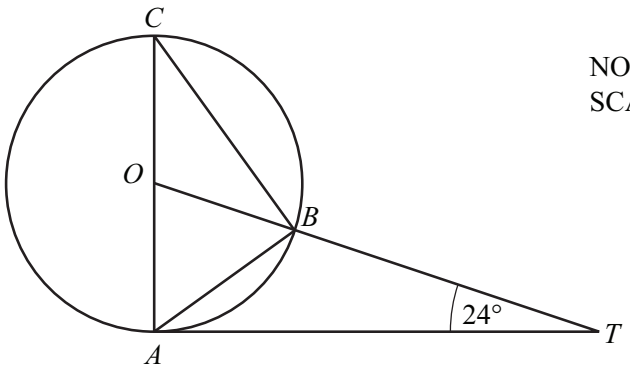
Circles / polygons / angles / parallel lines 1

1)



NOT TO SCALE

A, *B* and *C* are points on a circle, centre *O*.
TA is a tangent to the circle at *A* and *OBT* is a straight line.
AC is a diameter and angle *OTA* = 24°.

Calculate

(a) angle *AOT*,

Answer(a) Angle *AOT* = ... [2]

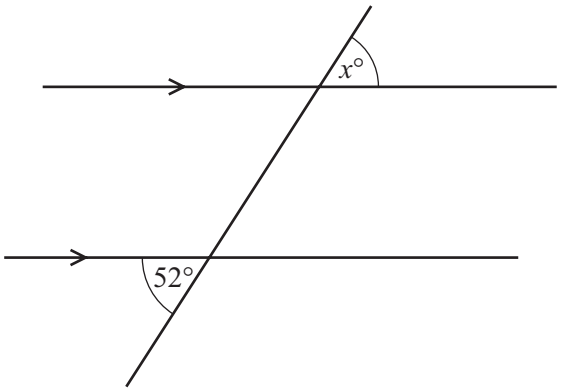
(b) angle *BOC*,

Answer(b) Angle *BOC* = ... [1]

(c) angle *OCB*.

Answer(c) Angle *OCB* = ... [1]

2)



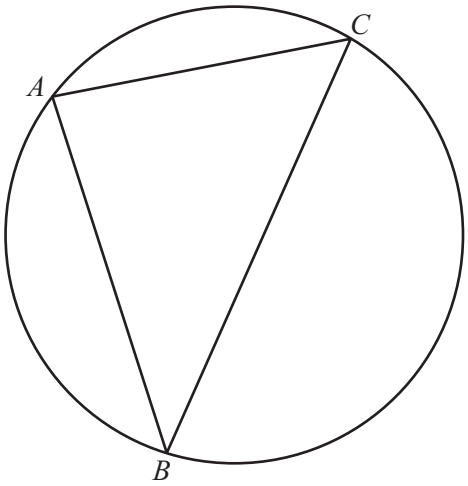
NOT TO SCALE

A straight line intersects two parallel lines as shown in the diagram.

Find the value of x.

Answer x = ... [1]

3) **(a)**



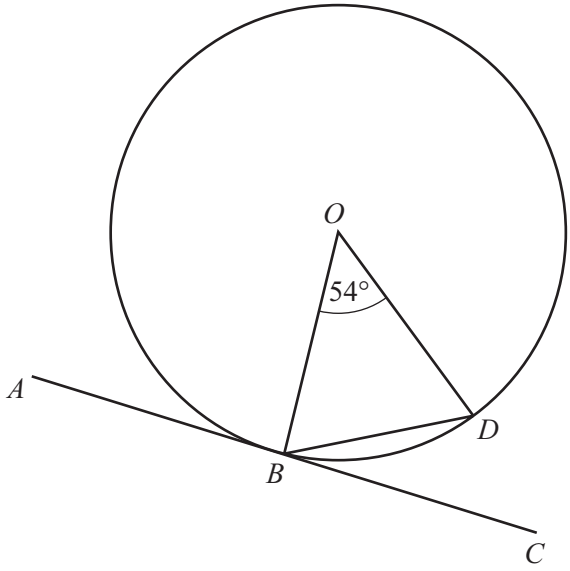
NOT TO SCALE

Points A, B and C lie on the circumference of the circle shown above.

When angle BAC is 90° write down a statement about the line BC.

Answer(a) ..... [1]

(b)



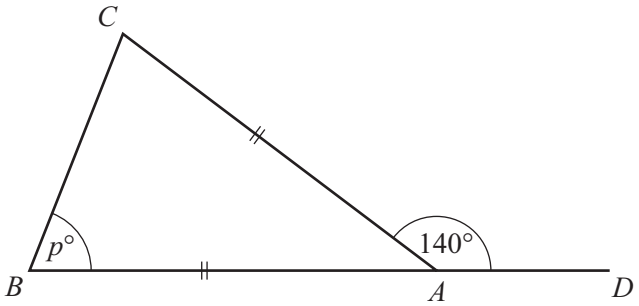
NOT TO SCALE

O is the centre of a circle and the line *ABC* is a tangent to the circle at *B*.
D is a point on the circumference and angle *BOD* = 54°.

Calculate angle *DBC*.

Answer(b) Angle *DBC* = ... [3]

4) **(a)**



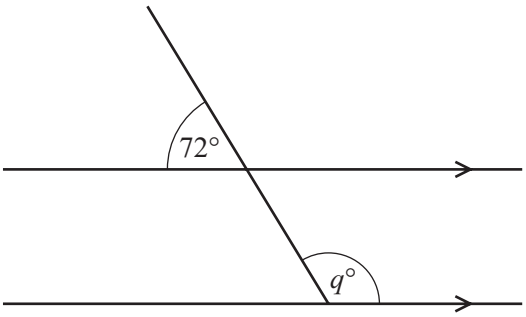
NOT TO SCALE

The diagram shows a triangle *ABC* with *BA* extended to *D*.
AB = *AC* and angle *CAD* = 140°.
Find the value of *p*.

Answer(a) p = ... [2]

4cont)

(b)

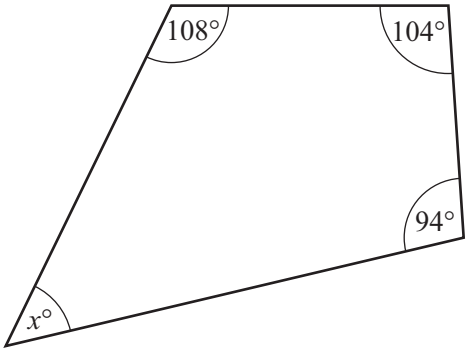


NOT TO SCALE

Find the value of q.

Answer(b) q = ... [2]

(c)

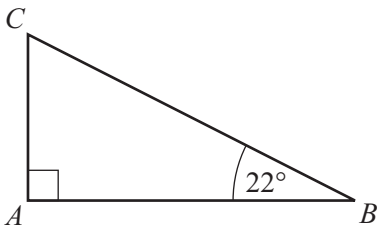


NOT TO SCALE

Find the value of x.

Answer(c) x = ... [1]

(d)



NOT TO SCALE

In triangle ABC, angle $A = 90°$ and angle $B = 22°$.

Calculate angle C.

Answer(d) Angle C = ... [1]

5)

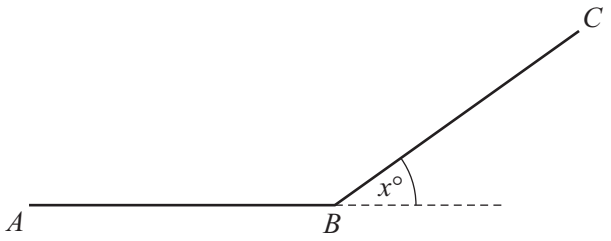
(a) The table below shows how many sides different polygons have.

Complete the table.

Name of polygon	Number of sides
	3
Quadrilateral	4
	5
Hexagon	6
Heptagon	7
	8
Nonagon	9

[3]

(b) Two sides, *AB* and *BC*, of a regular nonagon are shown in the diagram below.



NOT TO SCALE

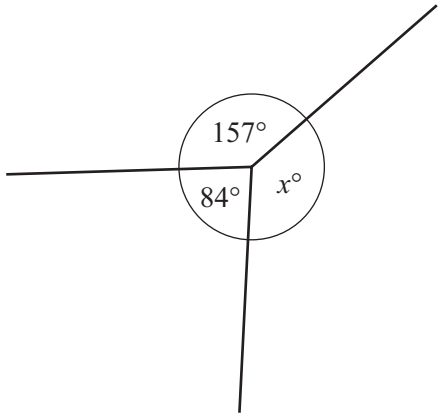
(i) Work out the value of *x*, the exterior angle.

Answer(b)(i) x = ... [2]

(ii) Find the value of angle *ABC*, the interior angle of a regular nonagon.

Answer(b)(ii) Angle *ABC* = ... [1]

6)

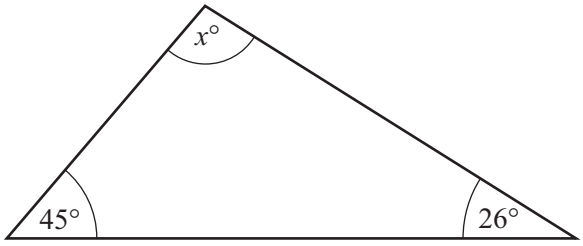


NOT TO SCALE

Find the value of x.

Answer x = ... [1]

7)

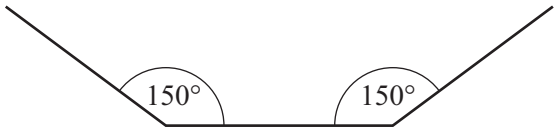


NOT TO SCALE

Find the value of x.

Answer x = ... [1]

8)



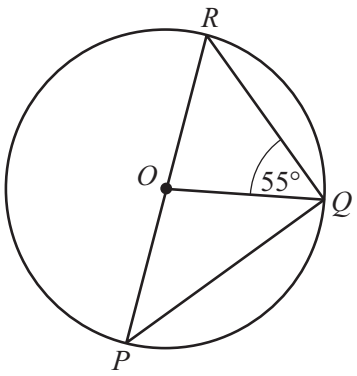
NOT TO SCALE

The diagram shows part of a regular polygon with each interior angle 150°.

Calculate the number of sides of the polygon.

Answer ..... [3]

9)



NOT TO SCALE

P, *Q* and *R* lie on a circle, centre *O*.
PR is a diameter and angle *OQR* = 55°.

Find

(a) angle *PQR*,

Answer(a) Angle *PQR* = ... [1]

(b) angle *ROQ*,

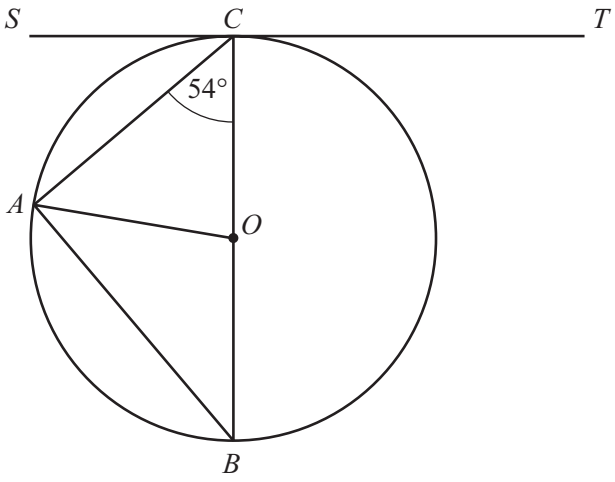
Answer(b) Angle *ROQ* = ... [1]

(c) angle *OPQ*.

Answer(c) Angle *OPQ* = ... [1]

10)

NOT TO SCALE



A, *B* and *C* lie on a circle, centre *O*. *BC* is a diameter and *SCT* is a tangent at *C*. Angle *ACB* = 54°.

Find

(a) angle *BCT*,

Answer(a) Angle *BCT* = ... [1]

(b) angle *COA*,

Answer(b) Angle *COA* = ... [1]

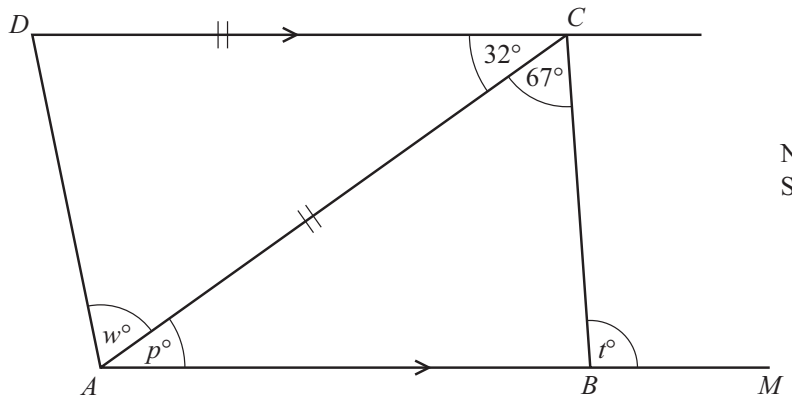
(c) angle *CAB*,

Answer(c) Angle *CAB* = ... [1]

(d) angle *ABC*.

Answer(d) Angle *ABC* = ... [1]

11)



NOT TO SCALE

The diagram shows a quadrilateral *ABCD* with *DC* parallel to *AB*.

(a) Write down the geometrical name for a quadrilateral with **only one** pair of parallel sides.

Answer(a) ..... [1]

(b) *ABM* is a straight line and *DC* = *AC*.
Angle *DCA* = 32° and angle *ACB* = 67°.

Find the values of *p*, *t* and *w*, giving a reason for each answer.

Answer (b) p = ... because .....

..... [2]

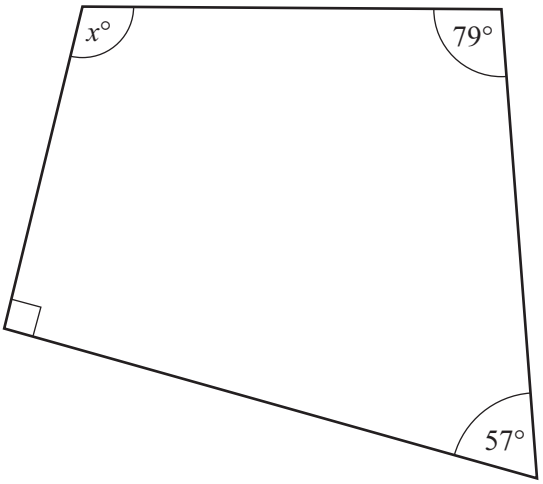
t = ... because .....

..... [2]

w = ... because .....

..... [2]

12)

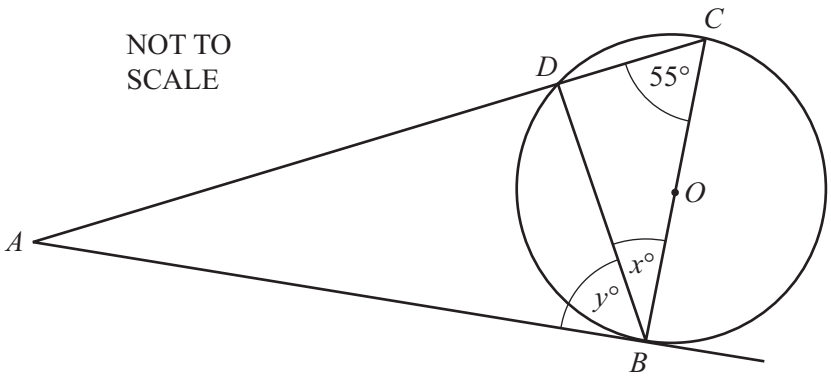


NOT TO SCALE

The diagram shows a quadrilateral.
Work out the value of x.

Answer x = ... [1]

13)



NOT TO SCALE

The diagram shows a circle, centre O, with diameter BC.
AB is a tangent to the circle at B and angle $BCD = 55°$.
A straight line from A meets the circle at D and C.

Calculate the value of

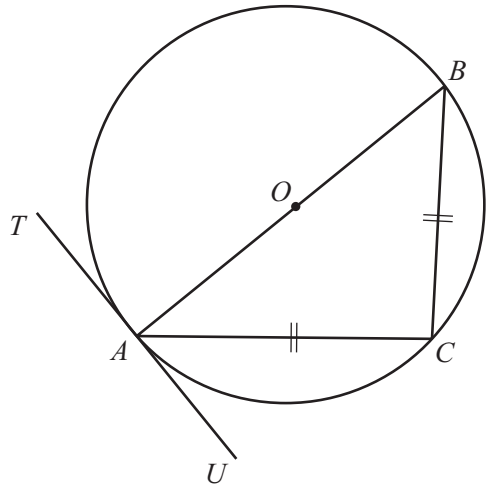
(a) x,

Answer(a) x = ... [2]

(b) y.

Answer(b) y = ... [1]

14)



NOT TO SCALE

In the diagram, TAU is a tangent to the circle at A.
AB is a diameter of the circle and $AC = BC$.

Find

(a) angle BCA,

Answer(a) Angle BCA = ... [1]

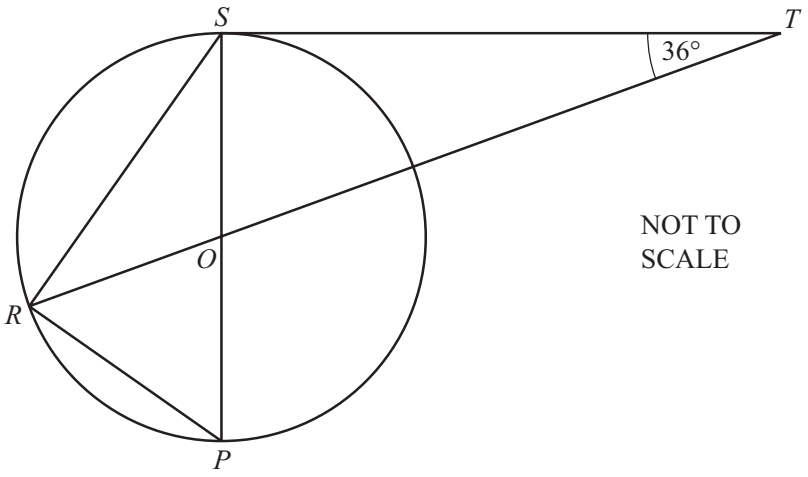
(b) angle ABC,

Answer(b) Angle ABC = ... [1]

(c) angle CAU.

Answer(c) Angle CAU = ... [1]

15)



The points *P*, *R* and *S* lie on a circle, centre *O*.
ROT is a straight line and *TS* is a tangent to the circle at *S*.
Angle *STO* = 36°.

(a) Write down the size of angle *TSO*, giving a reason for your answer.

Answer(a) Angle *TSO* = ... because .....

..... [2]

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

Answer(b)(i) Angle *TOS* = ... [1]

(ii) Show that angle *OPR* = 63°.

Answer(b)(ii)

[2]

(c) **(i)** Write down the size of angle *PRS*.

Answer(c)(i) Angle *PRS* = ... [1]

(ii) Calculate the size of angle *PSR*.

Answer(c)(ii) Angle *PSR* = ... [1]