DANEMATHICS
FREE CAPS MATHS RESOURCES

GRADE 11 · EUCLIDEAN GEOMETRY

Circle Geometry Riders: Proofs, Converses & Method (Grade 11)

EXAM-STYLE CLASS TEST

MARKS	DURATION	QUESTIONS
31	50 minutes	3

Name: _____ Class: _____

Date: _____

MARK ____ / 31

INSTRUCTIONS AND INFORMATION

1. Answer **ALL** the questions in this question paper.
2. Answer QUESTION 1 by **circling** the letter (A–D) in the answer grid at the end of that section.
3. Show **ALL** calculations clearly.
4. Show all units where applicable.
5. Number the answers correctly according to the numbering system used in this question paper.
6. A non-programmable calculator may be used, unless stated otherwise.
7. Write neatly and legibly.

QUESTION 1 [10 MARKS]

Four options are given as possible answers to the following questions. Choose the correct answer and circle the letter (A–D) in the grid at the end of this section. If you want to change your choice, put a cross through the wrong letter and circle your new choice.

1.1 The line drawn from the centre of a circle perpendicular to a chord ... (1)

A) is equal to the chord
B) is a tangent
C) halves the radius
D) bisects the chord

1.2 O is the centre and $A\hat{O}B = 140°$. The angle at the circumference subtended by the same arc AB is ... (1)

A) $140°$
B) $280°$
C) $70°$
D) $40°$

1.3 In cyclic quadrilateral PQRS, $\hat{P} = 105°$. Then $\hat{R}$ = ... (1)

A) $105°$
B) $75°$
C) $255°$
D) $15°$

1.4 To PROVE that ABCD is cyclic you may use ... (1)

A) a pair of opposite angles that add up to $180°$
B) opp $\angle$s of a cyclic quad
C) the angle at the centre theorem
D) a pair of equal chords

1.5 A chord of 24 cm lies in a circle of radius 13 cm. Its distance from the centre is ... (1)

A) 12 cm
B) 11 cm
C) $\sqrt{313}$ cm
D) 5 cm

1.6 The angle between a tangent and a chord at the point of contact equals ... (1)

A) the angle at the centre **B)** $90°$

C) the angle in the alternate segment **D)** the angle in the same segment

1.7 PA and PB are tangents from P to a circle with centre O. If $A\hat{P}B = 50°$, then $A\hat{O}B$ = ... (1)

A) $50°$ **B)** $130°$

C) $100°$ **D)** $25°$

1.8 The exterior angle of a cyclic quadrilateral equals ... (1)

A) the interior opposite angle **B)** the adjacent interior angle

C) $90°$ **D)** twice the opposite angle

1.9 Angles at the circumference subtended by the same arc are ... (1)

A) supplementary **B)** complementary

C) in the ratio $1 : 2$ **D)** equal

1.10 The FIRST step in proving that the perpendicular from the centre bisects a chord is to ... (1)

A) measure the two halves of the chord **B)** draw a tangent

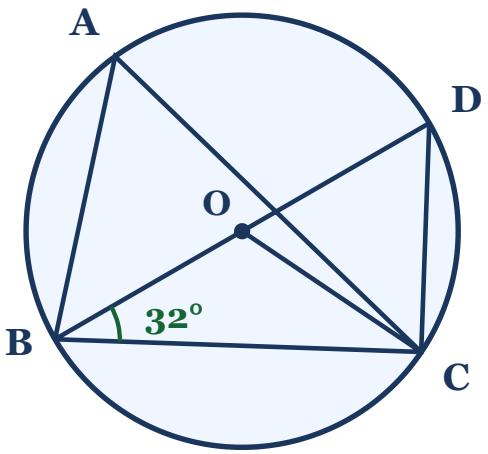
C) join the centre to both ends of the chord **D)** assume the chord is bisected

ANSWER GRID — CIRCLE YOUR ANSWERS FOR QUESTION 1

1.1	A	B	C	D
1.2	A	B	C	D
1.3	A	B	C	D
1.4	A	B	C	D
1.5	A	B	C	D
1.6	A	B	C	D
1.7	A	B	C	D
1.8	A	B	C	D
1.9	A	B	C	D
1.10	A	B	C	D

QUESTION 2 **[13 MARKS]**

In the diagram below, O is the centre of the circle. A, B, C and D lie on the circle, BD is a diameter and $D\hat{B}C = 32°$. *The diagram is not drawn to scale.*



2.1 Determine, with reasons, the sizes of $B\hat{C}D$ and $B\hat{D}C$. **(4)**

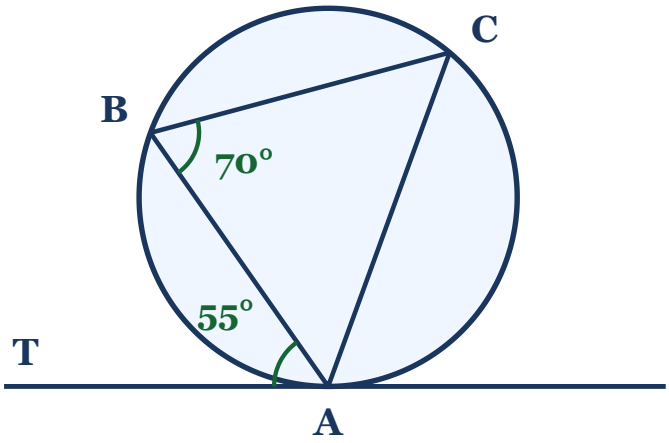
2.2 Determine $B\hat{A}C$, with a reason. **(2)**

2.3 Determine $B\hat{O}C$, with a reason. **(3)**

2.4 Explain why $\triangle OBC$ is isosceles, and hence calculate $O\hat{B}C$. **(4)**

QUESTION 3 [8 MARKS]

In the diagram below, TA is a tangent to the circle at A. B and C lie on the circle, $T\hat{A}B = 55°$ and $A\hat{B}C = 70°$.



3.1 Determine $A\hat{C}B$, with a reason. **(2)**

3.2 Determine $B\hat{A}C$, with a reason. **(3)**

3.3 Prove that AB = BC. **(3)**

TOTAL: 31 marks

This question paper consists of 3 questions.

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