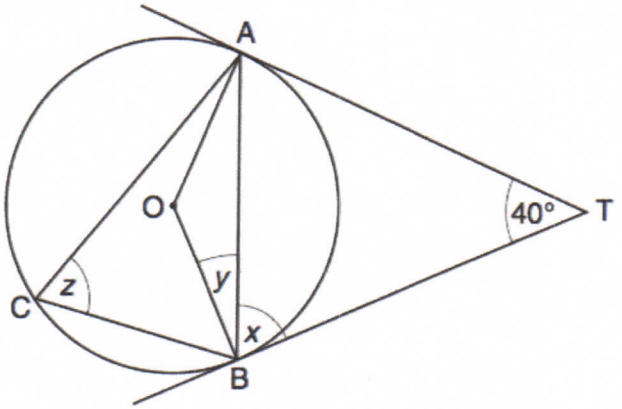
# Geometry - Circle Theorems

**Q1**

A, B and C are points on a circle, centre O.
TA and TB are tangents to the circle.
Angle ATB = 40°.

NOT TO SCALE




**(a)** Find angle *x*.
Give a reason for your answer.

.....

.....

*x* = _____° because _____

_____[2]

**(b)** Find angle *y*.
Give a reason for your answer.

.....

*y* = _____° because _____

_____[2]

**(c)** Find angle *z*.

.....

.....

.....

**(c)** *z* = _____ ° [2]

# Geometry - Circle Theorems

**Q2**

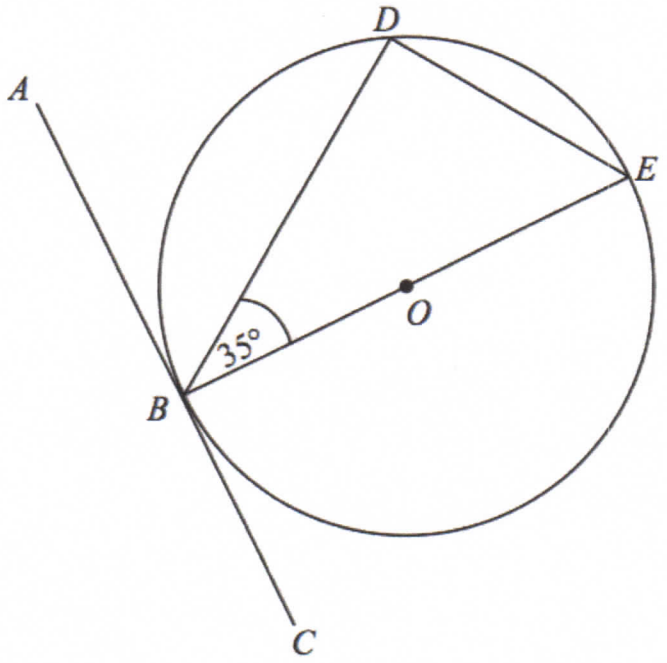



Diagram **NOT** accurately drawn

*B*, *D* and *E* are points on a circle centre *O*.
*ABC* is a tangent to the circle.
*BE* is a diameter of the circle.
Angle *DBE* = 35°.

(a) Find the size of angle *ABD*.
Give a reason for your answer.

..... °

**(2)**

(b) Find the size of angle *DEB*.
Give a reason for your answer.

..... °

**(2)**

**(Total 4 marks)**

# Geometry - Circle Theorems

**Q1**

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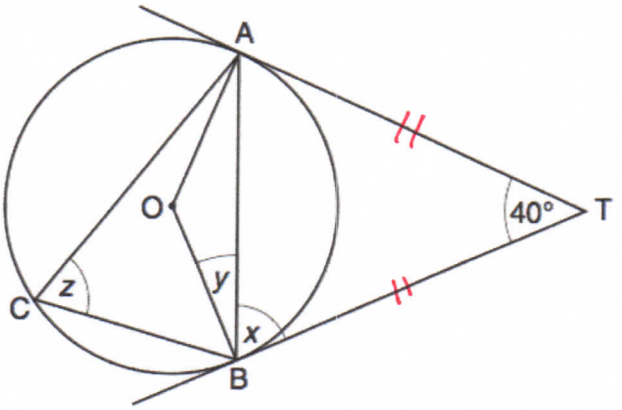


**(a)** Find angle *x*.
Give a reason for your answer.

Tangents from T are equal length so △ABT is isosceles

$x = (180-40) \div 2 = 70°$ (base angle of isos △)

*x* = 70 ° because see above

[2]

**(b)** Find angle *y*.
Give a reason for your answer.

Angle between tangent and radius = 90°

*y* = 20 ° because 90 − 70 = 20 and $y + x = 90°$ since this is angle between tangent and radius

[2]

**(c)** Find angle *z*.

z is the same as x (alternate segment theorem)

**(c)** *z* = 70 ° [2]

# Geometry - Circle Theorems

**Q2**

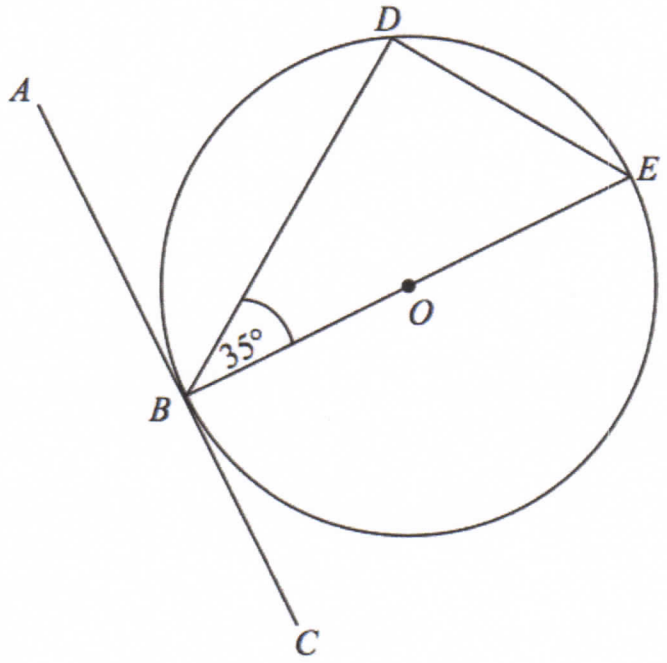


Diagram **NOT** accurately drawn

*B*, *D* and *E* are points on a circle centre *O*.
*ABC* is a tangent to the circle.
*BE* is a diameter of the circle.
Angle *DBE* = 35°.

$\angle ABD = 90 - 35 = 55^\circ$

because angle between tangent ABC and radius OB is 90°

(a) Find the size of angle *ABD*.
Give a reason for your answer.

55° .....°

**(2)**

(b) Find the size of angle *DEB*.
Give a reason for your answer.

$\angle BDE = 90^\circ$ (angle in a semi-circle = 90°)

$\therefore \angle DEB = 180 - (35 + 90)$
$= 180 - 125$
$= 55^\circ$ (angle sum of $\triangle$)

55 .....°

**(2)**

Could just have said

$\angle DEB = \angle ABD = 55^\circ$ (alternate segment theorem)

**(Total 4 marks)**