CIRCLE THEOREMS

[ESTIMATED TIME: 60 minutes]

GCSE

(+ IGCSE) EXAM QUESTION PRACTICE

1. **[3 marks]**

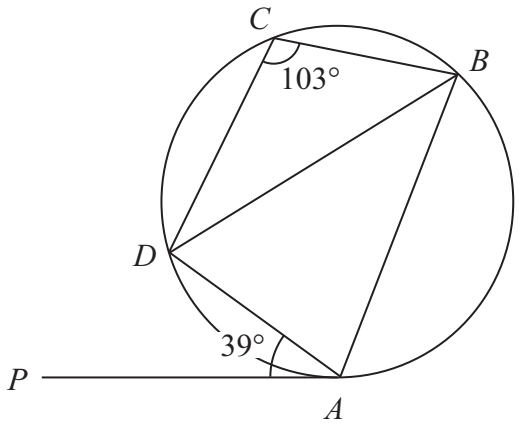


Diagram **NOT** accurately drawn

A, *B*, *C* and *D* are points on a circle.
PA is a tangent to the circle.
Angle *PAD* = 39°
Angle *BCD* = 103°

Calculate the size of angle *ADB*.

.....°

2. **[6 marks]**

A, *B*, *C* and *D* are points on a circle.
Angle *BAC* = 40°.
Angle *DBC* = 55°.

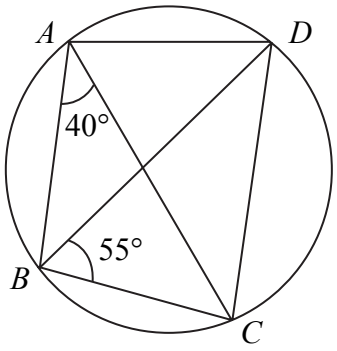


Diagram **NOT** accurately drawn

(a) (i) Find the size of angle *DAC*.

..... °

(ii) Give a reason for your answer.

.....

.....

(2)

(b) (i) Calculate the size of angle *DCB*.

..... °

(ii) Give reasons for your answer.

.....

.....

.....

.....

(3)

(c) Is *BD* a diameter of the circle? .....

Give a reason for your answer.

.....

(1)

3. **[4 marks]**

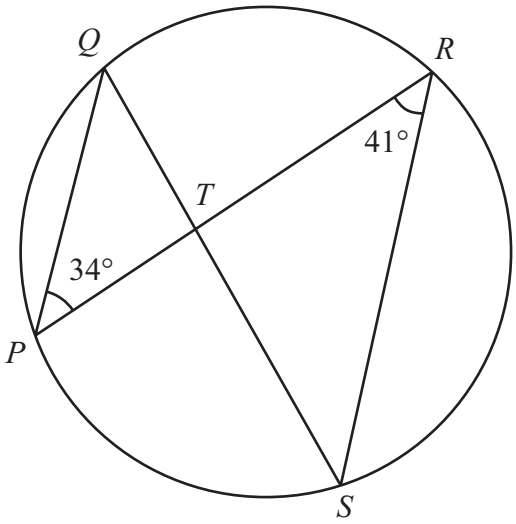


Diagram **NOT** accurately drawn

P, *Q*, *R* and *S* are points on the circumference of a circle.
PR and *QS* intersect at *T*.
Angle *QPR* = 34° and angle *PRS* = 41°

(a) (i) Find the size of angle *PQS*.

.....°

(ii) Give a reason for your answer.

.....

.....

(2)

(b) (i) Find the size of angle *PTS*.

.....°

(ii) Explain why *T* cannot be the centre of the circle.

.....

.....

(2)

4. **[4 marks]**

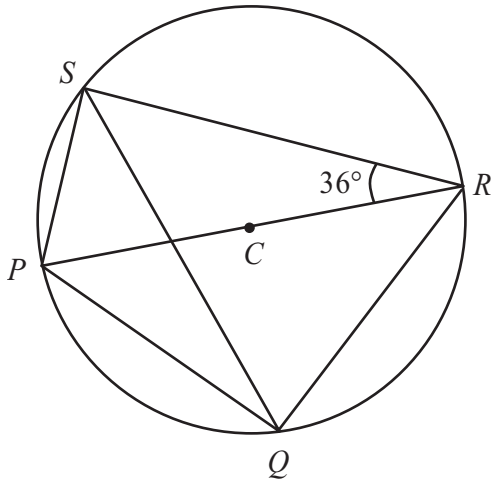


Diagram **NOT** accurately drawn

P, *Q*, *R* and *S* are points on a circle, centre *C*.
PCR is a straight line.
Angle *PRS* = 36°.

Calculate the size of angle *RQS*.
Give a reason for each step in your working.

.....°

5. **[5 marks]**

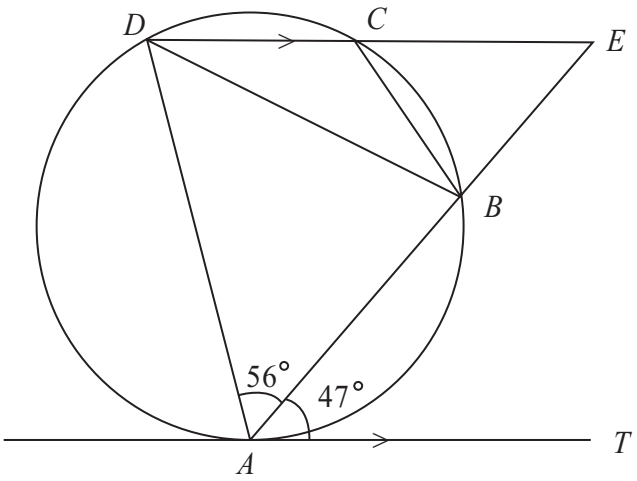


Diagram **NOT** accurately drawn

A, *B*, *C* and *D* are points on a circle.
ABE and *DCE* are straight lines.
AT is a tangent to the circle.
DCE is parallel to *AT*.
Angle *EAT* = 47°. Angle *BAD* = 56°.

(a) (i) Find the size of angle *AED*.

.....°

(ii) Give a reason for your answer.

.....

(2)

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

.....°

(1)

(c) (i) Find the size of angle *ADB*.

.....°

(ii) Give a reason for your answer.

.....

.....

(2)

6. **[5 marks]**

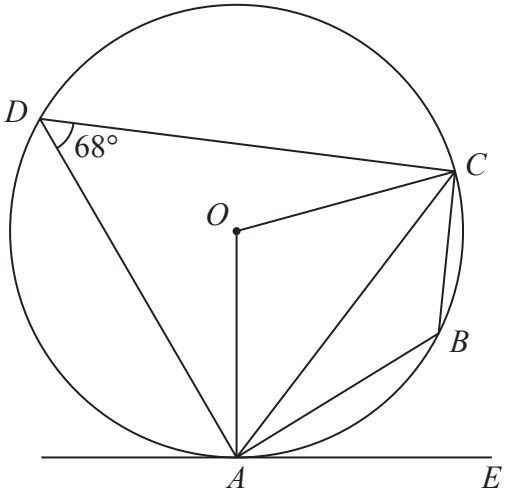


Diagram **NOT** accurately drawn

A, *B*, *C* and *D* are points on a circle, centre *O*.
AE is a tangent to the circle.
Angle *ADC* = 68°

(a) (i) Find the size of angle *ABC*.

.....°

(ii) Give a reason for your answer.

.....

(2)

(b) (i) Find the size of angle *AOC*.

.....°

(ii) Give a reason for your answer.

.....

(2)

(c) Find the size of angle *CAE*.

.....°

(1)

7. **[3 marks]**

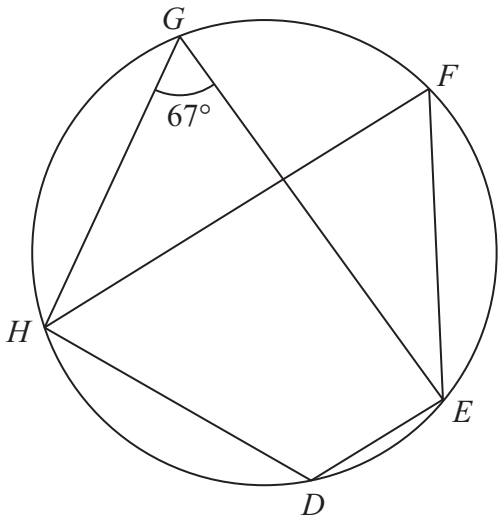


Diagram **NOT** accurately drawn

D, *E*, *F*, *G* and *H* are points on a circle.
Angle *EGH* = 67°

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

.....°

(1)

(b) (i) Find the size of angle *EDH*.

.....°

(ii) Give a reason for your answer.

.....

.....

(2)

8. **[4 marks]**

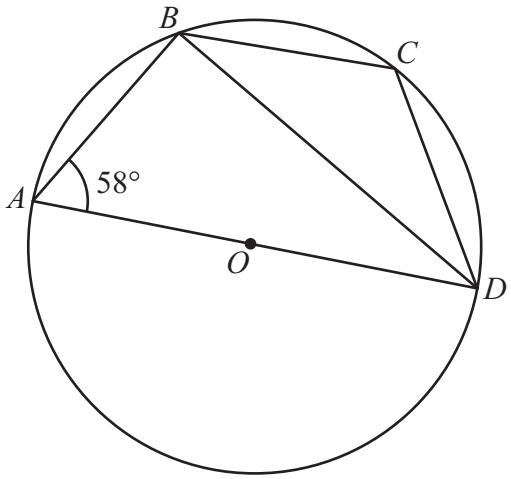


Diagram **NOT** accurately drawn

A, *B*, *C* and *D* are four points on a circle, centre *O*.
AD is a diameter of the circle.
Angle *BAD* = 58°

(a) Calculate the size of angle *ADB*.

.....°

(2)

(b) (i) Calculate the size of angle *BCD*.

.....°

(ii) Give a reason for your answer.

.....

.....

(2)

9. **[4 marks]**

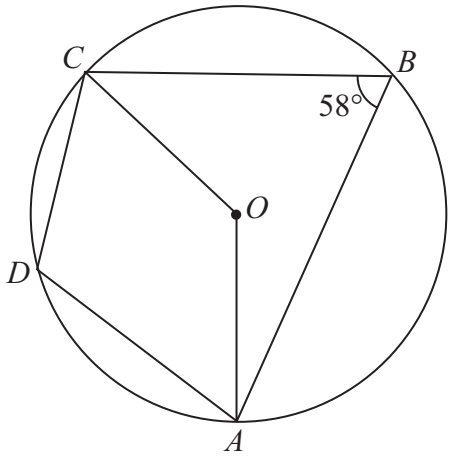


Diagram **NOT** accurately drawn

A, *B*, *C* and *D* are points on a circle, centre *O*.
Angle *ABC* = 58°.

(a) (i) Calculate the size of angle *AOC*.

.....°

(ii) Give a reason for your answer.

.....

.....

(2)

(b) (i) Calculate the size of angle *ADC*.

.....°

(ii) Give a reason for your answer.

.....

.....

(2)

10. **[3 marks]**

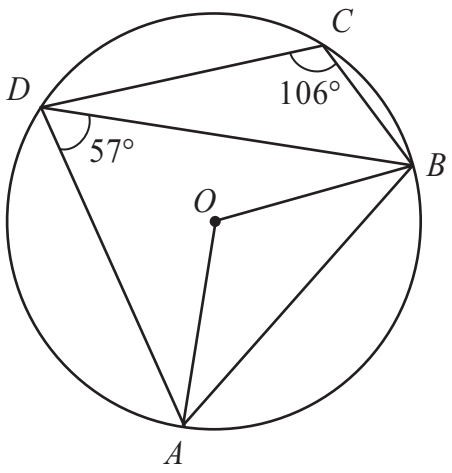


Diagram **NOT** accurately drawn

A, *B*, *C* and *D* are points on a circle, centre *O*.
Angle *ADB* = 57°.
Angle *BCD* = 106°.

(a) (i) Calculate the size of angle *AOB*.

.....°

(ii) Give a reason for your answer.

.....

.....

(2)

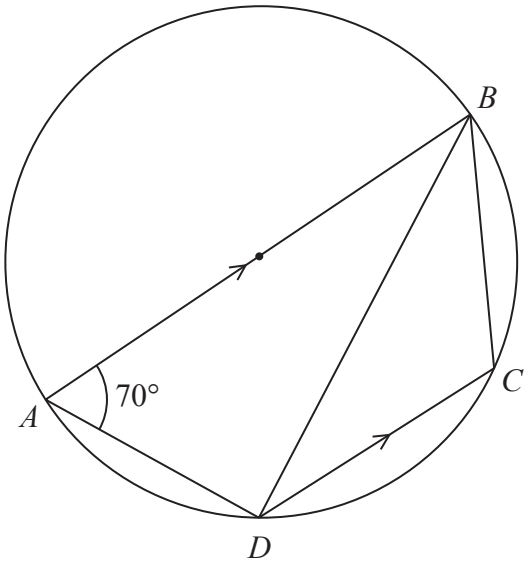
(b) Calculate the size of angle *BAD*.

.....°

(1)

11. **[5 marks]**

Diagram **NOT** accurately drawn



A, *B*, *C* and *D* are points on a circle.
AB is a diameter of the circle.
DC is parallel to *AB*.
Angle *BAD* = 70°

(a) Calculate the size of angle *BDC*.

.....°

(2)

The tangent to the circle at *D* meets the line *BC* extended at *T*.

(b) Calculate the size of angle *BTD*.

.....°

(3)

12. **[6 marks]**

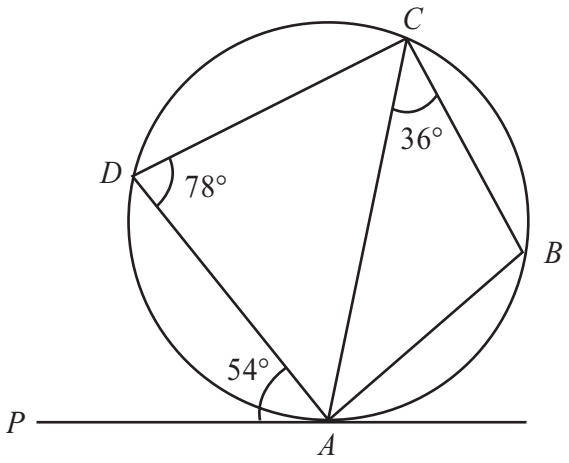


Diagram **NOT** accurately drawn

A, *B*, *C* and *D* are points on a circle.
PA is the tangent to the circle at *A*.
Angle *PAD* = 54°, angle *ACB* = 36° and angle *ADC* = 78°.

(a) (i) Find the size of angle *ACD*.

..... °

(ii) Give a reason for your answer.

.....

.....

(2)

(b) Explain why *BD* is a diameter of the circle.

.....

.....

(2)

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

..... °

(ii) Give a reason for your answer.

.....

.....

(2)

13. **[4 marks]**

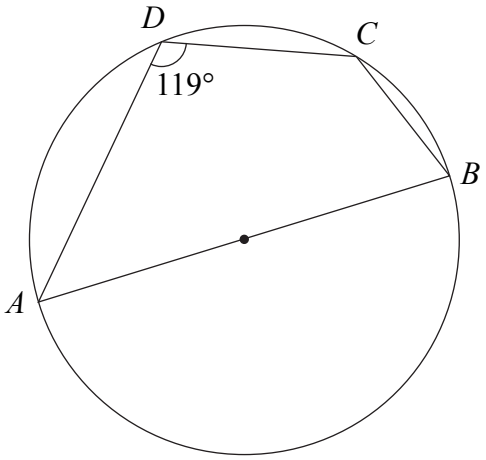


Diagram **NOT** accurately drawn

A, *B*, *C* and *D* are points on the circumference of a circle.
AB is a diameter of the circle.
Angle *ADC* = 119°.

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

.....°

(ii) Give a reason for your answer.

.....

.....

(2)

(b) Work out the size of angle *BAC*.

.....°

(2)

14. **[5 marks]**

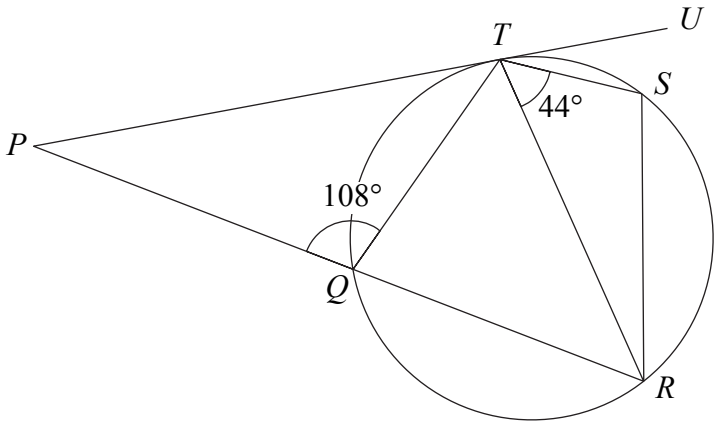


Diagram **NOT** accurately drawn

Q, R, S and T are points on the circumference of a circle.
PU is a tangent to the circle at T.
PQR is a straight line.
Angle $PQT = 108°$.
Angle $STR = 44°$.

Work out the size of angle STU.
You must give a reason for each step in your working.

°

.....

15. **[4 marks]**

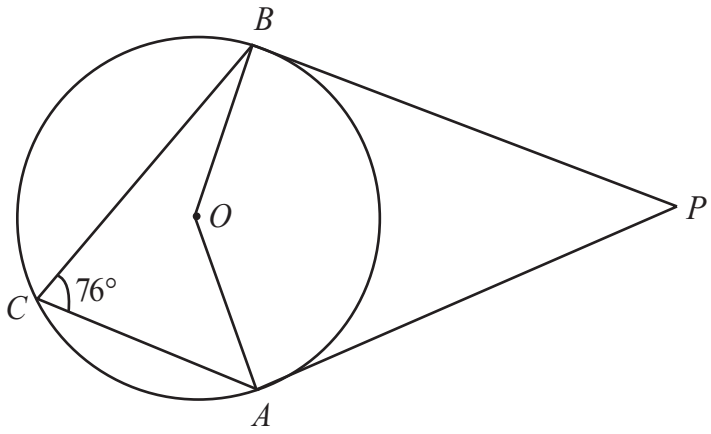


Diagram **NOT** accurately drawn

A, B and *C* are points on a circle, centre *O*.
Angle *ACB* = 76°
PA and *PB* are tangents to the circle.

Calculate the size of angle *APB*.

.....°

16. **[4 marks]**

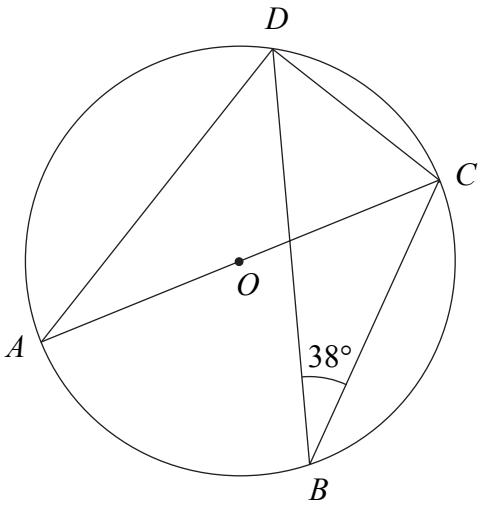


Diagram **NOT** accurately drawn

A, *B*, *C* and *D* are points on a circle, centre *O*.
AC is a diameter of the circle.
Angle *CBD* = 38°.

(a) (i) Find the size of angle *DAC*.

.....°

(ii) Give a reason for your answer.

.....

.....

(2)

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

.....°

(2)