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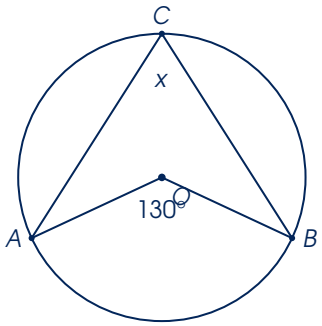
Name ..... Class .....

G10: Circle theorems

Apply the standard circle theorems, giving reasons

20 marks · 25 minutes · Non-calculator

1) *A*, *B* and *C* lie on a circle with centre *O*. Angle *AOB* = 130°.



(a) Find angle *x*.

..... °

(1)

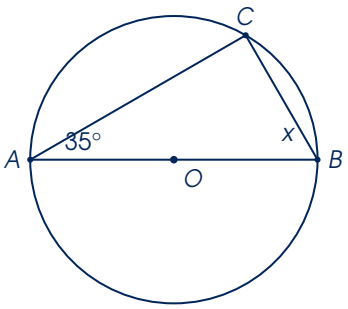
(b) Give a reason for your answer.

.....

(1)

[Question 1: 2 marks]

2) AB is a diameter of the circle. C lies on the circle. Angle $CAB = 35°$.



(a) Find angle x.

.....°

(1)

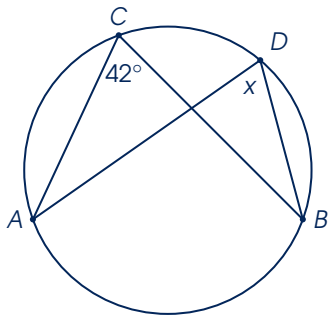
(b) Give a reason for your answer.

.....

(1)

[Question 2: 2 marks]

3) A, B, C and D lie on a circle. Angle $ACB = 42°$.



(a) Find angle x.

..... °

(1)

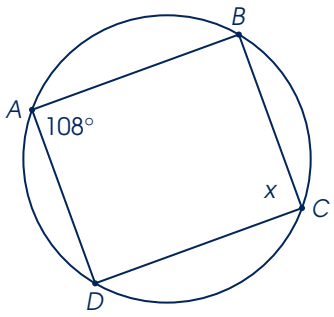
(b) Give a reason for your answer.

.....

(1)

[Question 3: 2 marks]

4) *ABCD* is a cyclic quadrilateral. Angle *DAB* = 108°.



(a) Find angle *x*.

..... °

(1)

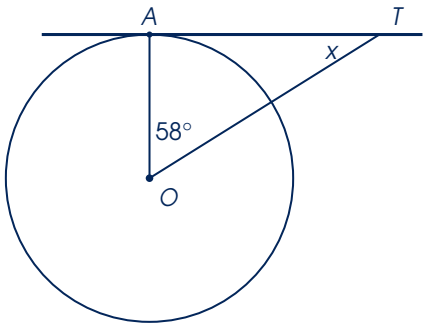
(b) Give a reason for your answer.

.....

(1)

[Question 4: 2 marks]

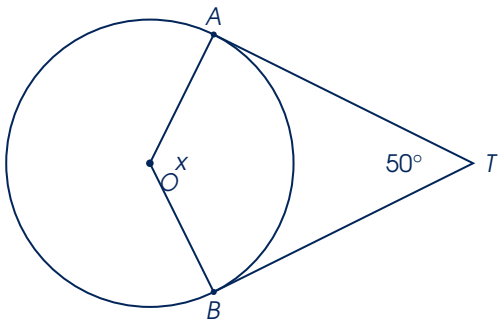
5) *TA* is a tangent to the circle at *A*. *O* is the centre. Angle *AOT* = 58°. Find angle *x*.



..... °

[Question 5: 2 marks]

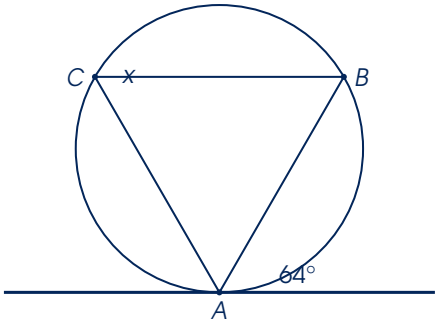
6) *TA* and *TB* are tangents to the circle with centre *O*. Angle *ATB* = 50°. Find angle *x*.



..... °

[Question 6: 2 marks]

7) The line through A is a tangent to the circle. A, B and C lie on the circle. The angle between the tangent and chord AB is 64°.



(a) Find angle x.

..... °

(1)

(b) Give a reason for your answer.

.....

.....

(1)

[Question 7: 2 marks]

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8) A circle has radius 13 cm. A chord is 10 cm long. Find the distance from the centre of the circle to the chord.

..... cm

[Question 8: 2 marks]

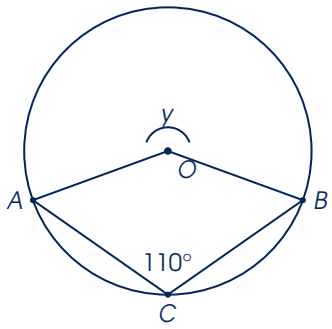
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9) $ABCD$ is a cyclic quadrilateral. Angle $A = 3x$ and angle $C = x$. Find x.

..... °

[Question 9: 2 marks]

10) A, B and C lie on a circle with centre O. Angle $ACB = 110°$. Find the reflex angle y at O.



..... °

[Question 10: 2 marks]

End of paper – 20 marks in total

Answers and brief mark scheme

Q	Answer	Method / notes
1	(a) 65 (b) angle at the centre is twice the angle at the circumference	B1 each.
2	(a) 55 (b) angle in a semicircle is 90°	B1 each.
3	(a) 42 (b) angles in the same segment are equal	B1 each.
4	(a) 72 (b) opposite angles of a cyclic quadrilateral add up to 180°	B1 each.
5	32	Angle $OAT = 90$ (M1); A1.
6	130	Angles $OAT = OBT = 90$ (M1); $360 - 230$ (A1).
7	(a) 64 (b) alternate segment theorem	B1 each.
8	12	Perpendicular bisects the chord, half chord 5 (M1); $\sqrt{169 - 25}$ (A1).
9	45	$3x + x = 180$ (M1); A1.
10	220	2×110 (M1); A1.