**Circle Theorems Exam Questions**

**1.**  In the diagram, *A*, *B* and *C* are points on the circumference of a circle, centre *O*.

 Angle *ABC* = 85°.

(i) Work out the size of the angle marked *x*°.

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(ii) Give a reason for your answer.

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(Total 2 marks)

**2.** Diagram **NOT** accurately drawn

 *R* and *S* are two points on a circle, centre *O*.
*TS* is a tangent to the circle.
Angle *RST* = *x*.

 Prove that angle *ROS* = 2*x*.
You must give reasons for each stage of your working.

**(Total 4 marks)**

**3.** Diagram **NOT** accurately drawn

 In the diagram, *A*, *B*, *C* and *D* are points on the circumference of a circle, centre *O*.
Angle *BAD* = 70°. Angle *BOD* = *x*°. Angle *BCD* = *y*°.

(a) (i) Work out the value of *x*.

*x* = ....................................

(ii) Give a reason for your answer.

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**(2)**

(b) (i) Work out the value of *y*.

*y* = ....................................

(ii) Give a reason for your answer.

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**(2)**

**(Total 4 marks)**

**4.** Diagram **NOT** accurately drawn

 *A*, *B* and *C* are points on the circumference of a circle, centre *O*.
*AC* is a diameter of the circle.

(a) (i) Write down the size of angle *ABC*.

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(ii) Give a reason for your answer.

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**(2)**

Diagram **NOT** accurately drawn

 *D*, *E* and *F* are points on the circumference of a circle, centre *O*.
Angle *DOF* = 130°.

(b) (i) Work out the size of angle *DEF*.

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(ii) Give a reason for your answer.

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**(2)**

**(Total 4 marks)**

**5.** Diagram **NOT** accurately drawn

 The diagram shows a circle centre *O*.
*A*, *B* and *C* are points on the circumference.

 *DCO* is a straight line.
*DA* is a tangent to the circle.

 Angle *ADO =* 36°

(a) Work out the size of angle *AOD*.

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(2)

(b) (i) Work out the size of angle *ABC*.

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(ii) Give a reason for your answer.

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(3)

(Total 5 marks)

**6.** Diagram **NOT** accurately drawn

 *B* and *C* are points on a circle, centre *O*.
*AB* and *AC* are tangents to the circle.
Angle *BOC* = 130°.

 Work out the size of angle *BAO*.

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**(Total 3 marks)**

**7.** Diagram **NOT** accurately drawn

 *A* and *B* are points on the circumference of a circle, centre *O*.
*PA* and *PB* are tangents to the circle.
Angle *APB* is 86°.

 Work out the size of the angle marked *x*.

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(Total 2 marks)

**8.** Diagram **NOT** accurately drawn

 *B* and *C* are two points on a circle, centre *O*.

 Angle *OBC* = 15°.

 *AB* and *AC* are tangents to the circle.

(a) Calculate the size of the angle marked *x*°*.*

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**(2)**

(b) Give reasons for your answer.

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**(2)**

**(Total 4 marks)**

**9.** In the diagram, *A*, *B* and *C* are points on the circle, centre *O*.
Angle *BCE* = 63°.
*FE* is a tangent to the circle at point *C*.

(i) Calculate the size of angle *ACB*.
Give reasons for your answer.

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(ii) Calculate the size of angle *BAC*.
Give reasons for your answer.

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**(Total 4 marks)**

**10.** *A*, *B*, *C* and *D* are four points on the circumference of a circle.
*ABE* and *DCE* are straight lines.

 Angle *BAC* = 25°.

 Angle *EBC* = 60°.

(a) Find the size of angle *ADC*.

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**(1)**

(b) Find the size of angle *ADB.*

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**(2)**

 Angle *CAD* = 65°.
Ben says that *BD* is a diameter of the circle.

(c) Is Ben correct? You must explain your answer.

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**(1)**

**(Total 4 marks)**

**11.** *P*, *Q*, *R* and *S* are points on the circumference of a circle, centre *O*.
*PR* is a diameter of the circle.
Angle *PSQ* = 56°.

(a) Find the size of angle *PQR*.
Give a reason for your answer.

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**(2)**

(b) Find the size of angle *PRQ*.
Give a reason for your answer.

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**(2)**

(c) Find the size of angle *POQ*.
Give a reason for your answer.

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**(2)**

**(Total 6 marks)**



**12.** *QRS* is a straight line.
*QR* and *PR* are chords of a circle, centre *O*.
Angle *PRS* *=* 123°.
Angle *QOP* = *x*°.

 Calculate the size of the angle marked *x*°.
Give reasons for your answer.

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**(Total 3 marks)**

**13.** Diagram **NOT** accurately drawn

 In the diagram *Q* and *R* are points on the circumference of a circle.
*TQ* and *TR* are tangents to the circle.
*PQ* = *PR.*Angle *RQT* =angle *QRT* =70°.
Angle *RPQ* =120°.

 Explain why *P* is not the centre of the circle.

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(Total 2 marks)