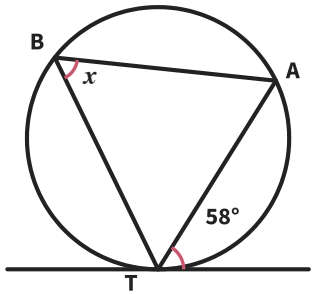
Circle theorems: the alternate segment theorem

ANSWERS

1

The line is a tangent to the circle at T. Find angle x.



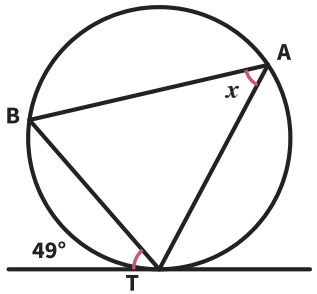
$x =$ 58 °

alternate segment theorem

$x =$ 58°

2

The line is a tangent to the circle at T. Find angle x.



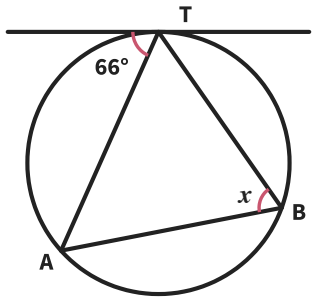
$x =$ 49 °

alternate segment theorem

$x =$ 49°

3

The line is a tangent to the circle at T. Find angle x. Give a reason.



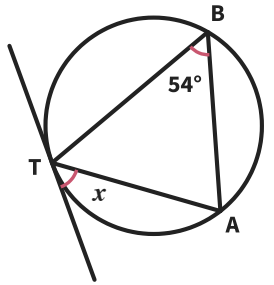
$x =$ 66 °

alternate segment theorem

$x =$ 66°

4

The line is a tangent to the circle at T. Find angle x. Give a reason.

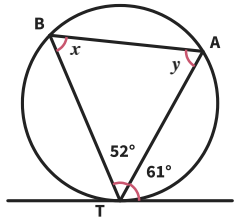


x = 54° (alternate segment theorem)

$x =$ 54°

5 Notice the change!

The line is a tangent to the circle at T. Find x and y.



$x =$ 61 °

alternate segment theorem

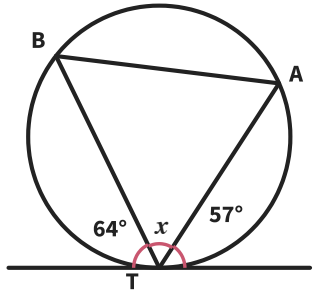
$y = 180 -$ 61 $-$ 52

angles in a triangle add up to 180°

$x, y =$ 61°, 67°

6

The line is a tangent to the circle at T. Find angle x. Give a reason.



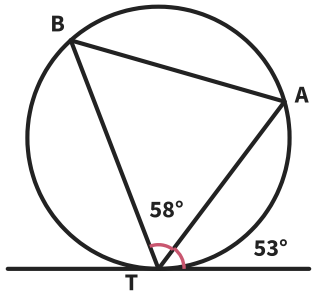
x = 180 – 57 – 64

angles on a straight line add up to 180°

$x =$ 59°

7

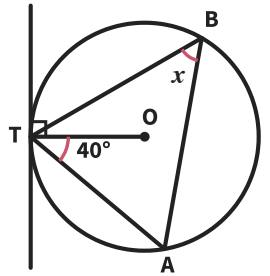
The line is a tangent to the circle at T. Chidi says angle TAB = 53°, by the alternate segment theorem.
Explain why Chidi is wrong.



A is on the chord TA. The equal angle is at B: angle TBA = 53°. (Angle TAB = 69°.)

8

O is the centre. The line is a tangent to the circle at T. Find angle x.



tangent and TA = 90 – 40 = 50° (tangent meets radius at 90°), x = 50° (alt. segment)

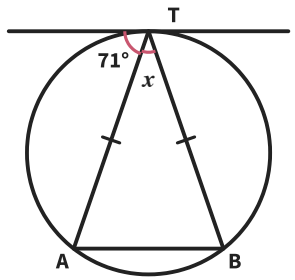
$x =$ 50°

Circle theorems: the alternate segment theorem *further practice*

ANSWERS

9

The line is a tangent to the circle at T. TA = TB. Find angle x. Give a reason for each step.



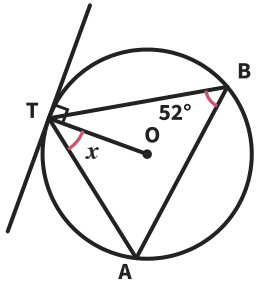
TBA = 71° (alternate segment theorem)

TAB = 71° (isosceles), x = 180 – 142

x = *38°*

10

O is the centre. The line is a tangent to the circle at T. Find angle x. Give reasons.



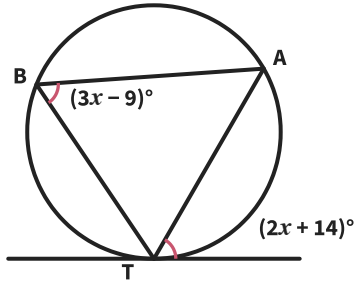
tangent and TA = 52° (alternate segment)

x = 90 – 52 (tangent meets radius at 90°)

x = *38°*

11

The line is a tangent to the circle at T. Find the value of x.



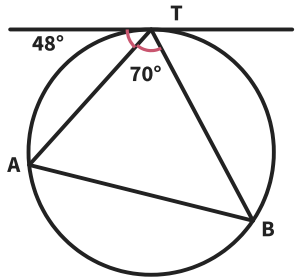
3x – 9 = 2x + 14 (alternate segment)

x = 23

x = *23*

12

A round flower bed touches a straight path at T. Edging strips TA, TB and AB cross it. Find angle TAB. Give reasons.



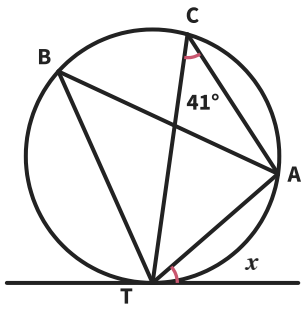
TBA = 48° (alternate segment theorem)

TAB = 180 – 48 – 70 (angles in a triangle)

Angle TAB = *62°*

13

The line is a tangent to the circle at T. Find angle x. Give reasons.



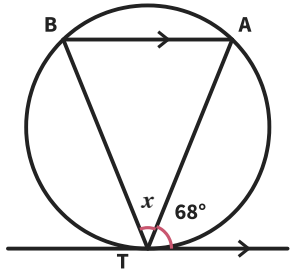
TBA = 41° (angles in the same segment)

x = 41° (alternate segment theorem)

x = *41°*

14

The line is a tangent to the circle at T. AB is parallel to the tangent. Find angle x. Give reasons.



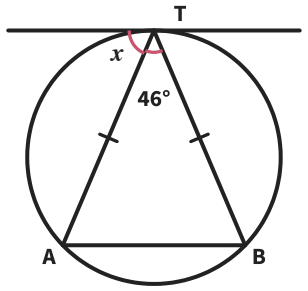
TBA = 68° (alternate segment theorem)

TAB = 68° (alt. angles), x = 180 – 136

x = *44°*

15

The line is a tangent to the circle at T. TA = TB. Find angle x. Give reasons.



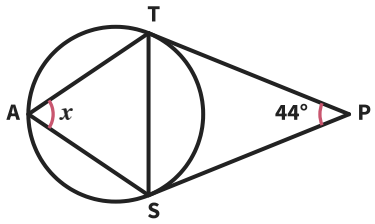
TBA = (180 – 46) ÷ 2 = 67° (isosceles)

x = 67° (alternate segment theorem)

x = *67°*

16

PT and PS are tangents to the circle. Find angle x. Give reasons.



PT = PS, so PTS = (180 – 44) ÷ 2 = 68°

x = 68° (alternate segment theorem)

x = *68°*