



## Lite GCSE Maths

### Circle Theorems

Name: \_\_\_\_\_

Class: \_\_\_\_\_

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Author:

Date:

Time: 38

Marks: 31

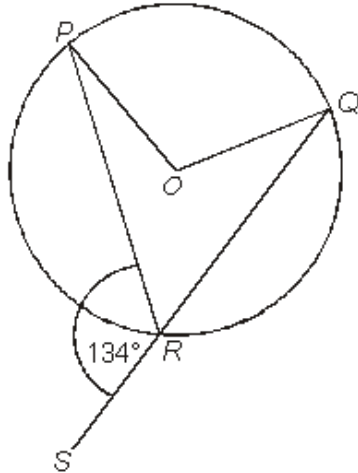
Comments:

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**Q1.**  $O$  is the centre of the circle.

Angle  $PRS = 134^\circ$

Not drawn accurately



Work out the size of the reflex angle  $POQ$ .

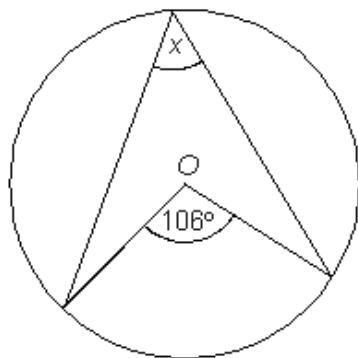
You **must** show your working.

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Answer ..... degrees

**(Total 3 marks)**

**Q2.** (a) In the diagram  $O$  is the centre of the circle.



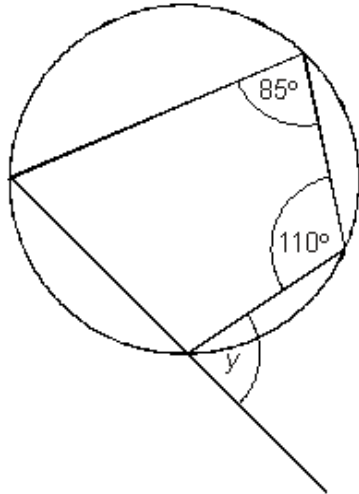
Not drawn accurately

What is the value of  $x$ ?

Answer ..... degrees

**(1)**

(b)



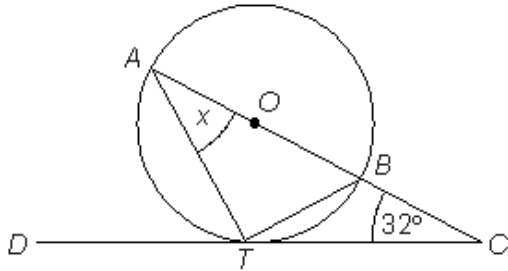
Not drawn accurately

What is the value of  $y$ ?

Answer ..... degrees

(1)  
(Total 2 marks)

- Q3.**  $AB$  is a diameter of the circle, centre  $O$ .  
 $ABC$  is a straight line.  
 $DTC$  is a tangent to the circle at  $T$ .  
Angle  $BCT = 32^\circ$  and angle  $TAB = x^\circ$



Not drawn accurately

Find the value of  $x$ .  
Give reasons for **all** angles you write down or calculate.

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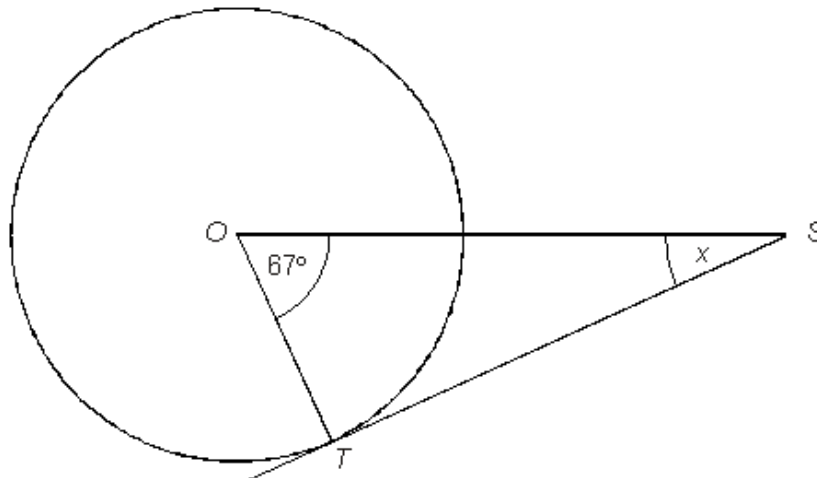
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Answer ..... degrees

**(Total 4 marks)**

- Q4.** (a) The diagram shows a circle with centre  $O$ .  
 $TS$  is a tangent.

Not drawn accurately



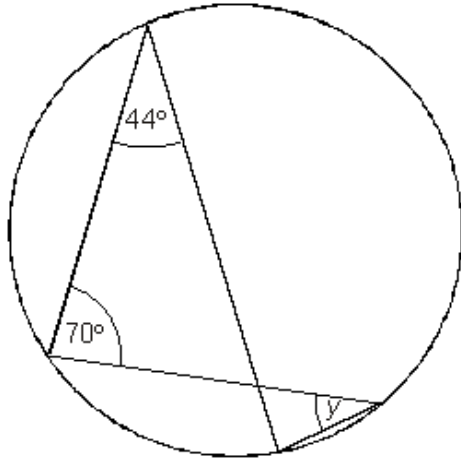
Work out the value of  $x$ .

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Answer ..... degrees

**(1)**

(b) The diagram shows another circle.



Not drawn accurately

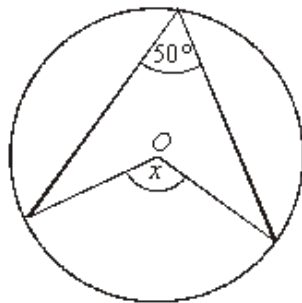
Write down the value of  $y$ .

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Answer ..... degrees

(1)  
(Total 2 marks)

**Q5.** (a) The diagram shows a circle with centre  $O$ .



Not drawn accurately

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

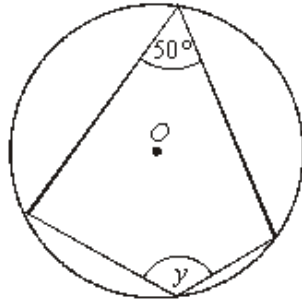
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Answer ..... degrees

(1)

(b) The diagram shows a different circle with centre  $O$ .



Not drawn accurately

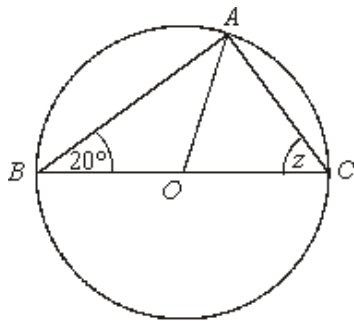
Work out the size of the angle marked  $y$ .

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Answer ..... degrees

(1)

(c)  $A$ ,  $B$  and  $C$  are points on the circumference of a circle with centre  $O$ .  
 $BOC$  is a straight line.  
 Angle  $ABC = 20^\circ$



Not drawn accurately

Work out the size of the angle marked  $z$ .  
 Explain your answer.

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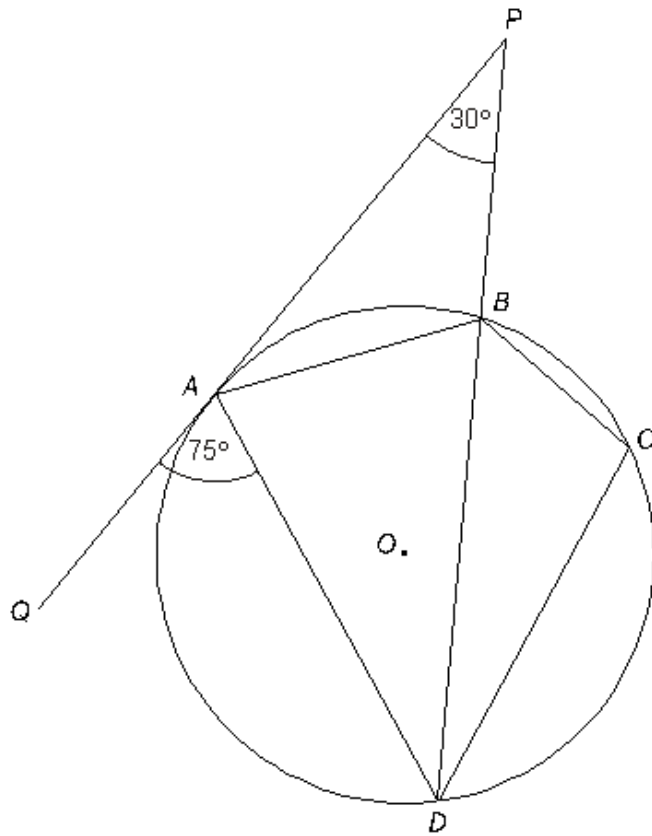
Answer ..... degrees

(2)

(Total 4 marks)

**Q6.** The diagram shows four points  $A$ ,  $B$ ,  $C$  and  $D$  on the circumference of a circle, centre  $O$ .  
 $PAQ$  is the tangent to the circle at  $A$ .  
 $PBD$  is a straight line.

Angle  $QAD = 75^\circ$   
 Angle  $APB = 30^\circ$



Not drawn accurately

Work out angle  $BCD$ .  
 You **must** show your working.

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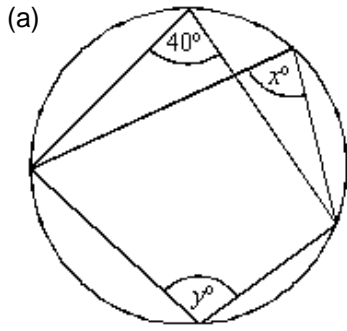
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Answer ..... degrees

**(Total 3 marks)**

**Q7.**



Not drawn accurately

(i) Write down the value of  $x$ .

Answer ..... degrees

(1)

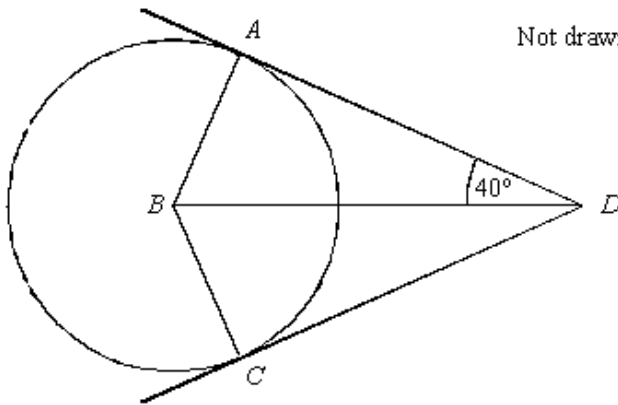
(ii) Calculate the value of  $y$ .

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Answer ..... degrees

(1)

(b)  $A$  and  $C$  are points on the circumference of a circle centre  $B$ .  
 $AD$  and  $CD$  are tangents.  
 Angle  $ADB = 40^\circ$ .



Not drawn accurately

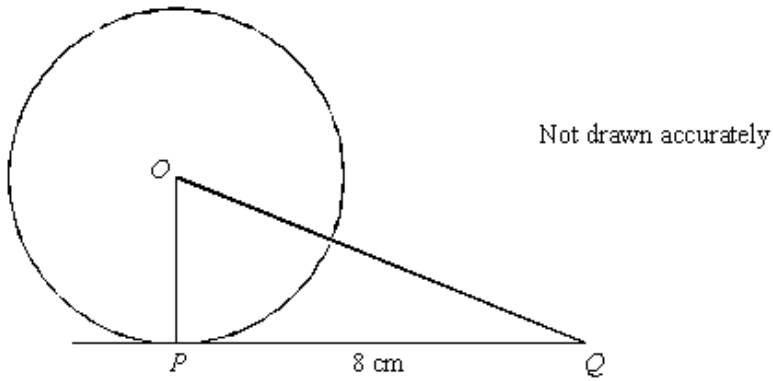
Explain why angle  $ABC$  is  $100^\circ$ .

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(2)



- (c)  $P$  is a point on the circumference of a circle with centre  $O$ .  
 $PQ$  is a tangent of length 8 cm.  
The area of triangle  $OPQ$  is  $24 \text{ cm}^2$ .



Calculate the area of the circle.  
Give your answer in terms of  $\pi$ .

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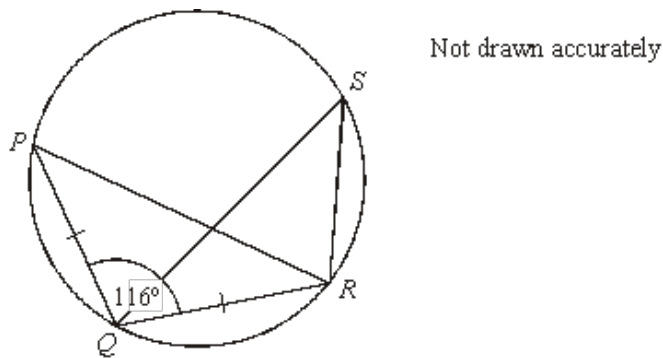
Answer .....  $\text{cm}^2$

(3)  
**(Total 7 marks)**

- Q8.** (a) Points  $P, Q, R$  and  $S$  lie on a circle.

$PQ = QR$

Angle  $PQR = 116^\circ$



Explain why angle  $QSR = 32^\circ$ .

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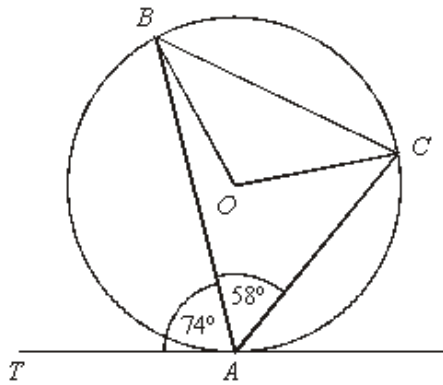
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(2)

- (b) The diagram shows a circle, centre  $O$ .  
 $TA$  is a tangent to the circle at  $A$ .  
 Angle  $BAC = 58^\circ$  and angle  $BAT = 74^\circ$ .



Not drawn accurately

- (i) Calculate angle  $BOC$ .

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Answer Angle  $BOC = \dots\dots\dots$  degrees

(1)

- (ii) Calculate angle  $OCA$ .

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Answer Angle  $OCA = \dots\dots\dots$  degrees

(3)

(Total 6 marks)

