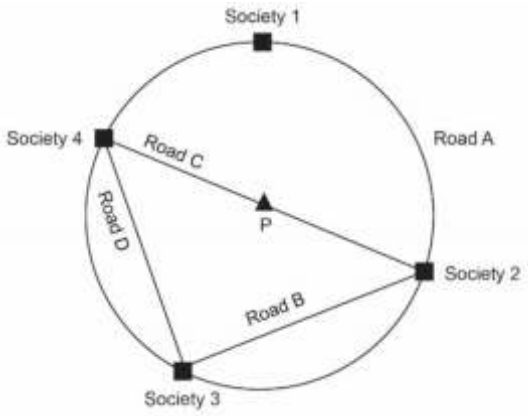
# Curriculum Aligned Competency Based Test Items
# Mathematics
# Class 9 – Chapter 10
# Circles

Given below is the map giving the position of four housing societies in a township connected by a circular road A.




Society 2 and 3 are connected by straight road B, society 4 and 2 are connected by straight road C and society 4 and 3 are connected by road D. Point P denotes the position of a park. The park is equidistant to all four societies.
Rubina claims that it is not possible to construct another circular road connecting all four societies.

SAS21M09S1001

**1** Which of the following options justifies Rubina's claim?

A. Equal chords of congruent circles subtend equal angles at the centre.
B. The perpendicular from the centre of a circle to a chord bisects the chord.
C. There is a unique circle passing through three non-collinear points.
D. Points equidistant from a given point will lie on a circle.

SAS21M09S1002

**2** What is the position of the park P with respect to road A?

A. Chord
B. Centre
C. Sector
D. Segment

SAS21M09S1003

3 The length of Road B is equal to the length of Road D.
Which of the following options can be true for the roads in the township?

A. Road B bisects Road D.
B. Road B and Road make an acute angle.
C. Road B, Road C and Road D are of equal length.
D. Road B and Road D subtend equal angles at society 1.

SAS21M09S1004

4 Alex says, "The angle made by road B on road D is a right angle."
Jai and Angad give different justifications to support Alex's claim.
Jai says, "Angles in the same segment of a circle are equal."
Angad says, "The angle in a semicircle is a right angle."
Who has given the correct justification?

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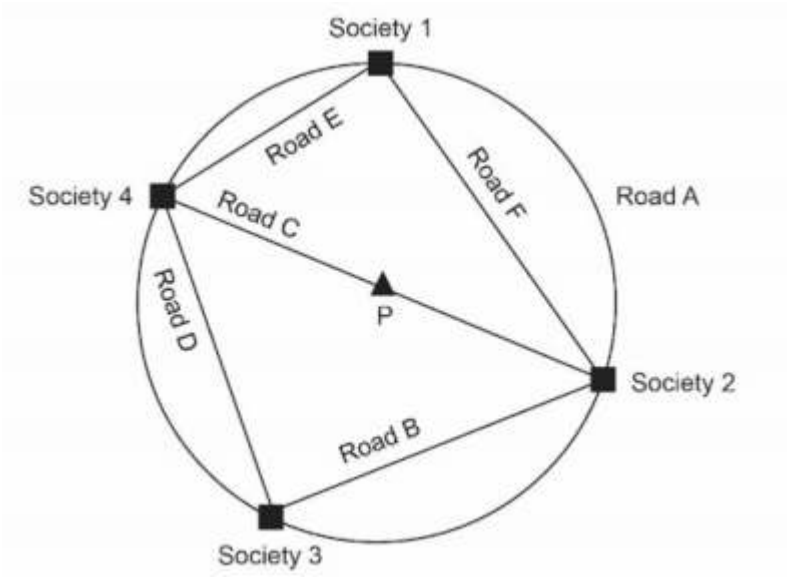
Two new roads, Road E and Road F were constructed between society 4 and 1 and society 1 and 2.




SAS21M09S1005

5 What would be the measure of the sum of angles formed by the straight roads at society 1 and society 3?

A. 60°
B. 90°
C. 180°
D. 360°

SAS21M09S1006

6 Krish says, "The distance to go from society 4 to society 2 using Road D will be longer that the distance using Road E"
Is Krish correct? Justify your answer with examples.

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SAS21M09S1007

7 Road G, perpendicular to Road F was constructed to connect the park and Road F.
Which of the following is true for Road G and Road F?

A. Road G and road F are of same length.
B. Road F divides Road G into two equal parts.
C. Road G divides Road F into two equal parts.
D. The length of road G is one-fourth of the length of Road F.

SAS21M09S1008

8 Priya said, "Minor arc corresponding to Road B is congruent to minor arc corresponding to Road D."
Do you agree with Priya? Give reason to support your answer.

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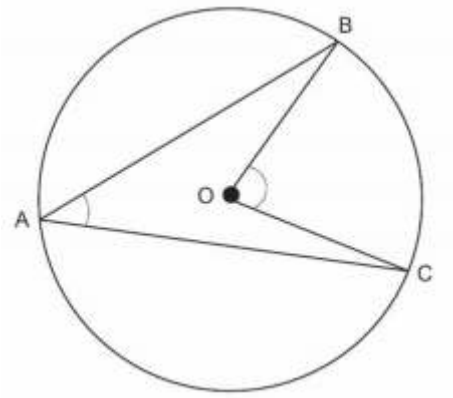
Given below is the figure of a circle with centre O.
The measure of ∠BOC = 88°.




SAS21M09S1009

9 What is the measure of ∠BAC?

A. 44°
B. 60°
C. 88°
D. 176°

SAS21M09S1010

10 Priya claims, "The length of OB is equal to the length of OC."
Siya and Aditi provide different justifications for Priya's claim.
Siya says, "OB and OC are radii of the same circle."
Aditi says, "OC is the base of ∠BOC."

Who has given the correct justification for Priya's claim?

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# Answers



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|---|---|
| **Item Number** | Question 1 |
| **Question Code** | SAS21M09S1001 |
| **Grade & Chapter Name** | Grade 9 \| Circles |
| **Concept \| Sub-concept** | Geometry \| Circles (Circle through Three Points) |
| **Competency** | Interpret and Evaluate |
| **Item Type** | Multiple Choice Question |
| **Full Credit (Full Score)** | C. There is a unique circle passing through three non-collinear points. |
| **No Credit (No Score)** | Any other response or missing response |

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| **Item Number** | Question 2 |
| **Question Code** | SAS21M09S1002 |
| **Grade & Chapter Name** | Grade 9 \| Circles |
| **Concept \| Sub-concept** | Geometry \| Circles (Circles and Its Related Terms) |
| **Competency** | Formulate |
| **Item Type** | Multiple Choice Question |
| **Full Credit (Full Score)** | B. Centre |
| **No Credit (No Score)** | Any other response or missing response |

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| **Item Number** | Question 3 |
| **Question Code** | SAS21M09S1003 |
| **Grade & Chapter Name** | Grade 9 \| Circles |
| **Concept \| Sub-concept** | Geometry \| Circles (Perpendicular from the Centre to a Chord) |
| **Competency** | Interpret and Evaluate |
| **Item Type** | Multiple Choice Question |
| **Full Credit (Full Score)** | D. Road B and Road D subtend equal angles at society 1. |
| **No Credit (No Score)** | Any other response or missing response |

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| **Item Number** | Question 4 |
| **Question Code** | SAS21M09S1004 |
| **Grade & Chapter Name** | Grade 9 \| Circles |
| **Concept \| Sub-concept** | Geometry \| Circles (Perpendicular from the Centre to a Chord) |
| **Competency** | Interpret and Evaluate |
| **Item Type** | Closed Constructed Response |
| **Full Credit (Full Score)** | Angad is correct. |
| **No Credit (No Score)** | Any other response or missing response |

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| **Item Number** | Question 5 |
| **Question Code** | SAS21M09S1005 |
| **Grade & Chapter Name** | Grade 9 \| Circles |
| **Concept \| Sub-concept** | Geometry \| Circles (Cyclic Quadrilateral) |
| **Competency** | Employ |
| **Item Type** | Multiple Choice Question |
| **Full Credit (Full Score)** | C. 180° |
| **No Credit (No Score)** | Any other response or missing response |

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|---|---|
| **Item Number** | Question 6 |
| **Question Code** | SAS21M09S1006 |
| **Grade & Chapter Name** | Grade 9 \| Circles |
| **Concept \| Sub-concept** | Geometry \| Circles (Cyclic Quadrilateral) |
| **Competency** | Interpret & Evaluate |
| **Item Type** | Closed Constructed Response |
| **Full Credit (Full Score)** | Examples to show that in a right triangle the sum of legs is longest for an isosceles right triangle when hypotenuse remains same.<br>• Take for example the length of diameter (hypotenuse) = 5 units.<br>Road D and Road B are equal hence (Road D = 3.53 units).<br>Let Road E be = 1 Chapter, Road F = 4.89 units.<br>Therefore, length of Road B + Road D is greater than Road E + Road F. |
| **No Credit (No Score)** | Any other response or missing response |

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| **Item Number** | Question 7 |
| **Question Code** | SAS21M09S1007 |
| **Grade & Chapter Name** | Grade 9 \| Circles |
| **Concept \| Sub-concept** | Geometry \| Circles (Cyclic Quadrilateral) |
| **Competency** | Interpret & Evaluate |
| **Item Type** | Multiple Choice Question |
| **Full Credit (Full Score)** | C. Road G divides Road F into two equal parts. |
| **No Credit (No Score)** | Any other response or missing response |

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| **Item Number** | Question 8 |
| **Question Code** | SAS21M09S1008 |
| **Grade & Chapter Name** | Grade 9 \| Circles |
| **Concept \| Sub-concept** | Geometry \| Circles (Cyclic Quadrilateral) |
| **Competency** | Interpret & Evaluate |
| **Item Type** | Closed Constructed Response |
| **Full Credit (Full Score)** | Yes, Priya is correct with valid reasoning.<br>• Yes, Priya is correct because arc corresponding to two equal roads (chords) are congruent. |
| **No Credit (No Score)** | Any other response or missing response |

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| **Item Number** | Question 9 |
| **Question Code** | SAS21M09S1009 |
| **Grade & Chapter Name** | Grade 9 \| Circles |
| **Concept \| Sub-concept** | Geometry \| Circles (Angle Subtended at the Center) |
| **Competency** | Employ |
| **Item Type** | Multiple Choice Question |
| **Full Credit (Full Score)** | A. 44° |
| **No Credit (No Score)** | Any other response or missing response |

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|---|---|
| **Item Number** | Question 10 |
| **Question Code** | SAS21M09S1010 |
| **Grade & Chapter Name** | Grade 9 \| Circles |
| **Concept \| Sub-concept** | Geometry \| Circles (Angle Subtended at the Center) |
| **Competency** | Interpret & Evaluate |
| **Item Type** | Closed Constructed Response |
| **Full Credit (Full Score)** | Siya is correct with valid reasoning<br>• Siya is correct as the length of OB and OC is equal because they are two radii of the same circle. |
| **No Credit (No Score)** | Any other response or missing response |