

Circle Theorems (H)

A collection of 9-1 Maths GCSE Sample and Specimen questions from AQA, OCR, Pearson-Edexcel and WJEC Eduqas.

Name:	
Total Marks:	

1. (a) Calculate the size of the angle marked x .

You must give a reason for your answer.

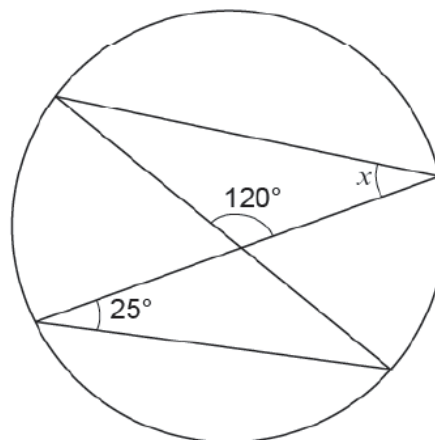


Diagram not drawn to scale

[2]

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

The tangent PT touches the circle at C .

The reflex angle at the centre of the circle is 280° .

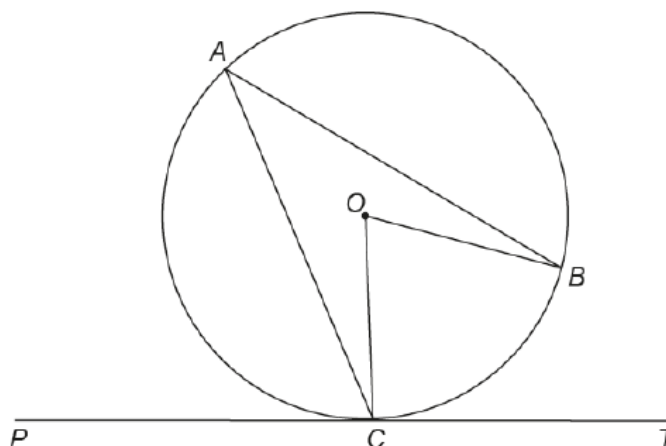


Diagram not drawn to scale

Diagram not drawn to scale

Find the size of \hat{BAC} .

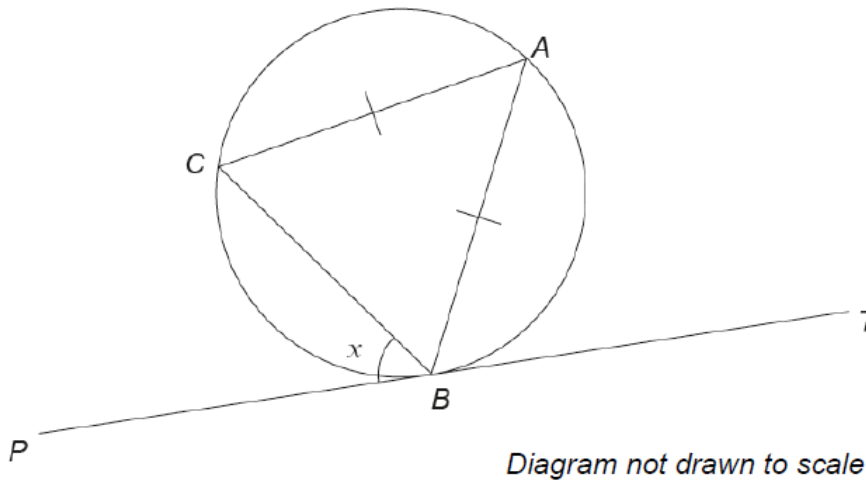
You must give a reason for your answer.

[2]

(c) The points A , B and C lie on the circumference of a circle.

The straight line PBT is a tangent to the circle.

$\angle CBP = x$, where x is measured in degrees.



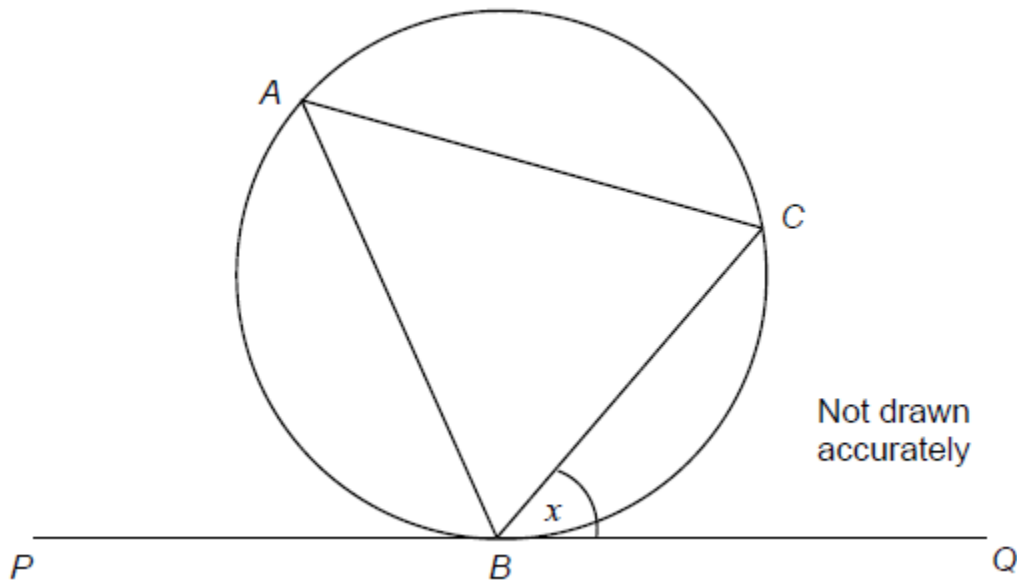
Show that the size of $\angle ABC$ in degrees is $90 - \frac{1}{2}x$

You must give reasons for each step of your answer.

[2]

2. A, B and C are points on a circle.

- BC bisects angle ABQ .
- PBQ is a tangent to the circle.



Angle $CBQ = x$

Prove that $AC = BC$

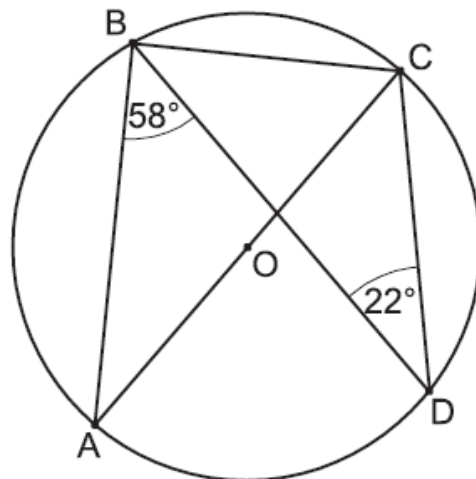
[3]

3. A, B, C and D are points on the circumference of a circle, centre O.

AC is a diameter of the circle.

Angle $ABD = 58^\circ$.

Angle $CDB = 22^\circ$.



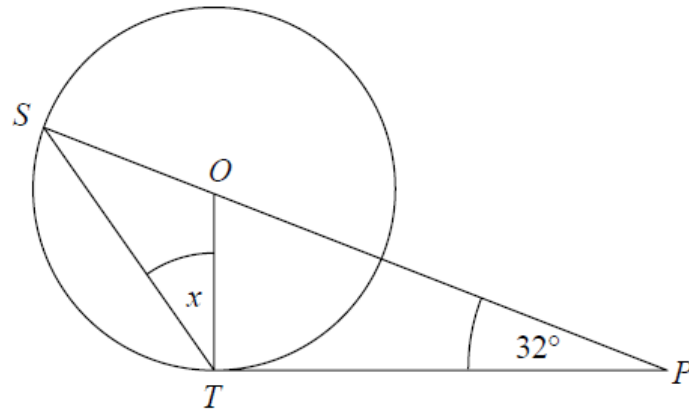
Not to scale

Work out the sizes of angle ACD and ACB , giving reasons for your answers.

(a) Angle $ACD = \dots\dots\dots^\circ$ [2]

(b) Angle $ACB = \dots\dots\dots^\circ$ [3]

4.



S and T are points on the circumference of a circle, centre O .

PT is a tangent to the circle.

SOP is a straight line.

Angle $OPT = 32^\circ$

Work out the size of the angle marked x .

You must give a reason for each stage of your working.

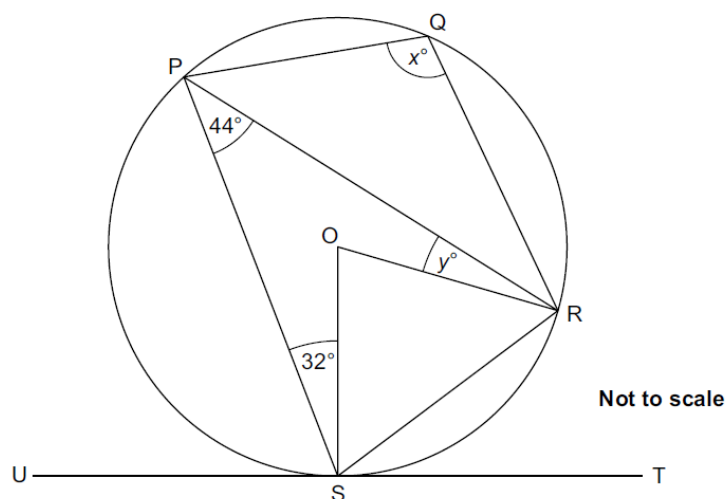
[4]

5. The diagram shows a circle, centre O .

Points P, Q, R and S lie on the circumference of the circle.

UST is a tangent to the circle.

Angle $RPS = 44^\circ$ and angle $PSO = 32^\circ$.



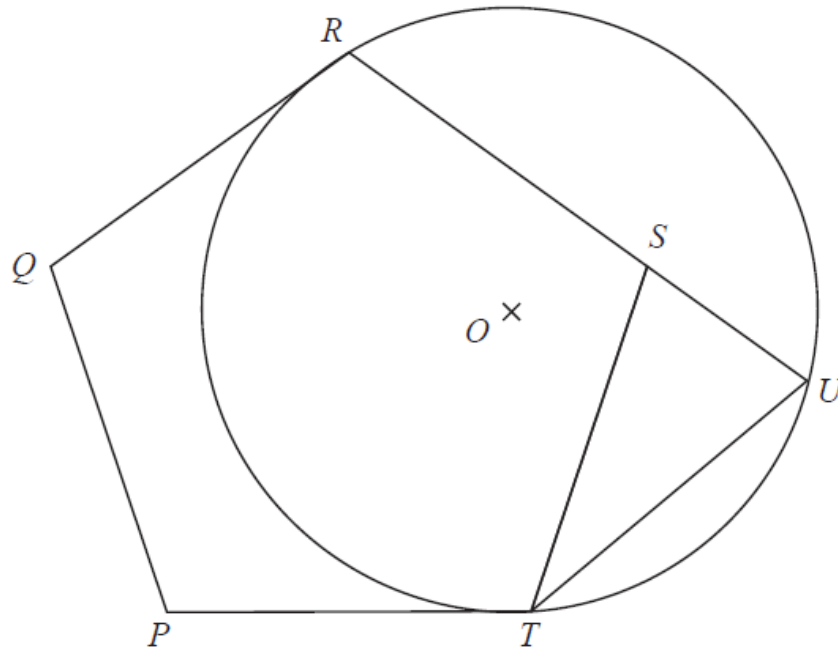
a) Work out the value of x .

a) $x = \dots\dots\dots$ [4]

b) Work out the value of y .

b) $y = \dots\dots\dots$ [3]

6.



$PQRST$ is a regular pentagon.

R, U and T are points on a circle, centre O .

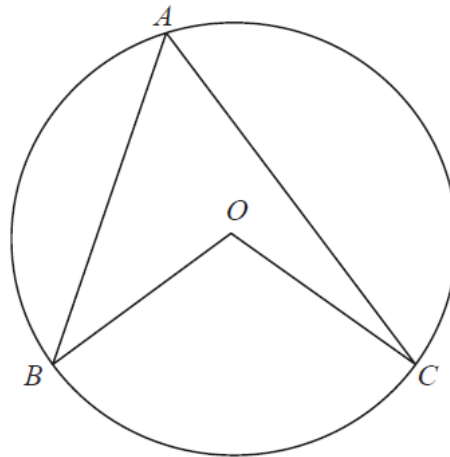
QR and PT are tangents to the circle.

RSU is a straight line.

Prove that $ST = UT$.

[5]

7. A, B and C are points on the circumference of a circle centre O.



Prove that angle BOC is twice the size of angle BAC.

[4]

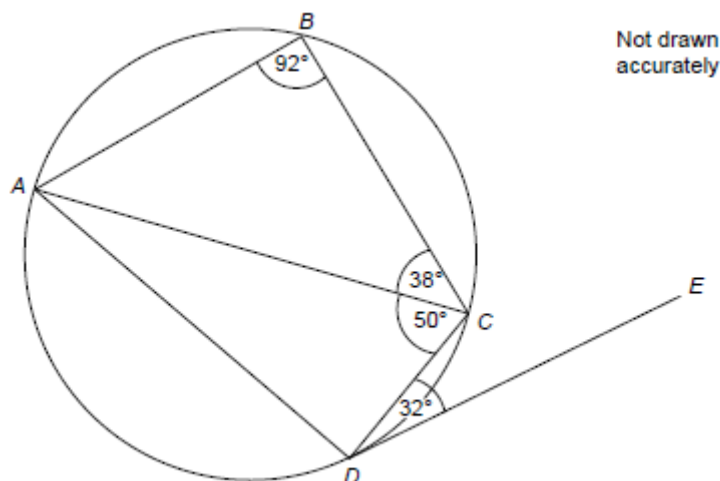
8. B, C and D are points on a circle.

Angle ABC = 92°

Angle ACB = 38°

Angle ACD = 50°

Angle CDE = 32°



Not drawn accurately

Tick whether each statement is true or false.

Give a reason for each answer.

Statement	True	False
AC is a diameter	<input type="checkbox"/>	<input type="checkbox"/>

Reason

Statement	True	False
Angle $ADC = 88^\circ$	<input type="checkbox"/>	<input type="checkbox"/>

Reason

Statement	True	False
$ABCD$ is a trapezium	<input type="checkbox"/>	<input type="checkbox"/>

Reason

Statement	True	False
DE is a tangent to the circle	<input type="checkbox"/>	<input type="checkbox"/>

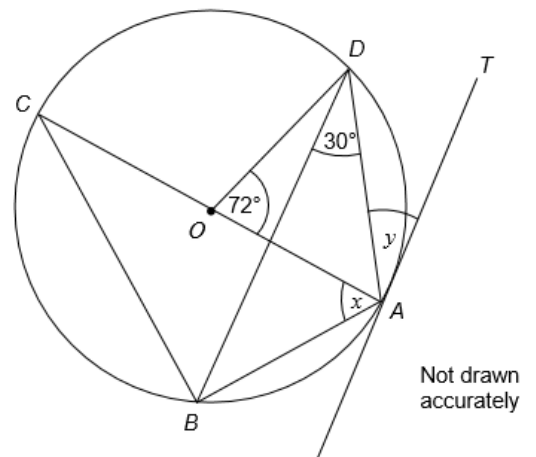
Reason

[4]

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

AC is a diameter of the circle.

AT is a tangent to the circle.



Work out the size of angle x and the size of angle y .

[4]

CREDITS AND NOTES

Question	Awarding Body
1	WJEC Eduqas
2	AQA
3	OCR
4	Pearson Edexcel
5	OCR
6	Pearson Edexcel
7	Pearson Edexcel
8	AQA
9	AQA

Notes:

These questions have been retyped from the original sample/specimen assessment materials and whilst every effort has been made to ensure there are no errors, any that do appear are mine and not the exam board s (similarly any errors I have corrected from the originals are also my corrections and not theirs!).

Please also note that the layout in terms of fonts, answer lines and space given to each question does not reflect the actual papers to save space.

These questions have been collated by me as the basis for a GCSE working party set up by the GLOW maths hub - if you want to get involved please get in touch. The objective is to provide support to fellow teachers and to give you a flavour of how different topics "could" be examined. They should not be used to form a decision as to which board to use. There is no guarantee that a topic will or won't appear in the "live" papers from a specific exam board or that examination of a topic will be as shown in these questions.



Links:

AQA <http://www.aqa.org.uk/subjects/mathematics/gcse/mathematics-8300>

OCR <http://ocr.org.uk/gcsemaths>

Pearson Edexcel <http://qualifications.pearson.com/en/qualifications/edexcel-gcse/mathematics-2015.html>

WJEC Eduqas <http://www.eduqas.co.uk/qualifications/mathematics/gcse/>

Contents:

This version contains questions from:

AQA – Sample Assessment Material, Practice set 1 and Practice set 2

OCR – Sample Assessment Material and Practice set 1

Pearson Edexcel – Sample Assessment Material, Specimen set 1 and Specimen set 2

WJEC Eduqas – Sample Assessment Material