**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*°.

................................ °

(ii) Give a reason for your answer.

..............................................................................................................................

..............................................................................................................................

(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.

...............................................................................................................................

...............................................................................................................................

**(2)**

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

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

(ii) Give a reason for your answer.

...............................................................................................................................

...............................................................................................................................

**(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*.

..........................°

(ii) Give a reason for your answer.

...............................................................................................................................

...............................................................................................................................

**(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*.

..........................°

(ii) Give a reason for your answer.

...............................................................................................................................

...............................................................................................................................

**(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*.

................................. °

(2)

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

................................. °

(ii) Give a reason for your answer.

...............................................................................................................................

(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*.

..............................°

**(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*.

.........................°

(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*°*.*

....................°

**(2)**

(b) Give reasons for your answer.

..............................................................................................................................

..............................................................................................................................

..............................................................................................................................

**(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.

...............................°

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

...............................°

**(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*.

.........................°

**(1)**

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

.........................°

**(2)**

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

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

..............................................................................................................................

..............................................................................................................................

**(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.

……………………………°

**(2)**

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

……………………………°

**(2)**

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

……………………………°

**(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.

................................°

**(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.

........................................................................................................................................

........................................................................................................................................

........................................................................................................................................

(Total 2 marks)