SECTION A

QUESTION 1

Given the points $A(2;7)$ and $B(-8;-3)$

1..1 Find the co-ordinates of the midpoint of *AB*.

(2)

1.2 Determine the length of line *AB*, leaving answer in surd form.

(3)

1.3 Find the gradient of *AB*.

(2)

1.4 Determine the equation of the line which is parallel to *AB*, and which passes through the point $(1;-2)$.

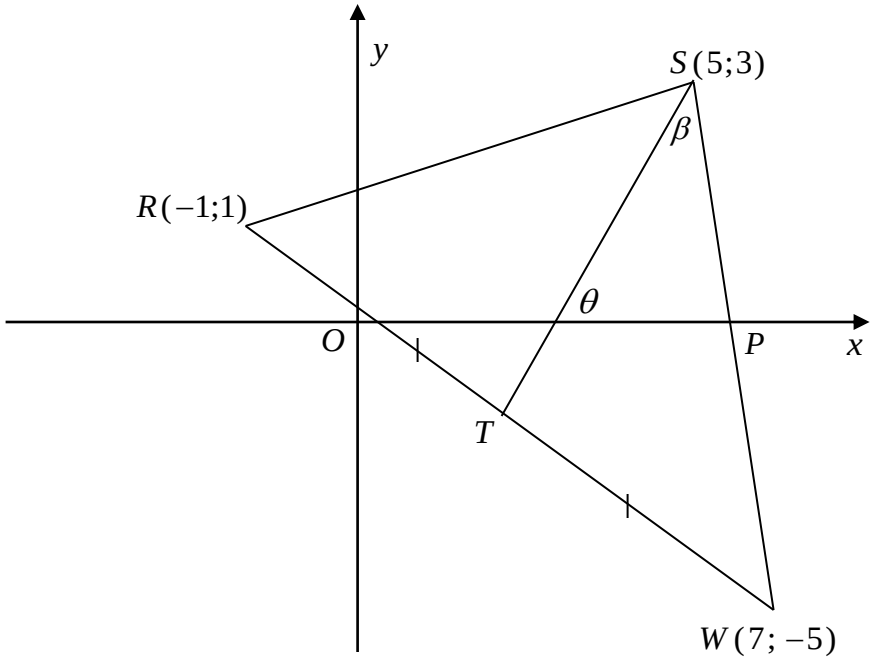
(4)

1.5 Find the value of k if the points *A*, *B* and $D(6;k)$ are collinear. (lie on the same straight line.)

(4)

QUESTION 2

Refer to the figure. $R(-1\,;1)$, $S(5\,;3)$ and $W(7\,;-5)$ are points in the Cartesian plane.
$\boldsymbol{RT = TW}$ and $T\hat{S}P = \beta$.



2.1 Show that the co-ordinates of T are $(3\,;-2)$.

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_____

(2)

2.2 Find the equation of the line *ST*.

_____

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_____

(3)

2.3 Determine whether or not $R\hat{S}W = 90°$. Explain

_____

_____

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(4)

QUESTION 2 contd

2.4 Find the size of θ, the inclination of *ST*.

(2)

2.5 Hence, calculate the value of β. ($T\hat{S}P$)

(4)

2.6 Calculate the co-ordinates of a point $D(x\,;\,y)$, if *RSWD* is a parallelogram.

(4)

QUESTION 3

Given the points $C(-11\,;-4)$, $D(-5\,;3)$ and $E(1\,;\,k)$.

Calculate the value(s) of k if $DE = 3CD$.

(6)

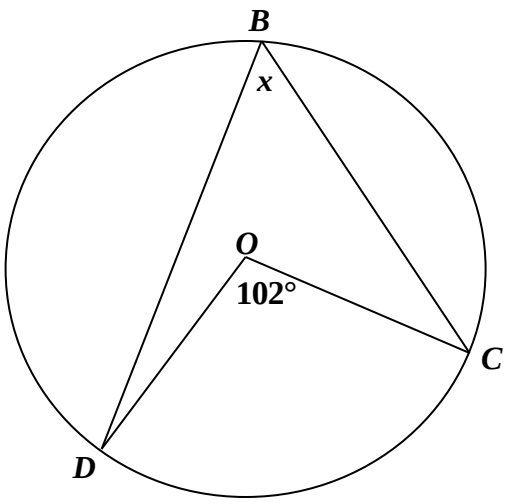
TOTAL SECTION A : 40

SECTION B

QUESTION 4

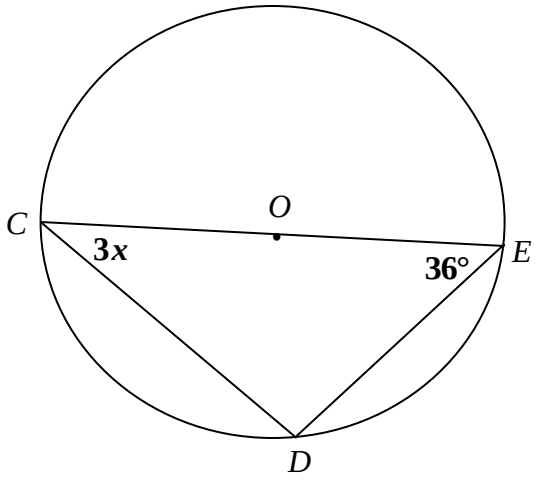
Giving reasons, find the value of x in each of the following, **where *O* is circle centre** :

4.1



(2)

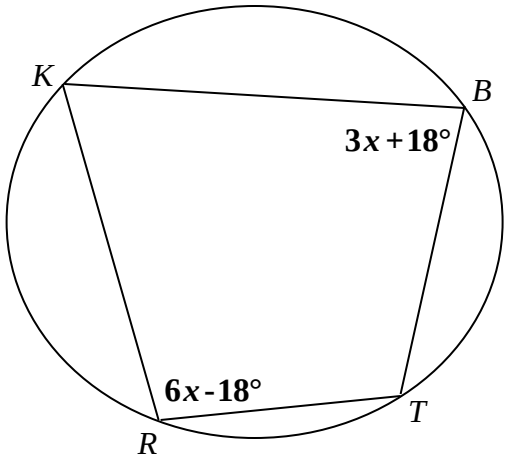
4.2



(3)

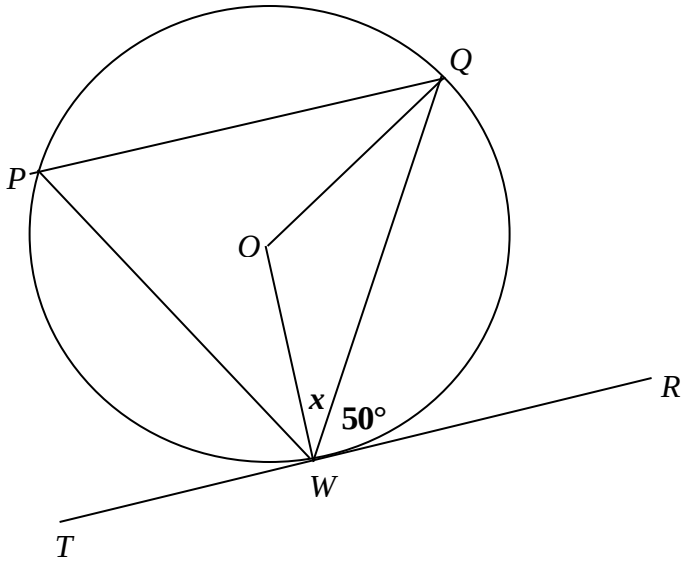
Question 4 contd

4.3



(4)

4.4 TR is a tangent and $Q\hat{W}R = 50°$.

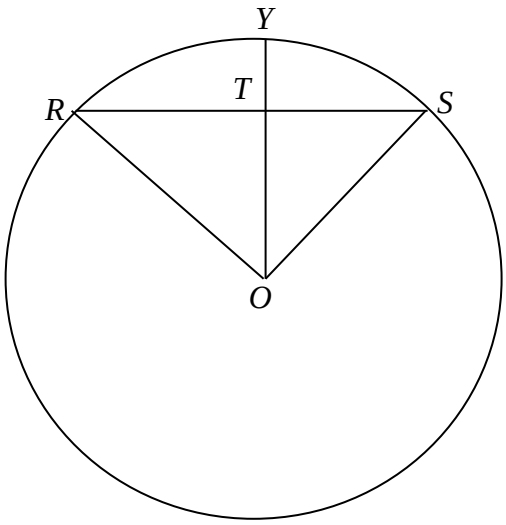


(4)

QUESTION 5

In the figure below, O is the centre of the circle. $RT = TS = 4cm$ and $YT = 1cm$.

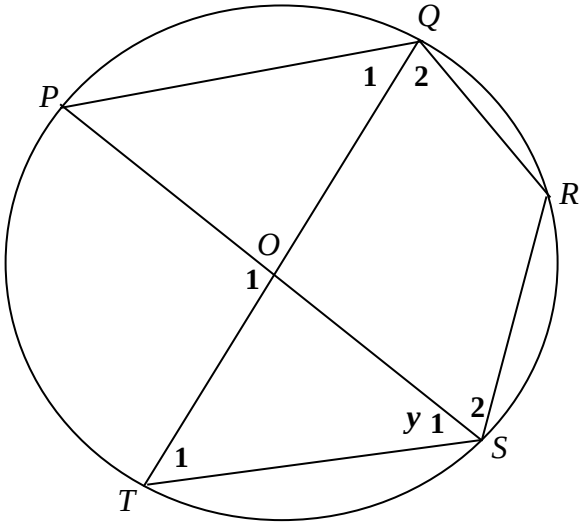
Find the length of the radius of the circle.



(6)

QUESTION 6

In the diagram, *O* is the centre of the circle and $\hat{S}_1 = y$



6.1 Name, with reasons, three other angles each equal to y .

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_____

_____

_____

(6)

6.2 If $y = 44°$, determine, with reasons, the size of the following angles:

(a) $\hat{R}$

_____

_____

(3)

(b) $\hat{O}_1$

_____

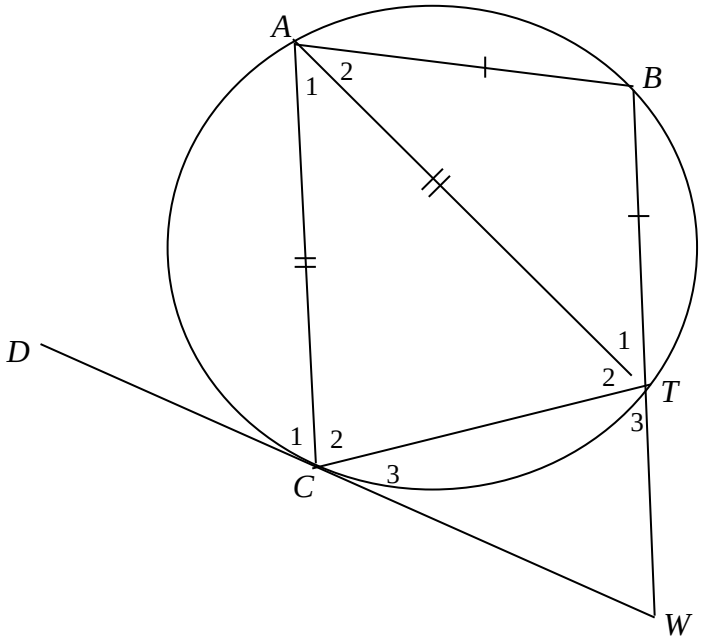
_____

(3)

QUESTION 7

In the figure below, $BW \parallel AC$, $AB = BT$ and $AT = AC$.

DCW is a tangent to the circle at C and BTW is a straight line.



7.1 If $\hat{C}_1 = x$, name three other angles each equal to x. (reasons not required)

_____

_____

_____

(3)

7.2 Express $A\hat{B}T$ in terms of x.

_____

(2)

7.3 If $\hat{C}_3 = k$, give, with reasons, two other angles each equal to k.

_____

_____

(4)

TOTAL SECTION B : 40

You may require the following FORMULAE.

$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

$\text{Midpt} = \left(\frac{x_1 + x_2}{2} \; ; \; \frac{y_1 + y_2}{2} \right)$

$\tan\theta = m$

$m = \frac{y_1 - y_2}{x_1 - x_2}$

$y = mx + c$

$m(x_2 - x_1) = y_2 - y_1$