

1.

[3 marks]

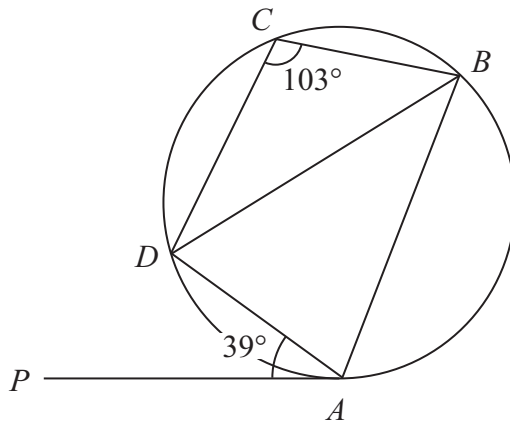


Diagram **NOT**  
accurately drawn

$A$ ,  $B$ ,  $C$  and  $D$  are points on a circle.

$PA$  is a tangent to the circle.

Angle  $PAD = 39^\circ$

Angle  $BCD = 103^\circ$

Calculate the size of angle  $ADB$ .

o

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$A, B, C$  and  $D$  are points on a circle.

Angle  $BAC = 40^\circ$ .

Angle  $DBC = 55^\circ$ .

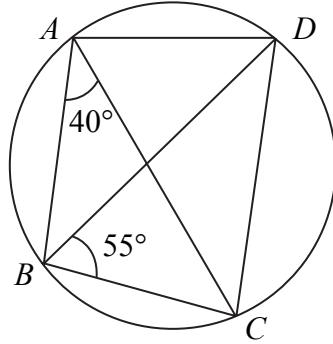


Diagram **NOT**  
accurately drawn

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

.....<sup>o</sup>

(ii) Give a reason for your answer.

.....

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(2)

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

.....<sup>o</sup>

(ii) Give reasons for your answer.

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(3)

(c) Is  $BD$  a diameter of the circle?

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Give a reason for your answer.

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(1)

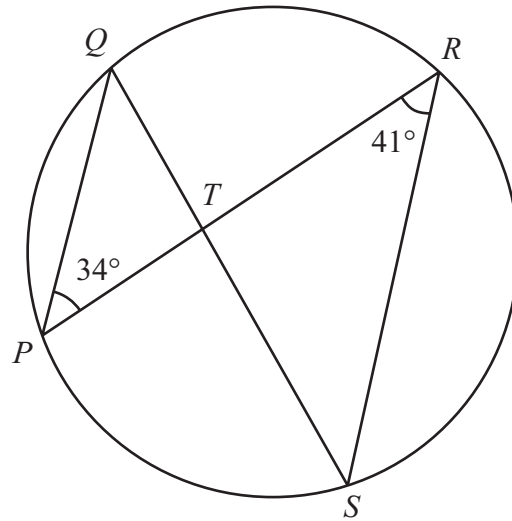


Diagram **NOT**  
accurately drawn

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

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

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(ii) Give a reason for your answer.

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 (2)

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

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

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 (2)

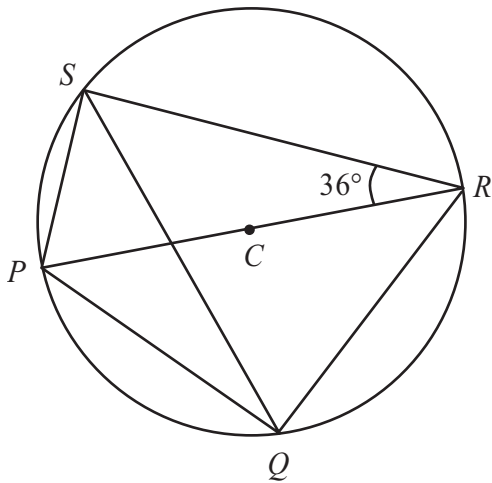


Diagram **NOT**  
accurately drawn

$P$ ,  $Q$ ,  $R$  and  $S$  are points on a circle, centre  $C$ .  
 $PCR$  is a straight line.  
 Angle  $PRS = 36^\circ$ .

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

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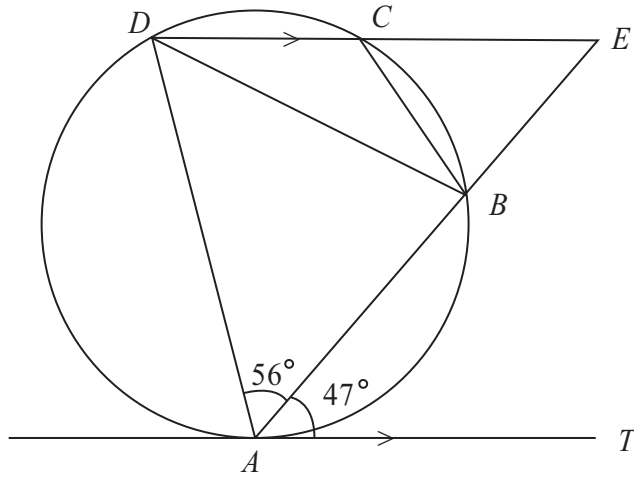


Diagram **NOT**  
accurately drawn

$A$ ,  $B$ ,  $C$  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  $EAT = 47^\circ$ . Angle  $BAD = 56^\circ$ .

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

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(ii) Give a reason for your answer.

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 (2)

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

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 (1)

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

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(ii) Give a reason for your answer.

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 (2)

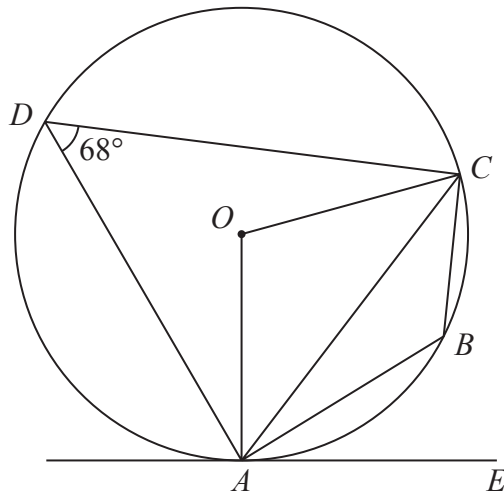


Diagram **NOT**  
accurately drawn

$A$ ,  $B$ ,  $C$  and  $D$  are points on a circle, centre  $O$ .  
 $AE$  is a tangent to the circle.  
 Angle  $ADC = 68^\circ$

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

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(ii) Give a reason for your answer.

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 (2)

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

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(ii) Give a reason for your answer.

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 (2)

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

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(1)

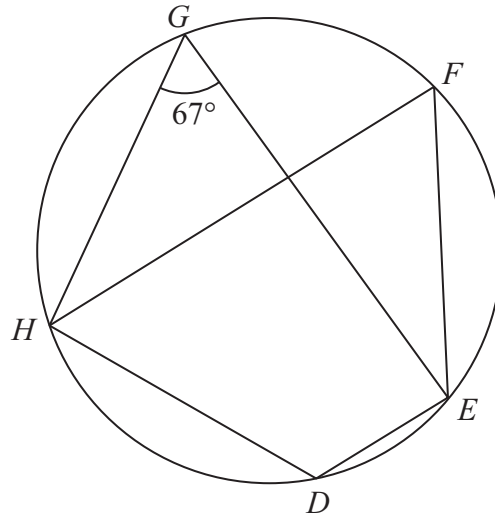


Diagram **NOT**  
accurately drawn

$D, E, F, G$  and  $H$  are points on a circle.  
Angle  $EGH = 67^\circ$

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

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(1)

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

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(ii) Give a reason for your answer.

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(2)

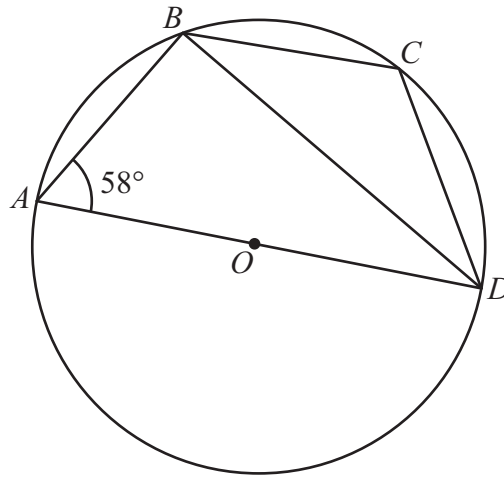


Diagram **NOT**  
accurately drawn

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

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

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 (2)

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

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(ii) Give a reason for your answer.

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(2)



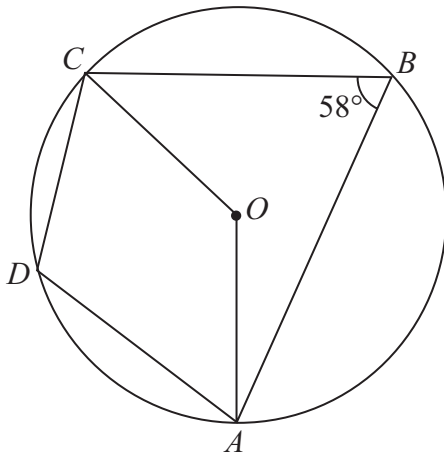


Diagram **NOT** accurately drawn

$A$ ,  $B$ ,  $C$  and  $D$  are points on a circle, centre  $O$ .  
 Angle  $ABC = 58^\circ$ .

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

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(ii) Give a reason for your answer.

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 (2)

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

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(ii) Give a reason for your answer.

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 (2)

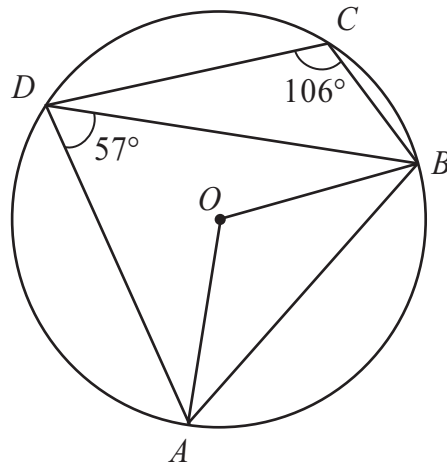


Diagram **NOT**  
accurately drawn

$A$ ,  $B$ ,  $C$  and  $D$  are points on a circle, centre  $O$ .  
Angle  $ADB = 57^\circ$ .  
Angle  $BCD = 106^\circ$ .

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

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(ii) Give a reason for your answer.

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(2)

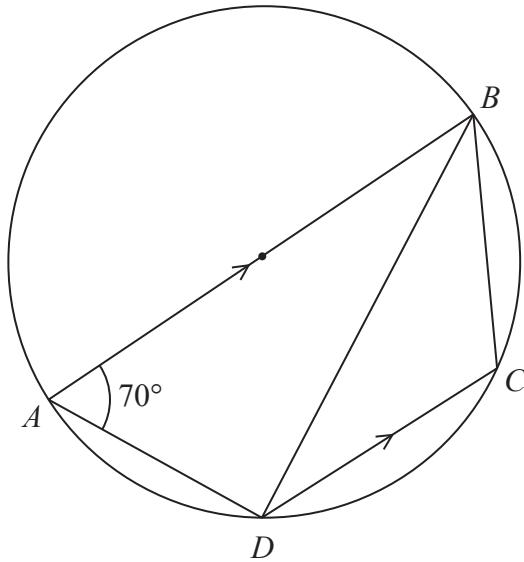
(b) Calculate the size of angle  $BAD$ .

o

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(1)

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  $BAD = 70^\circ$

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

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 (2)

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

(b) Calculate the size of angle  $BT D$ .

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 (3)

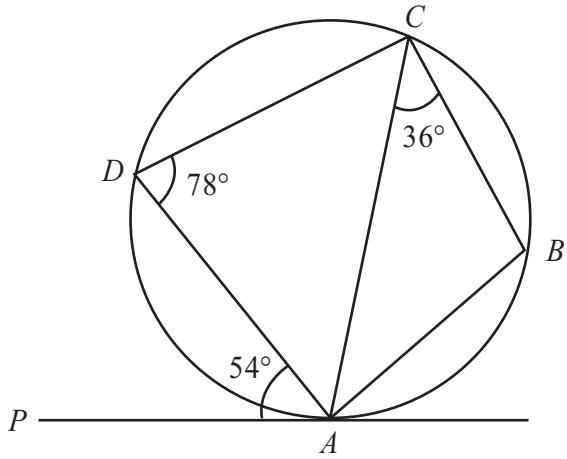


Diagram **NOT** accurately drawn

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

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

.....<sup>o</sup>

(ii) Give a reason for your answer.

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 (2)

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

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 (2)

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

.....<sup>o</sup>

(ii) Give a reason for your answer.

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 (2)

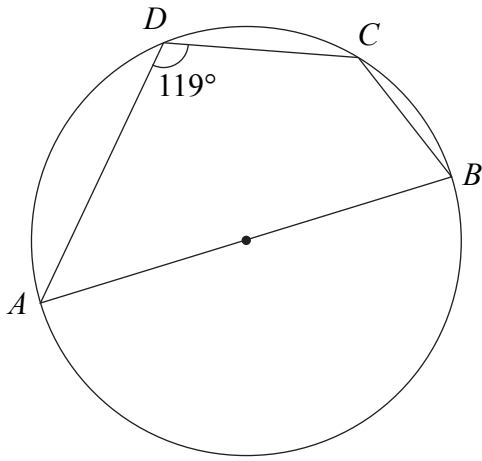


Diagram **NOT**  
accurately drawn

$A$ ,  $B$ ,  $C$  and  $D$  are points on the circumference of a circle.  
 $AB$  is a diameter of the circle.  
 Angle  $ADC = 119^\circ$ .

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

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(ii) Give a reason for your answer.

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 (2)

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

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 °  
 (2)

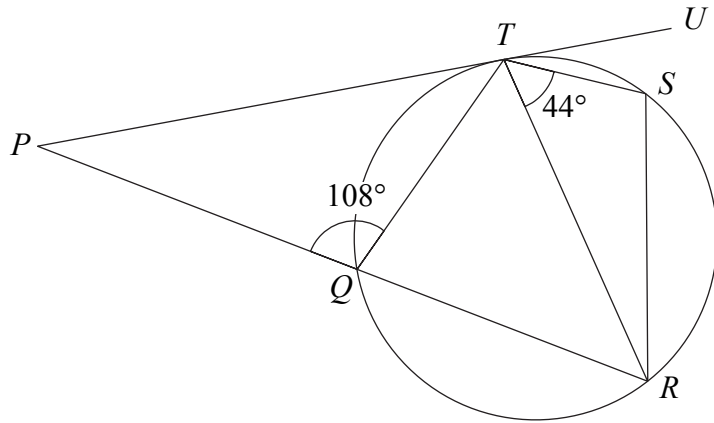


Diagram **NOT**  
accurately drawn

$Q$ ,  $R$ ,  $S$  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  $PQT = 108^\circ$ .

Angle  $STR = 44^\circ$ .

Work out the size of angle  $STU$ .

You must give a reason for each step in your working.

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○

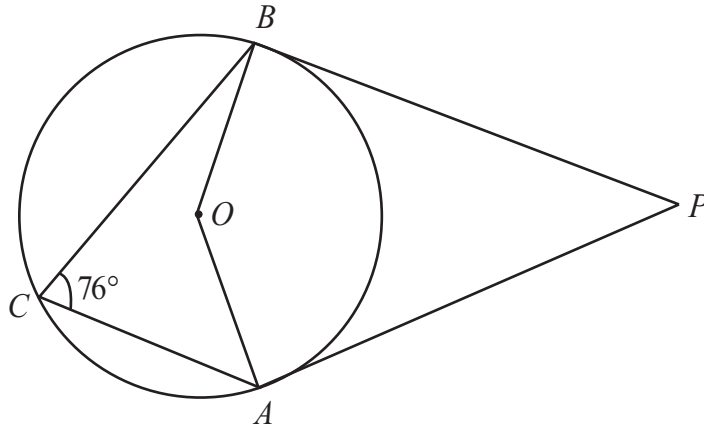


Diagram **NOT**  
accurately drawn

$A$ ,  $B$  and  $C$  are points on a circle, centre  $O$ .

Angle  $ACB = 76^\circ$

$PA$  and  $PB$  are tangents to the circle.

Calculate the size of angle  $APB$ .

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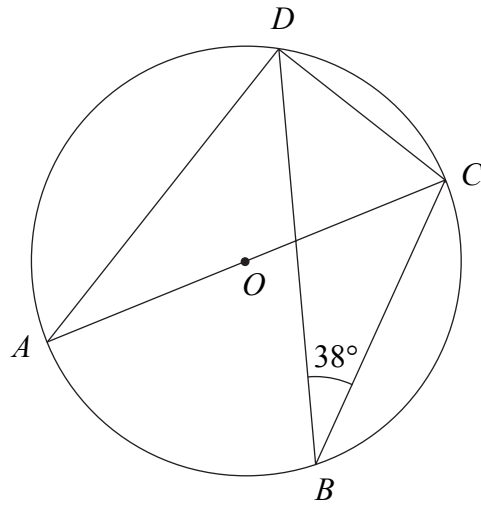


Diagram **NOT**  
accurately drawn

$A$ ,  $B$ ,  $C$  and  $D$  are points on a circle, centre  $O$ .  
 $AC$  is a diameter of the circle.  
 Angle  $CBD = 38^\circ$ .

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

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(ii) Give a reason for your answer.

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(2)

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

o

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(2)