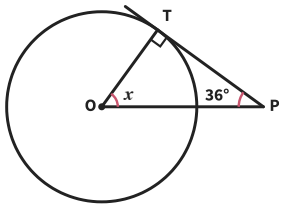
Circle theorems: tangents

1

PT is a tangent to the circle at T, and O is the centre. Find angle x.



Angle OTP = 90 °

tangent meets radius at 90°

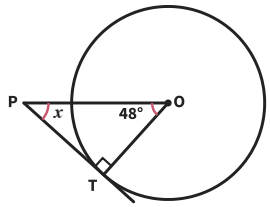
$x = 180 - 90 -$ ____

angles in a triangle add up to 180°

$x =$ _____

2

PT is a tangent to the circle at T, and O is the centre. Find angle x.



Angle OTP = ____ °

tangent meets radius at 90°

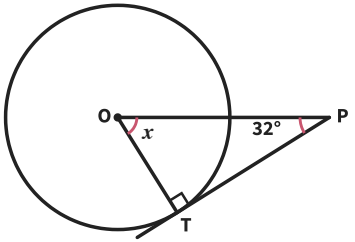
$x =$ ____ $-$ ____ $-$ ____

angles in a triangle add up to 180°

$x =$ _____

3

PT is a tangent to the circle at T, and O is the centre. Find angle x. Give reasons.



Angle OTP = ____ °

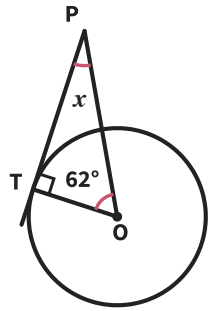
_____

_____

$x =$ _____

4

PT is a tangent to the circle at T, and O is the centre. Find angle x. Give reasons.



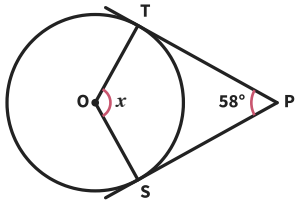
_____

_____

$x =$ _____

5 *Notice the change!*

PT and PS are tangents to the circle, centre O. Find angle x.



Angles at T and S = ____ °

tangent meets radius at 90°

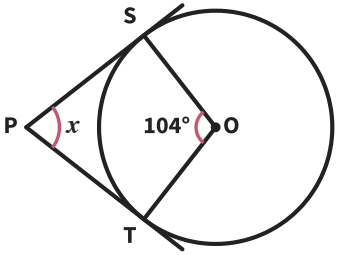
$x = 360 -$ ____ $-$ ____ $-$ ____

angles in a quadrilateral add up to 360°

$x =$ _____

6

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



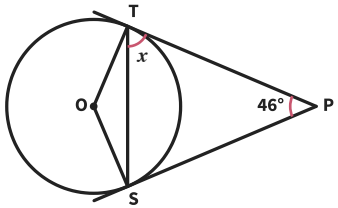
_____

_____

$x =$ _____

7

PT and PS are tangents to the circle, centre O. Find angle x.



PT = PS

tangents from a point are equal

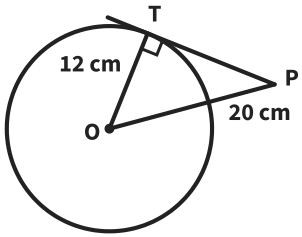
$x = (180 -$ ____ $) \div 2$

base angles of an isosceles triangle are equal

$x =$ _____

8

PT is a tangent to the circle at T, and O is the centre. OT = 12 cm and OP = 20 cm. Find the length of PT.



The hypotenuse is ____

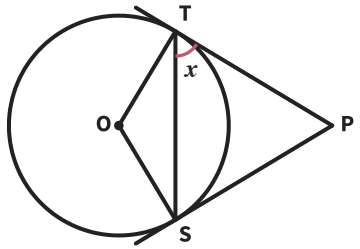
$PT^2 =$ ____ $^2 -$ ____ ^{2}

PT = _____

Circle theorems: tangents *further practice*

9

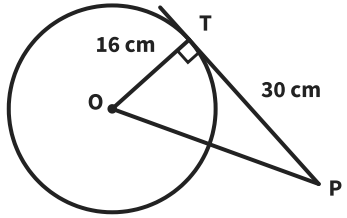
PT and PS are tangents to the circle, centre O. Angle TOS = 118°.
Find angle x. Give reasons.



x = _____

10

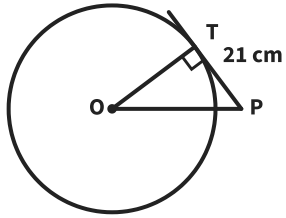
PT is a tangent to the circle at T, and O is the centre. OT = 16 cm and PT = 30 cm. Find OP.



OP = _____

11

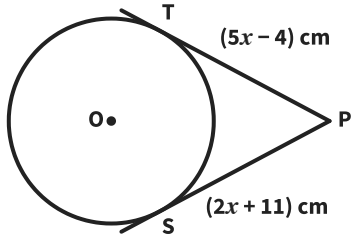
PT is a tangent to the circle at T, and O is the centre. PT = 21 cm and OP = 35 cm.
Find the radius of the circle.



Radius = _____

12

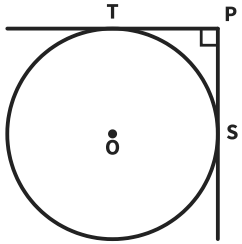
PT and PS are tangents to the circle.
Find the length of PT.



PT = _____

13

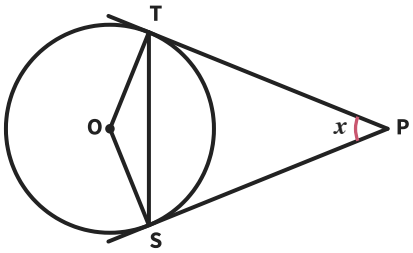
A round rug of radius 80 cm lies in the corner of a room. It touches both walls, which meet at right angles at P. How far is P from the centre O of the rug?



OP = _____

14

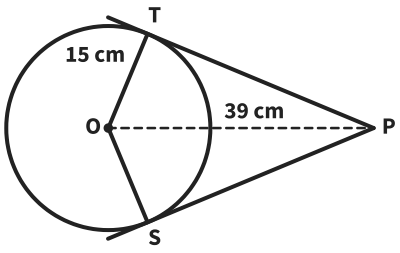
PT and PS are tangents to the circle, centre O. Angle OTS = 22°.
Find angle x. Give reasons.



x = _____

15

PT and PS are tangents to the circle, centre O. OT = 15 cm and OP = 39 cm.
Find the perimeter of the kite OTPS.



Perimeter = _____

16

PT and PS are tangents to the circle, centre O. Zainab says angle a + angle b is always 180°. Is she right? Explain.

