Test - Circle theorems

Year: Year 11 · Duration: 45 minutes · /20

Name:	Date:	**Mark: /20**

Question	1	2	3	4	5	Total
marks	4	4	4	4	4	**20**
Mark						

Show your working.

Question 1 (4 marks)

Question 1 – Angles at the centre and in a semicircle

A, B and C are on a circle with centre O. Angle $AOB = 118°$.

a. Find angle ACB and give a reason. (2 marks)
b. If AB were a diameter and angle $CAB = 37°$, find angle ABC. (2 marks)

Question 2 (4 marks)

Question 2 – Cyclic quadrilateral

$ABCD$ is a cyclic quadrilateral. Angle $A = (4x + 5)°$ and angle $C = (2x + 25)°$.

a. Form an equation and solve it to find x. (3 marks)
b. Write down the size of angle A. (1 mark)

Question 3 (4 marks)

Question 3 – Tangents

TA is a tangent to a circle of radius 8 cm, centre O. $OT = 17$ cm.

a. Work out the length TA. (3 marks)
b. Work out angle ATO to 1 decimal place. (1 mark)

Question 4 (4 marks)

Question 4 – Alternate segment

TA is a tangent to a circle at A, centre O. B is on the circle and angle $TAB = 64°$.

a. Find angle AOB and give two reasons. (3 marks)
b. Find angle OAB. (1 mark)

Question 5 (4 marks)

Question 5 – Problem: the arch

A circular arch has a chord 30 m wide at its base and the top of the arch is 5 m above the base.

a. Show that the radius r satisfies $r^2 = 15^2 + (r - 5)^2$. (1 mark)
b. Solve to find r. (3 marks)