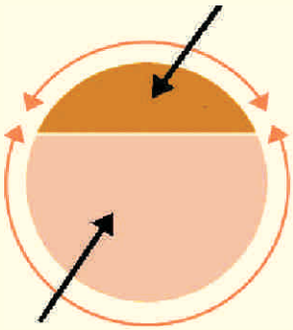
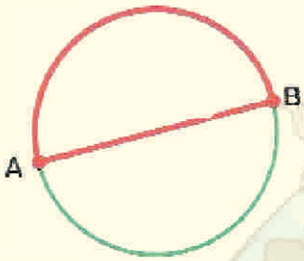
Circles

Suggested Formative Assessment Tasks

Task-1: Figures Speak

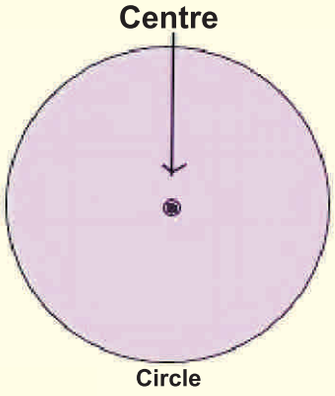
Topic	Circles
Nature of task	Pre Content
Content Coverage	Definition and basic terms related to circle viz. interior, exterior, circular region, radius, diameter, arc, minor arc, major arc, segment, minor segment, major segment
Learning Objectives	Recall and review Definition and basic terms related to circle.
Task	Figures Speak
Execution of task	Each student would be given the activity sheet. They would be then asked to write an appropriate word for the given picture.
	Teacher may draw these figures on the chalk board also.
Duration	1 period
Criteria for assessment	This is just a fun activity. Students are aware of these terms.
Follow up	Teacher may use the given flash cards for review and recall.

Figure	Write a suitable word corresponding to each figure.
	
	
	
	

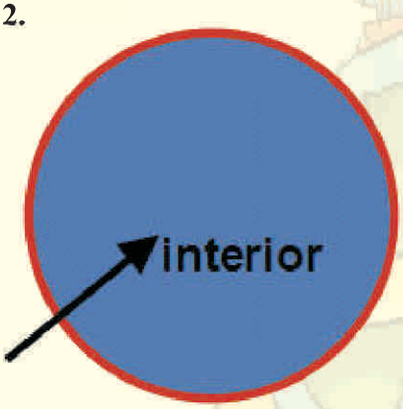
	
	

Flash cards

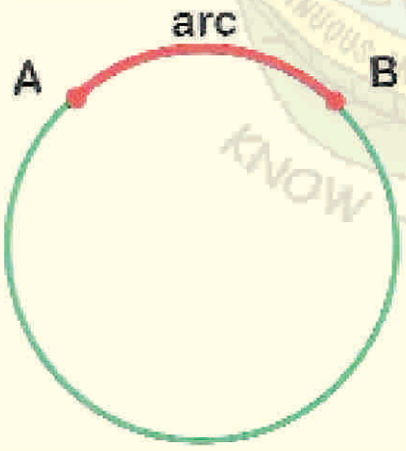
1.



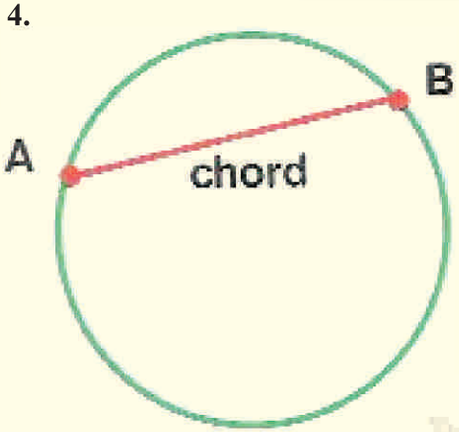
2.



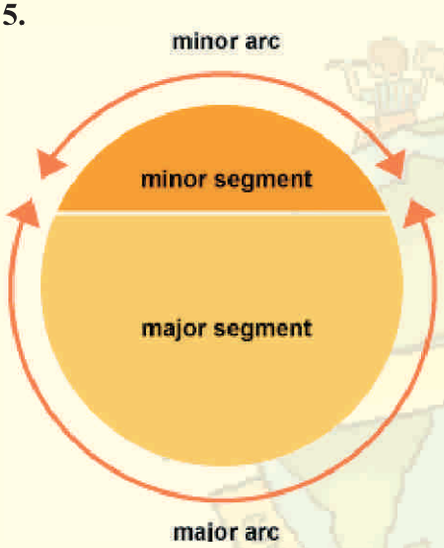
3.



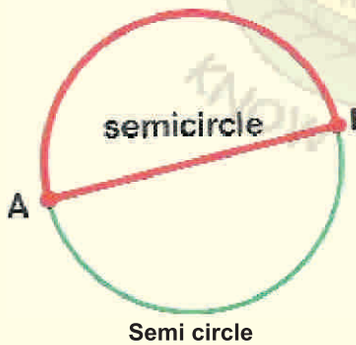
4.


B
A
chord

5.


minor arc
minor segment
major segment
major arc

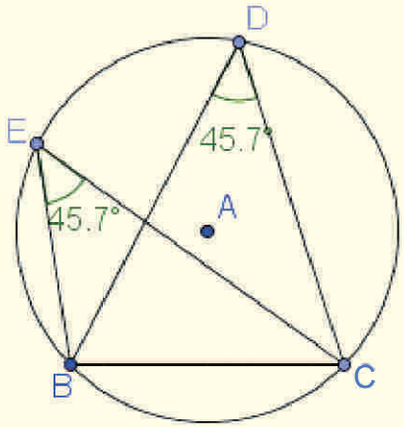
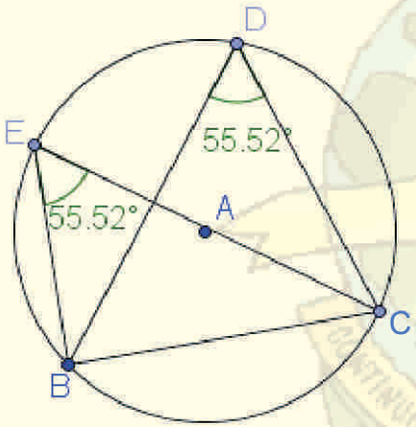
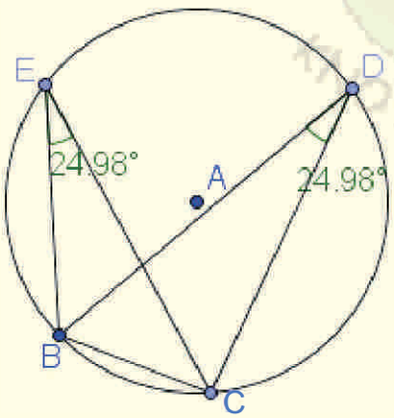
6.

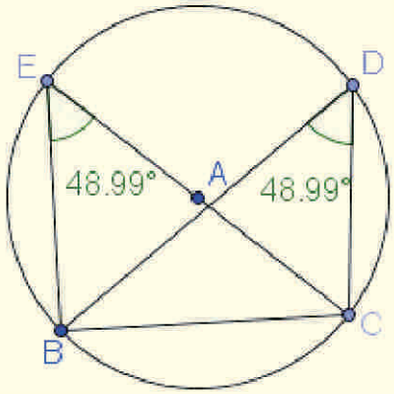

semicircle
B
A
Semi circle

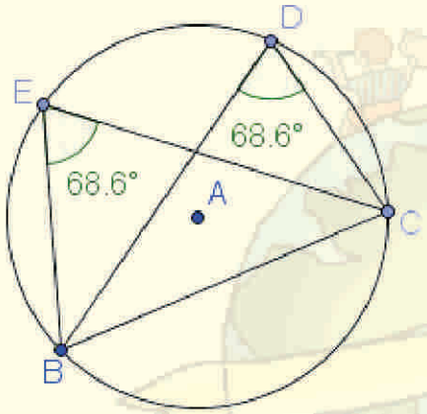
Task-2: Observe and answer

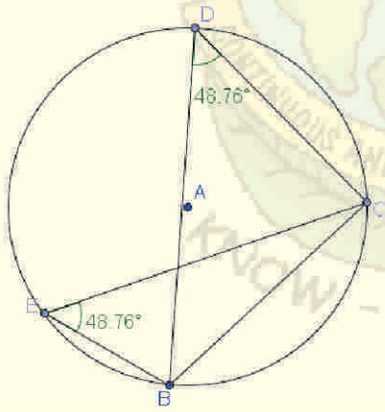
Topic	Circles
Nature of task	Content
Content Coverage	Angles in the same segment
Learning Objectives	To appreciate the theorem angles in the same segment of a circle are equal. (Students would come to learn this relationship through given activity)
Task	Figures Speak
Execution of task	Each student would be given the activity sheet. They would be then asked to write to fill in the missing entries in the columns.
	Teacher may draw these figures on the chalk board also.
Duration	1 period
Criteria for assessment	Teacher may make a note of record of students who are able to make the correct observation and write the result. It's a part of C.W. assessment.
Follow up	Hands on activity

In each of the figures given below in the table fill the missing column entries. What specifically do you notice about the two labeled angles?

Figures	∠BEC	∠BDC	Relationship between ∠BEC and ∠BDC
			
			
			


E
D
48.99°
A
48.99°
B
C


D
E
68.6°
68.6°
A
C
B

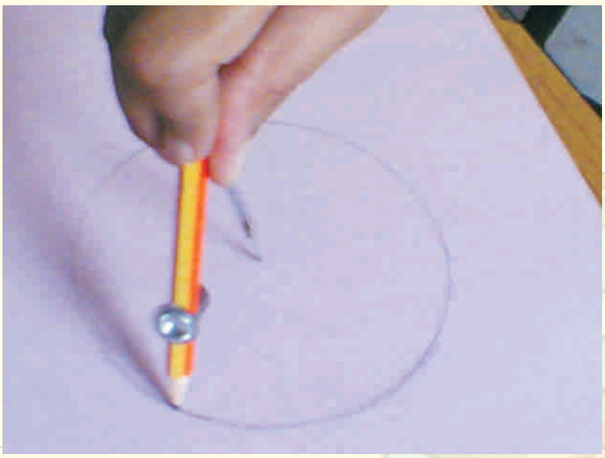

D
48.76°
A
C
E
48.76°
B

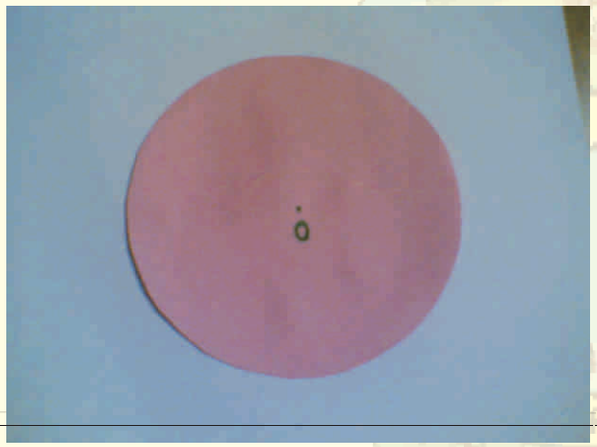
Follow up Hands on

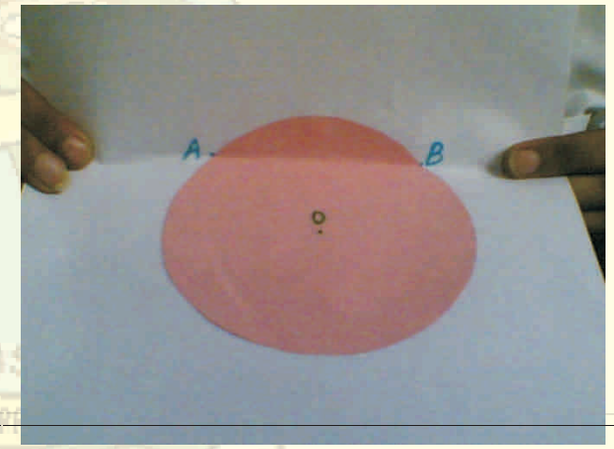
Activity Instruction sheet

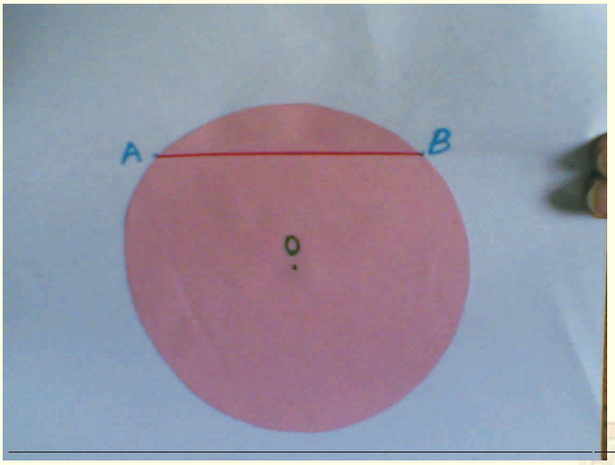
Aim: To verify by paper cutting and pasting "Angles in the same segment of a circle are equal"

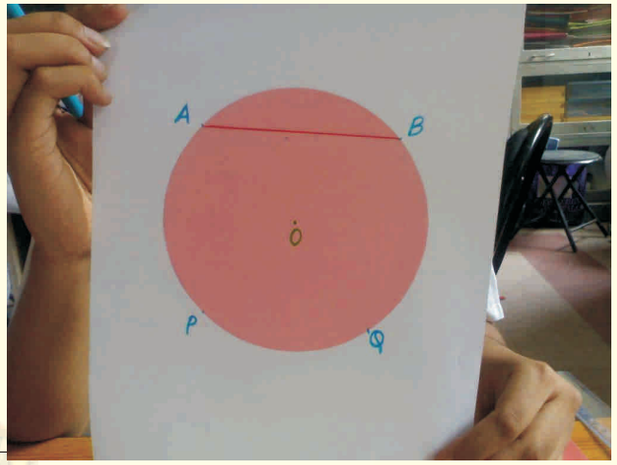
Observe the following pictures and perform hands on…

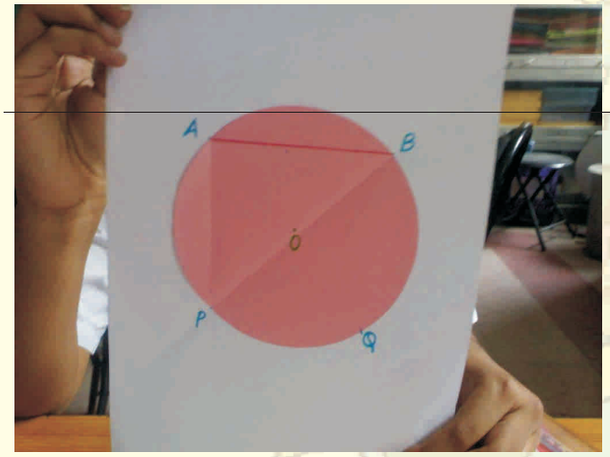


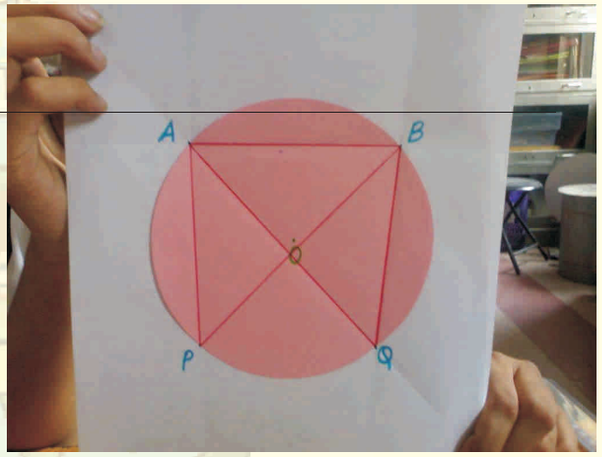


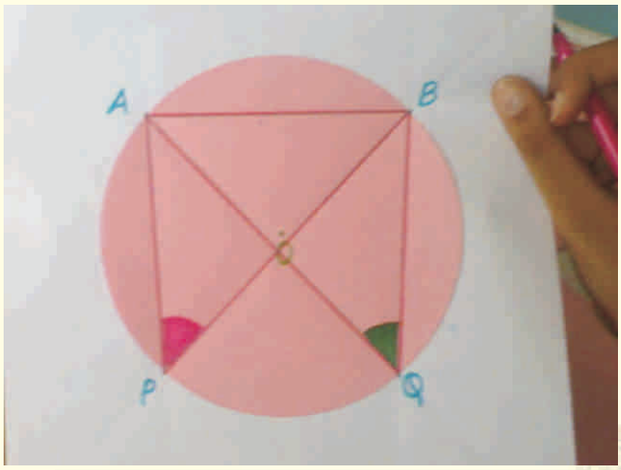


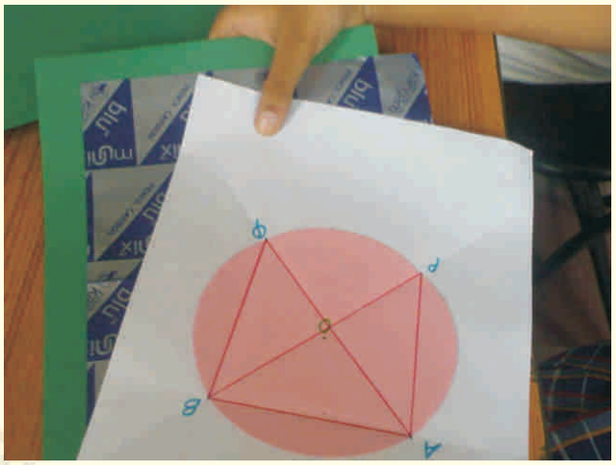


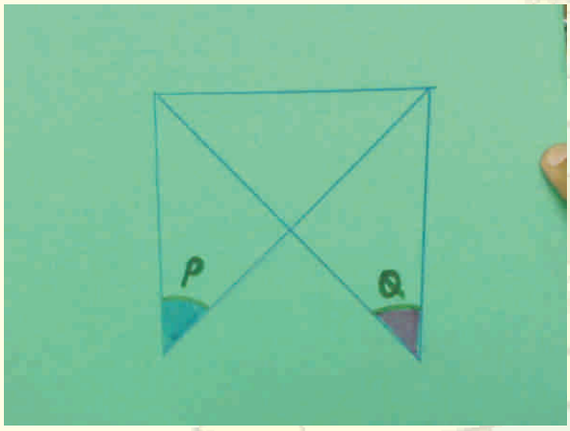


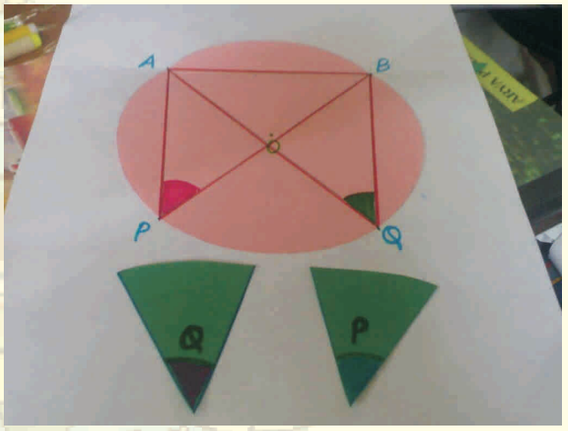


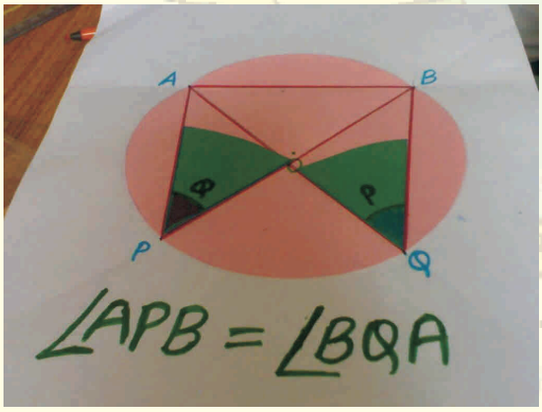










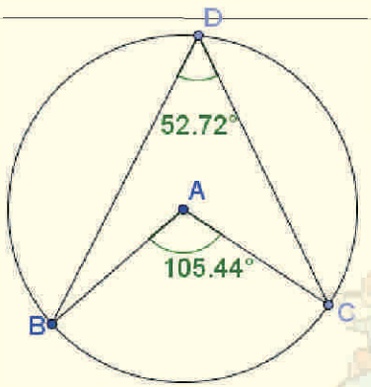
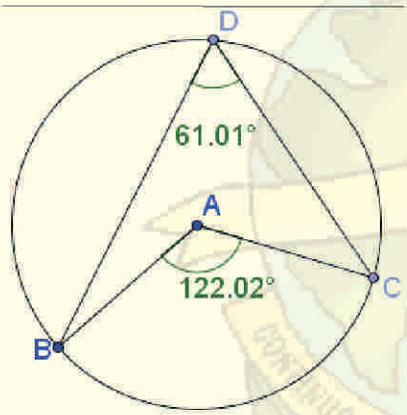
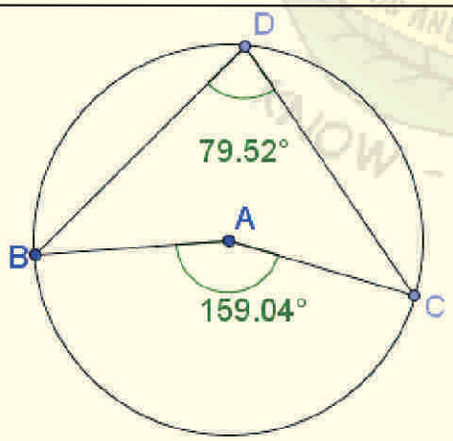


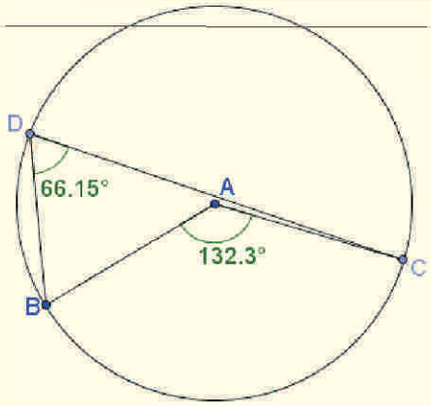
What do you observe?

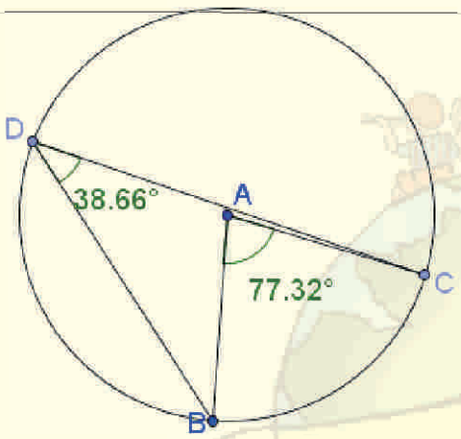
Task-3: Figures Speak

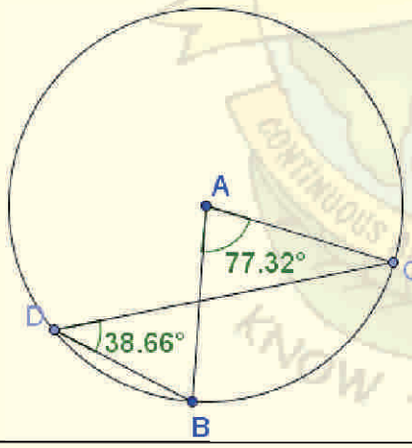
Topic	Circles
Nature of task	Content
Content Coverage	Angles subtended by an arc
Learning Objectives	To appreciate the theorem angle subtended by an arc at the centre of a circle is twice the angle subtended by the same arc at any other point on the remaining part of the circle. (Students would come to learn this relationship through given activity)
Task	Figures Speak
Execution of task	Each student would be given the activity sheet. They would be then asked to write to fill in the missing entries in the columns. Teacher may draw these figures on the chalk board also.
Duration	1 period
Criteria for assessment	Teacher may make a note of record of students who are able to make the correct observation and write the result. It's a part of C.W. assessment.
Follow up	–

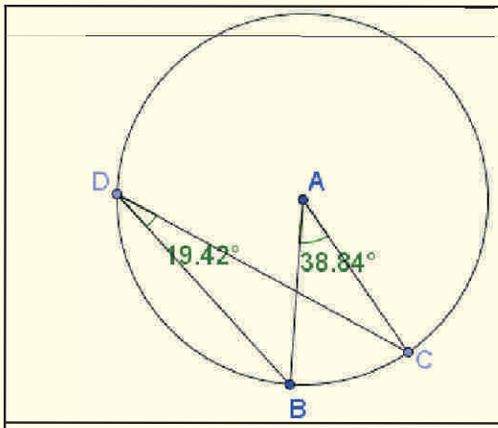
In the figures given below, ∠BAC is angle subtended by arc BC at the centre and ∠BDC is the angle subtended by the same arc at point D on the circumference. What specifically do you notice from the relationship between the two angles?

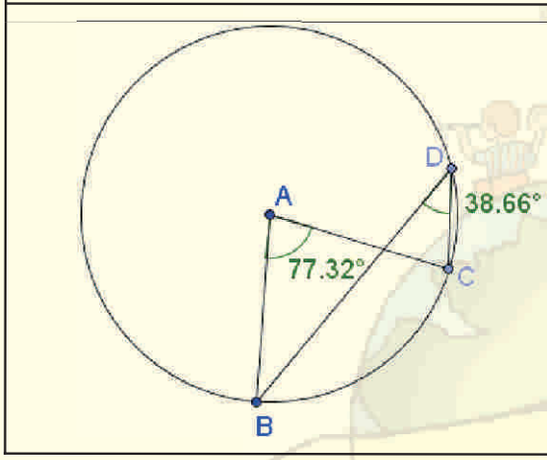
Figures	∠BAC	∠BDC	Relationship between ∠BAC and ∠BDC
			
			
			


D
66.15°
A
132.3°
C
B


D
38.66°
A
77.32°
C
B


A
77.32°
C
D
38.66°
B



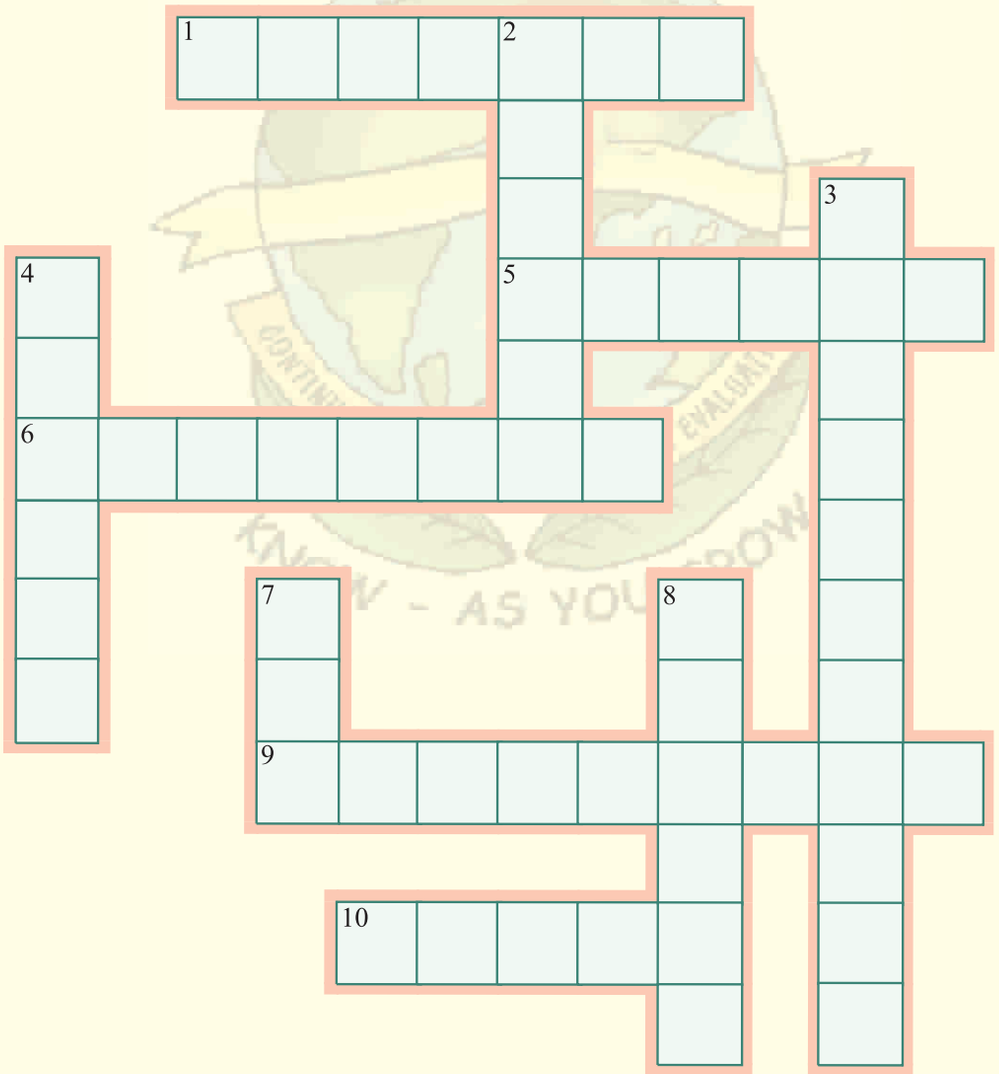


Note: Teacher may prepare such types of figures speak tasks for the other geometrical results. It helps in not only learning but also retaining the concept for longer.

Task-4: Crossword

Topic	Circles
Nature of task	Pre Content
Content Coverage	Basic term related to circles and statement of theorems
Learning Objectives	• To recall basic term related to circles • To revise statement of theorems related to circles
Execution of task	The teacher may provide printed Crossword Sheet to the students. Each students would be given 10 minutes for solving the Crossword.
Duration	1 period
Criteria for assessment	1 mark for each correct answer can be alloted.

Given below are some suggested post content tasks which may be utilized for recapitulation purpose. It is not necessary to give marks for such tasks.



Across

1. perpendicular from centre of a circle to a chord ..... the chord
5. sum of pair of opposite angles of ..... quadrilateral is 180 degrees
6. longest chord
9. ..... arcs of a circle subtend equal angles at the centre
10. equal chord subtends ..... angles at the centre

Down

2. collection of points in a plane equidistant from a fixed point
3. angle in a semi circle
4. half of the diameter
7. part of a circle
8. angle subtended by an arc at centre of a circle is ..... the angle subtended by it in remaining part of circle.

Task-5: Oral Assessment

Topic	Circles
Nature of task	Pre Content
Content Coverage	• Basic term related to circles • Statement of Theorems
Learning Objectives	• To test the thinking skills, communication skills, understanding of concept of the student.
Execution of task	Oral Assessment can be an ongoing activity from beginning of Chapter till its completion.
Criteria for assessment	Follow Oral Assessment rubric.

Suggested questions for oral assessment

1. Define circle.
2. Define circular region.
3. Differentiate between circumference and chord of a circle.
4. What does a theorem regarding angles subtended by equal chords in a circle say?
5. If the angles subtended by an arc at centre of a circle measures 100°. What would be the measure of the angle subtended by the same arc at a point of major arc or minor arc?
6. How would you find the measure of the angles of a cyclic Quadrilateral if only 2 angles of the quadrilateral are given, which are not opposite angles?
7. What is the relationship between chord of a circle and a perpendicular drawn to it from the centre?
8. When is a quadrilateral said to be cyclic?

Task-6: Fill in the blanks.

Topic	Circles
Nature of task	Pre Content
Content Coverage	• Basic term related to circles • Statement of Theorems
Learning Objectives	• To test the thinking skills, communication skills, understanding of concept of the student.
Execution of task	The teacher may write the exercise on the board or dictate in class room.
Criteria for assessment	Teacher may give 1 mark for each correct answer.

Suggested Fill up the blanks exercise

i. Equal chords of a circle (or congruent circles) are ..... from the centre.

ii. The line drawn through the centre of a circle to bisect a chord is ..... to the chord.

iii. There is one and only one circle passing through three given ..... points.

iv. Chords equidistant from the centre of a circle are ..... in length.

v. The ..... from the centre of a circle to a chord bisects the chord.

vi. The sum of either pair of opposite angles of a ..... quadrilateral is 180°.

vii. Angle in a semicircle is a ..... angle.

viii. Angles in the same segment of a circle are .....

ix. ..... arcs of a circle subtend equal angles at the centre.

x. Angle subtended by an arc at the centre of a circle is ..... the angle subtended by the same arc at any other point on the remaining part of the circle.

Please note : Formative assessment tasks are meant for learning. It is not always necessary to assess all of them.

Task-7: MCQ Worksheet

Topic	Circles
Nature of task	Pre Content
Content Coverage	Complete Chapter
Learning Objectives	• To recall basic terms related to circles.
Execution of task	The teacher may give printed worksheet to the students.
Duration	1 period
Criteria for assessment	• For each correct answer 1 mark may be alloted. • In case MCQ is used as practise worksheet then it is not necessary to assign marks.
Follow up	Class room discussion. Answers to the questions and common errors may be discussed in the class.

Multiple Choice Questions

1. Distance of chord AB from the centre is 12 cm and length of the chord is 10 cm. Then diameter of the circle is

A. 26 cm B. 13 cm C. $\sqrt{244}$ cm D. 20 cm

2. Two circles are drawn with side AB and AC of a triangle ABC as diameters. Circles intersect at a point D, Then

A. $\angle$ADB and $\angle$ADC are equal B. $\angle$ADB and $\angle$ADC are compementary

C. Points B, D, C are collinear D. none of these

3. The region between a chord and either of the arcs is called

A. an arc B. a sector C. a segment D. a semicircle

4. A circle divides the plane in which it lies, including circle in

A. 2 parts B. 3 parts C. 4 parts D. 5 parts

5. If diagonals of a cyclic quadrilateral are the diameters of a circle through the vertices of a quadrilateral, then quadrilateral is a

A. parallelogram B. square C. rectangle D. trapezium

6. Given three non collinear points, then the number of circles which can be drawn through these three points are

A. one B. zero C. two D. infinite

7. In a circle with centre O, AB and CD are two diameters perpendicular to each other. The length of chord AC is

A. 2 AB B. $\sqrt{2}$ AB C. $\frac{1}{2}$ AB D. $\frac{1}{\sqrt{2}}$ AB

8. If AB is a chord of a circle, P and Q are the two points on the circle different from A and B, then

A. $\angle APB = \angle AQB$

B. $\angle APB + \angle AQB = 180^\circ$

C. $\angle APB + \angle AQB = 90^\circ$

D. $\angle APB + \angle AQB = 180^\circ$

Task-8: Home Assignment

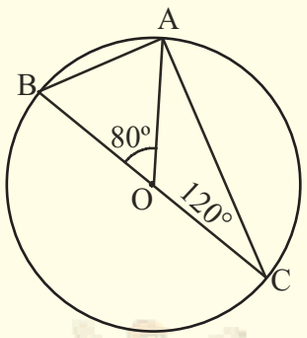
Topic	Circles
Nature of task	Pre Content
Content Coverage	Complete Chapter
Learning Objectives	• To apply knowledge gained on the topic circles to solve question.
Execution of task	For extra practise of content taught, home assignment can be given after the completion of Chapter
Duration	2 to 3 days
Criteria for assessment	Follow CW / HW / assignment rubric.
Follow up	Class discussion. Answers to the questions may be discussed in class room and individual queries may be answered.

Home Assignment

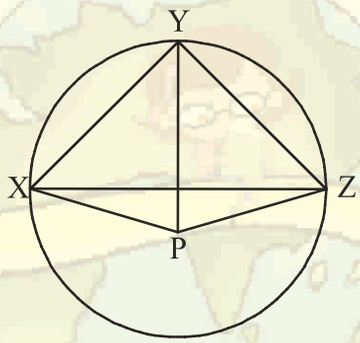
1. Two circles with centres A and B intersect at C and D. Prove that $\angle ACB = \angle ADB$

2. Bisector AD of $\angle BAC$ of ΔABC passes through the centre of the circumcircle of ΔABC. Prove that AB = AC.

3. In fig. A, B, C are three points on a circle such that the angles subtended by the chords AB and AC at the centre O are 80º and 120º respectively. Determine $\angle BAC$.



4. In the fig. P is the centre of the circle. Prove that: $\angle XPZ = 2(\angle XZY + \angle YXZ)$.

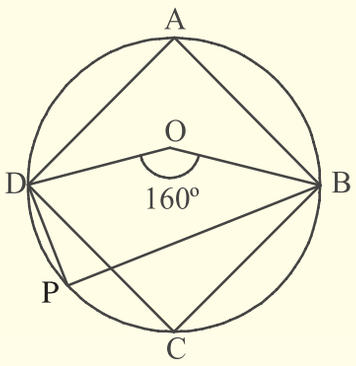


5. Prove that the circle drawn with any side of a rhombus as a diameter, passes through the point of its diagonals.

6. Bisetors of angles A, B and C of a triangles ABC intersect its circumcircle at D, E and F respectively. Prove that the angles of ΔDEF are $90°-\frac{A}{2}$, $90°-\frac{B}{2}$ and $90°-\frac{C}{2}$

7. Prove that the mid-point of the hypotenuse of a right triangle is equidistant from its vertices.

8. In Fig. ABCD is a cyclic quadrilateral, O is the centre of the circle. If $\angle BOD = 160^\circ$, Find $\angle BPD$.



9. Prove that in a triangle if the bisector of any angle and the perpendicular bisector of its opposite side intersect, they will intersect on the circumcircle of the triangle.

10. The diagonals of a cyclic quadrilateral arc at right angles. Prove that perpendiculars from the point of their intersection on any side when produced backward bisect the opposite side.