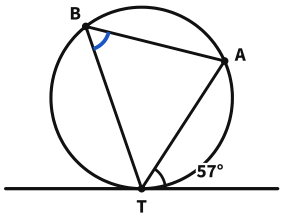
Circle theorems: alternate segment

ANSWERS

1

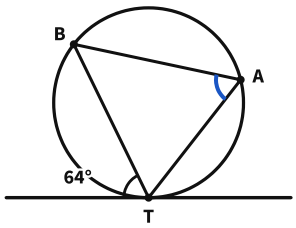
The line is a tangent to the circle at T.
Which angle in triangle TAB is also 57°?
Mark it.



Angle TBA

2

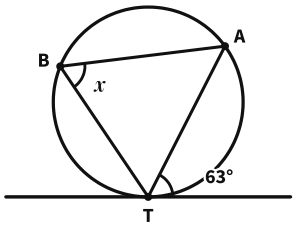
The line is a tangent to the circle at T.
Which angle in triangle TAB is also 64°?
Mark it.



Angle TAB

3

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

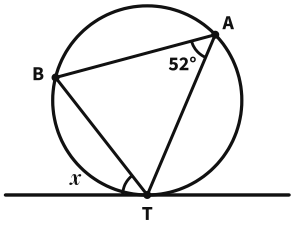


$x =$ 63°

Reason alternate segment theorem

4

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

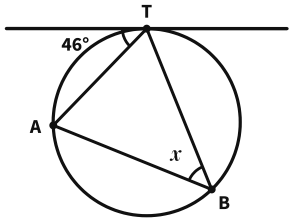


$x =$ 52°

Reason alternate segment theorem

5 Notice the change!

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

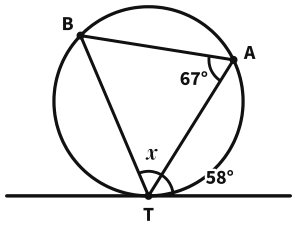


$x =$ 46°

Reason alternate segment theorem

6

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

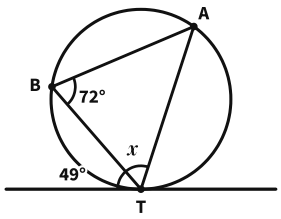


angle TBA = 58°

$x =$ 180 − 58 − 67 = 55°

7

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

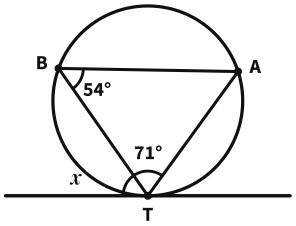


angle TAB = 49°

$x =$ 180 − 49 − 72 = 59°

8 Notice the change!

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



angle TAB = 180 − 54 − 71 = 55°

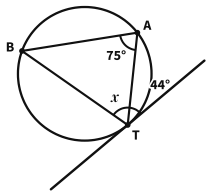
$x =$ 55°

Circle theorems: alternate segment *further practice*

ANSWERS

9

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



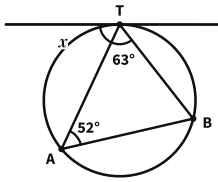
angle TBA = 44° (alternate segment)

x = 180 − 44 − 75 = 61°

Answer x = 61°

10

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



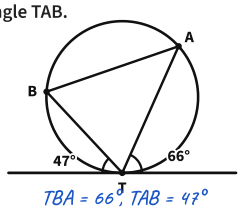
angle TBA = 180 − 52 − 63 = 65°

x = angle TBA (alternate segment)

Answer x = 65°

11

A round mirror rests on a shelf at T.
Strings TA, TB and AB make a triangle inside it. Find the three angles of triangle TAB.



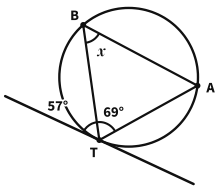
TBA = 66°, TAB = 47° (alternate segment)

ATB = 180 − 66 − 47 = 67°

Answer TBA = 66°, TAB = 47°, ATB = 67°

12

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



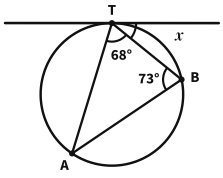
180 − 57 − 69 = 54° (a straight line)

x = 54° (alternate segment)

Answer x = 54°

13

A round glass panel hangs from a bar that touches it at T. Lead strips make triangle TAB. Find angle x.



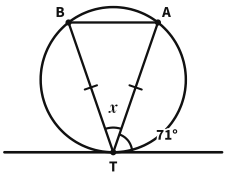
angle TAB = 180 − 73 − 68 = 39°

x = angle TAB (alternate segment)

Answer x = 39°

14

A round table touches a wall at T.
Strings of tape TA and TB are the same length. Find angle ATB, marked x.



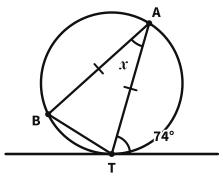
angle TBA = 71° (alternate segment)

TA = TB, so angle TAB = 71°:
x = 180 − 71 − 71 = 38°

Answer x = 38°

15

The line is a tangent to the circle at T.
AT = AB. Find angle TAB, marked x.



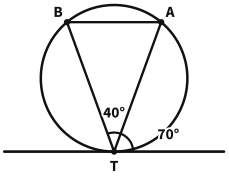
angle TBA = 74° (alternate segment)

AT = AB, so angle ATB = 74°:
x = 180 − 74 − 74 = 32°

Answer x = 32°

16

The line is a tangent to the circle at T.
Show that triangle TAB is isosceles.



angle TBA = 70° (alternate segment)

angle TAB = 180 − 70 − 40 = 70°

So TAB = TBA = 70°, so TA = TB