



Name: _____ Date: _____ Score: _____ / 70

- 1** AB is a diameter of a circle with centre O.
C is a point on the circle, not at A or B.
Prove that angle $ACB = 90^\circ$.

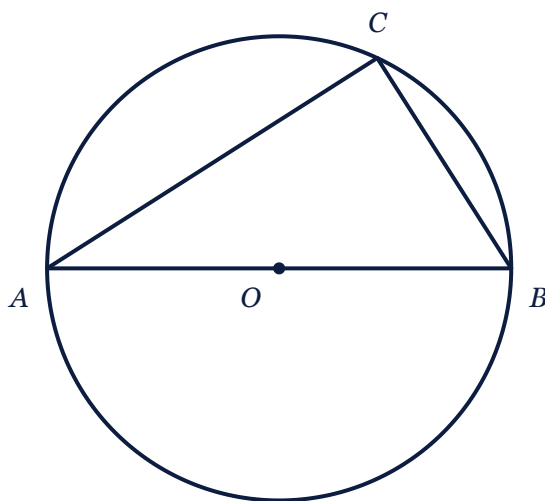


Diagram NOT accurately drawn

(3 marks)

Answer _____

2

AB is a chord of a circle with centre O.

M is the point on AB such that OM is perpendicular to AB.

Prove that M is the midpoint of AB.

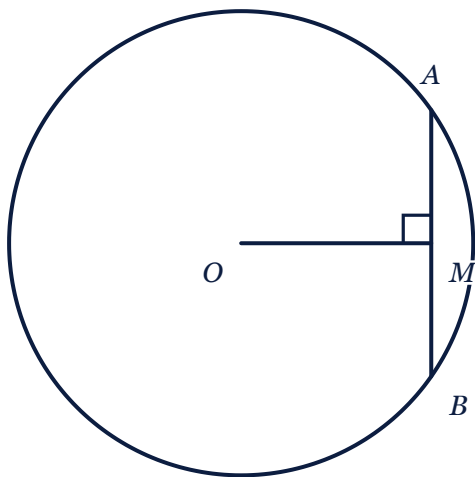


Diagram NOT accurately drawn

(4 marks)

Answer

- 3 P is a point outside a circle with centre O.
The two tangents from P touch the circle at A and at B.
Prove that $PA = PB$.

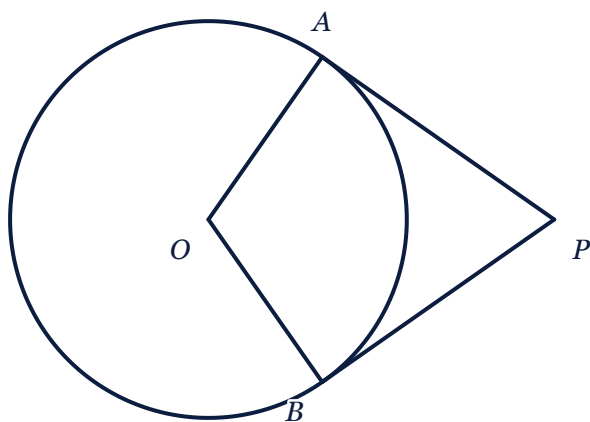


Diagram NOT accurately drawn

(4 marks)

Answer

- 4 A, B and P are points on a circle with centre O.
O lies inside triangle ABP.
Prove that $\text{angle AOB} = 2 \times \text{angle APB}$.

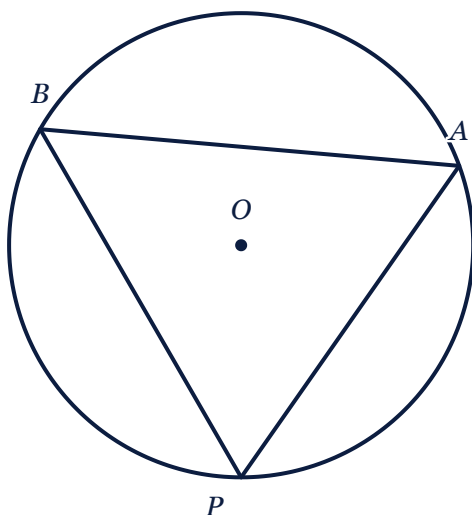


Diagram NOT accurately drawn

(4 marks)

Answer

5 A, B, P and Q are points on a circle with centre O.

P and Q are on the same side of the chord AB, and both are on the major arc AB.

You may use the theorem that the angle at the centre of a circle is twice the angle at the circumference standing on the same arc.

Prove that $\angle APB = \angle AQB$.

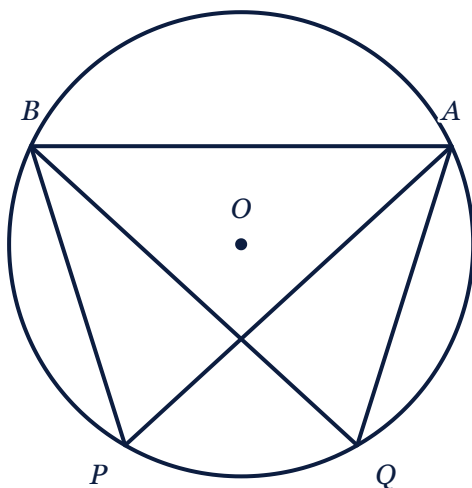


Diagram NOT accurately drawn

(4 marks)

Answer _____

6 ABCD is a cyclic quadrilateral in a circle with centre O.

You may use the theorem that the angle at the centre of a circle is twice the angle at the circumference standing on the same arc.

Prove that $\text{angle } ABC + \text{angle } ADC = 180^\circ$.

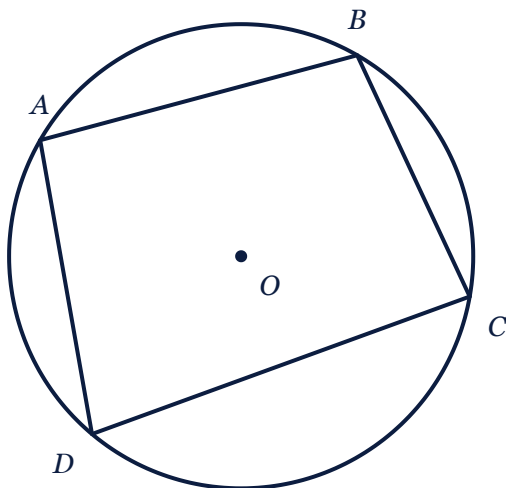


Diagram NOT accurately drawn

(4 marks)

Answer _____

7

The line ST is a tangent to a circle with centre O , touching the circle at A .

AB is a chord of the circle.

C is a point on the major arc AB , so that C is in the alternate segment to angle TAB .

Prove that angle TAB = angle ACB .

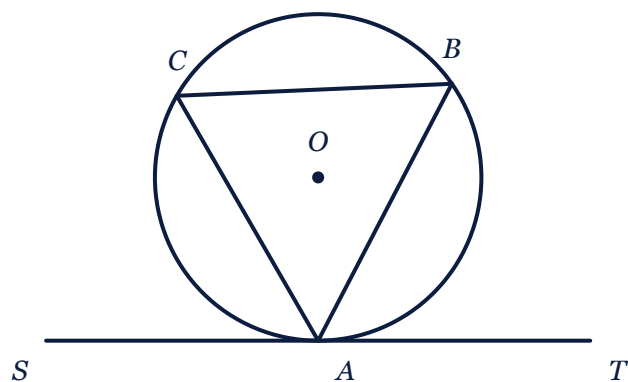


Diagram NOT accurately drawn

(4 marks)

Answer _____

8

A, B and C are points on a circle.

DAE is a tangent to the circle at A.

B is on the opposite side of the chord AC from E.

Angle CAE = 63° and angle BAC = 44° .

Work out the size of

a. angle ABC,

b. angle ACB.

Give a reason for each stage of your working.

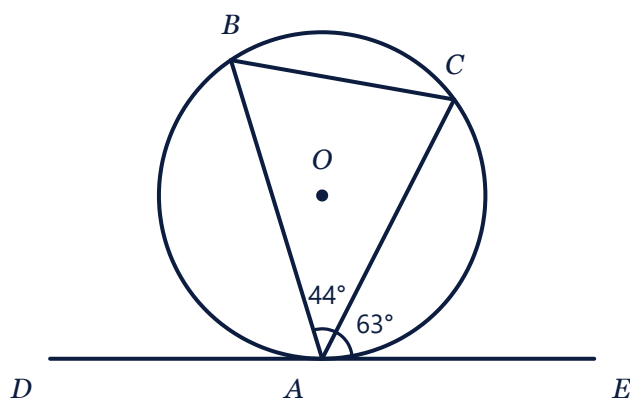


Diagram NOT accurately drawn

(4 marks)

Answer _____

9 AB and CD are chords of a circle with centre O.

$$AB = CD$$

M is the point on AB such that OM is perpendicular to AB.

N is the point on CD such that ON is perpendicular to CD.

Prove that $OM = ON$.

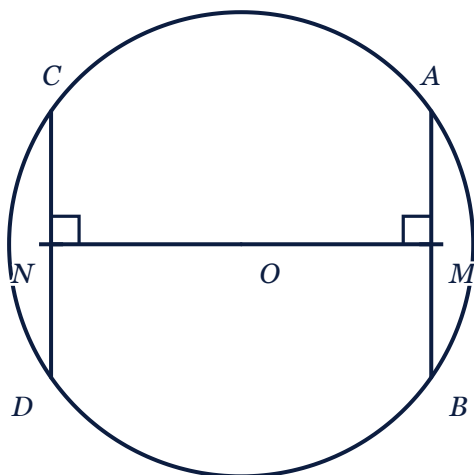


Diagram NOT accurately drawn

(5 marks)

Answer _____

10 A, B and C are points on a circle with centre O. Angle ACB is acute. TA is a tangent to the circle at A, with T and C on opposite sides of the line AB.

Prove that $\angle TAB = \angle ACB$.

(You may use the fact that the angle at the centre is twice the angle at the circumference.)

(4 marks)

Answer _____

- 11** A, B and C are points on a circle with centre O.
 PA and PB are tangents to the circle from the point P.
 C lies on the major arc AB.
 Angle $APB = 42^\circ$.

Work out the size of angle ACB. Give a reason for each stage of your working.

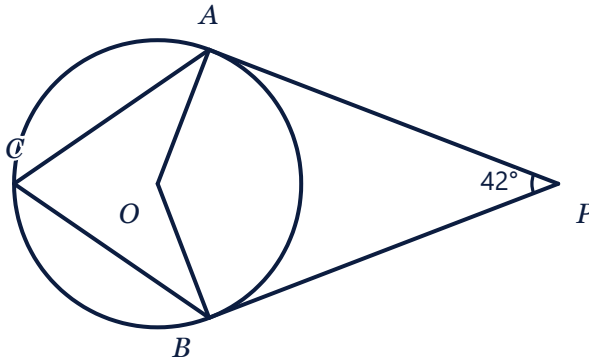


Diagram NOT accurately drawn

(4 marks)

Answer _____

- 12** A, B, C and D are points on a circle, in that order, so ABCD is a cyclic quadrilateral.
 TA is a tangent to the circle at A. T and D are on opposite sides of the line AB.
 Angle $TAB = 48^\circ$.
 Angle $BDC = 35^\circ$.

Work out the size of angle ABC. Give a reason for each stage of your working.

(4 marks)

Answer _____

13

A, B, C and D are points on a circle, in that order.

The chords AC and BD intersect at the point E inside the circle.

Prove that triangle ABE is similar to triangle DCE.

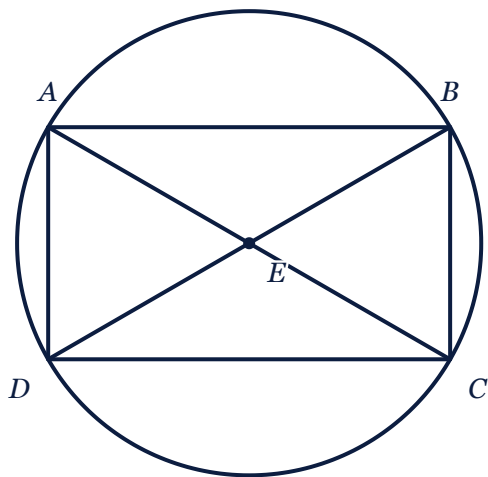


Diagram NOT accurately drawn

(4 marks)

Answer

14

A, B and C are points on a circle with centre O.

PA and PB are tangents to the circle from the point P.

C lies on the major arc AB.

Angle $APB = x^\circ$.

Find the size of angle ACB in terms of x . Give your answer in its simplest form and give a reason for each stage of your working.

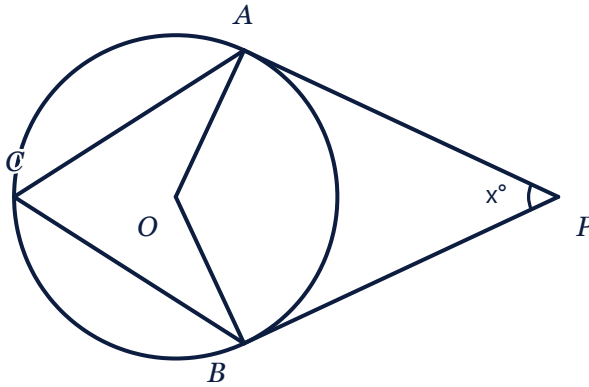


Diagram NOT accurately drawn

(5 marks)

Answer _____

15

A, B, C and D are points on the circumference of a circle, in that order, so ABCD is a cyclic quadrilateral.

Angle $DAB = (3x + 10)^\circ$

Angle $BCD = (5x - 30)^\circ$

Angle $ABC = (2x + 25)^\circ$

Work out the size of angle ADC. Give a reason for each stage of your working.

(4 marks)

Answer _____

16 ABCD is a cyclic quadrilateral.

angle BAD : angle BCD = 4 : 5

angle ABC = angle BAD + 30°

Work out the size of angle ADC. Give a reason for each stage of your working.

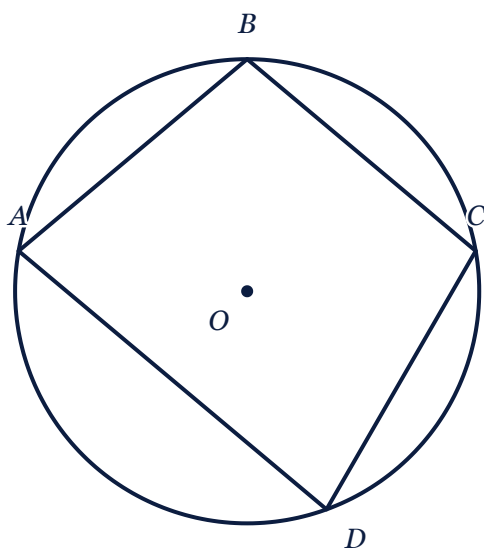


Diagram NOT accurately drawn

(5 marks)

Answer _____

17 A, B and C are points on a circle. $AB = AC$.

The line TAS is a tangent to the circle at A. T and C are on opposite sides of the line AB.

Prove that TS is parallel to BC.

(4 marks)

Answer _____

End of questions | Total 70 marks