**Question 1** Find the value of the pronumeral(s) in each case:

(a)



(b)



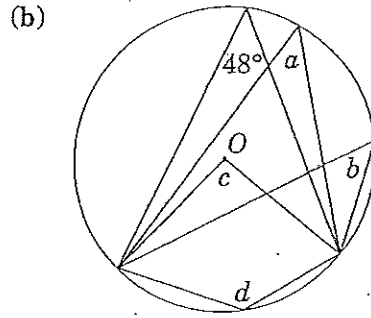(c)



(d)



(e)



(f)



**Question 2**

(a)
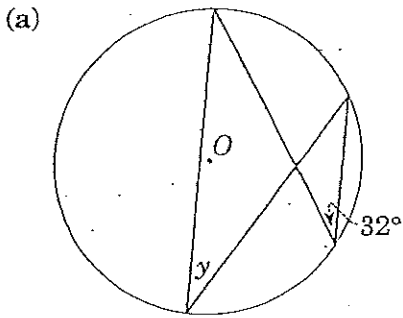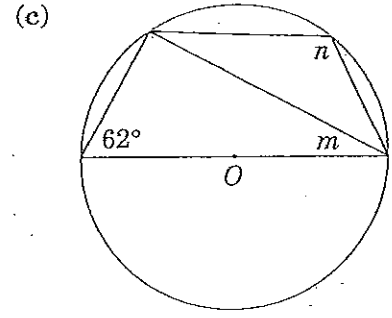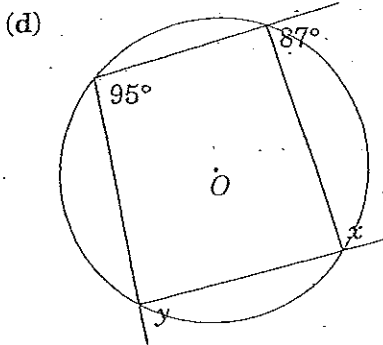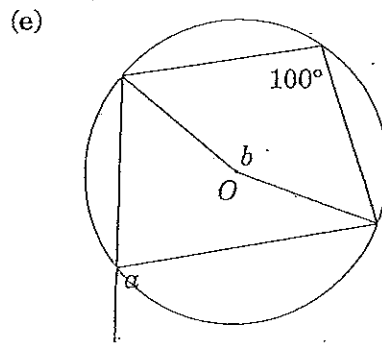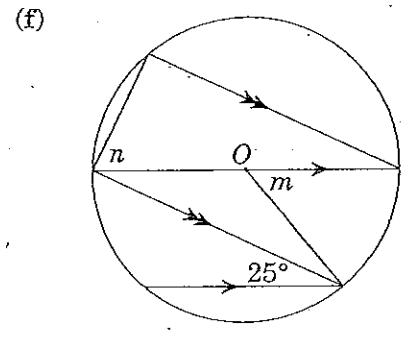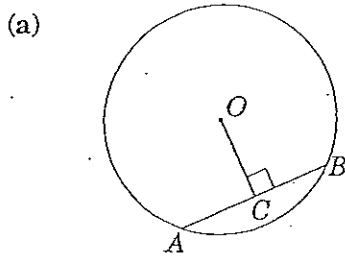


$AB = 16$ cm, $OC = 6$ cm
Find the radius of the
circle.

(b)
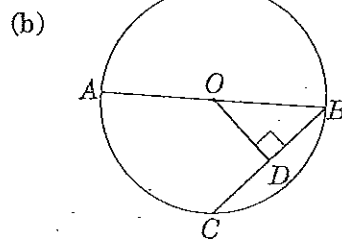


$AB = 34$ cm, $BC = 30$ cm
Find $OD$.

(c)
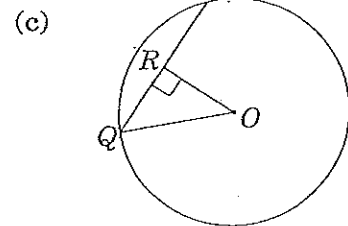


$OQ = 20$ cm, $OR = 16$ cm
Find $PQ$.

## Question 3

(a)
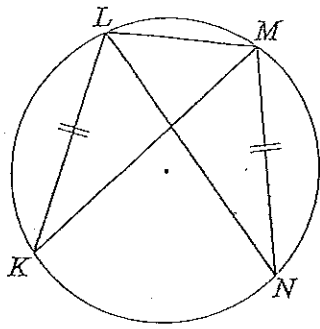


$KL = MN$

Prove $KM = LN$ and $\angle KLM = \angle LMN$.

_____

_____

_____

_____

_____

_____

_____

(b)
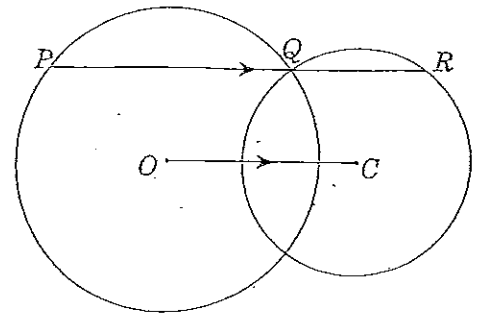


$O$, $C$ are centres.  $PR \parallel OC$

Prove that $PR = 2 \times OC$.

_____

_____

_____

_____

_____

_____

## Question 4

(a)
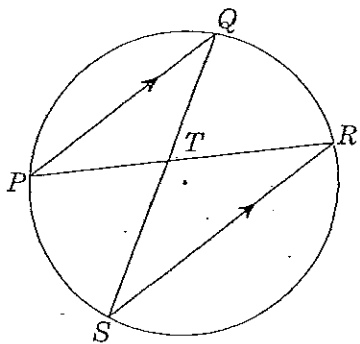


$PQ \parallel SR$

Prove that $PT = QT$.

_____

_____

_____

_____

_____

(b)
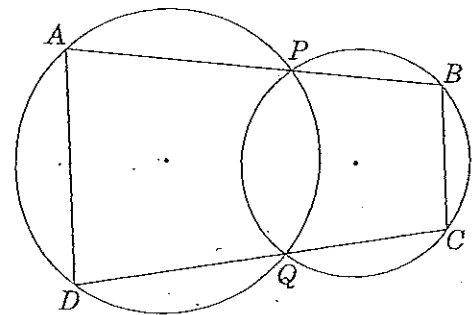


$APB$ and $DQC$ are straight lines.

Prove $AD \parallel BC$.

_____

_____

_____

_____

_____
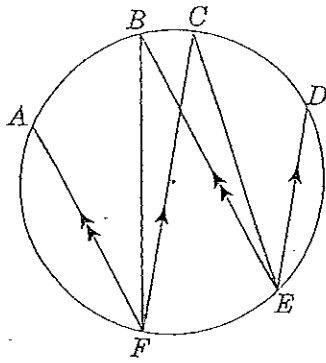
$AF \parallel BE, \quad CF \parallel DE$

Prove $\angle AFB = \angle CED$.

_____

_____

_____

_____

_____

_____

_____

(d)
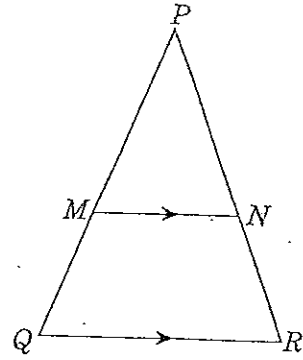
$PQ = PR, \quad MN \parallel QR$

Prove that $MNRQ$ is a cyclic quadrilateral.

_____

_____

_____

_____

_____

_____

_____

Question 5

B

A 3 cm K

N

5 cm

L

6 cm

D

7 cm

M

C
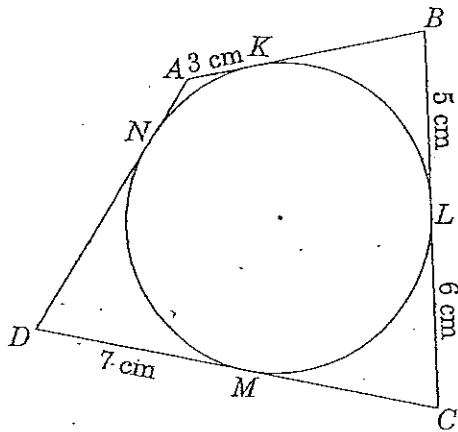
AB, BC, CD, DA are tangents.
Find the perimeter of ABCD.

_____

_____

_____

_____

_____

(b)

A

$y$

15 cm

68°

B

$x$ cm

T
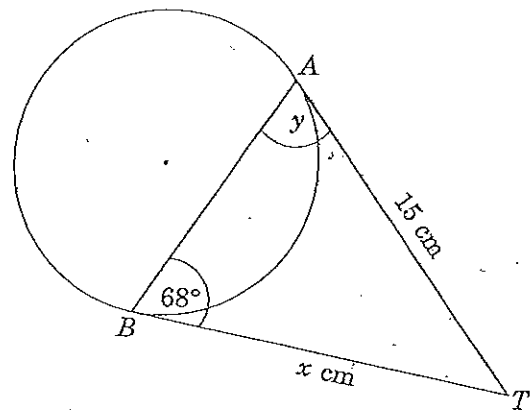
AT, BT are tangents.
Find $x$ and $y$.

_____

_____

_____

_____

_____

## Question 6

(a)
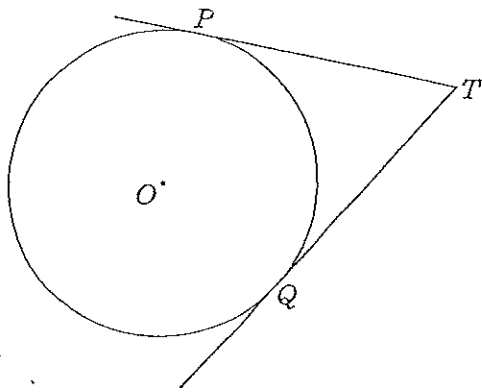


PT, QT are tangents.

Prove that OPTQ is a cyclic quadrilateral.

_____
_____
_____
_____
_____
_____
_____

(b)
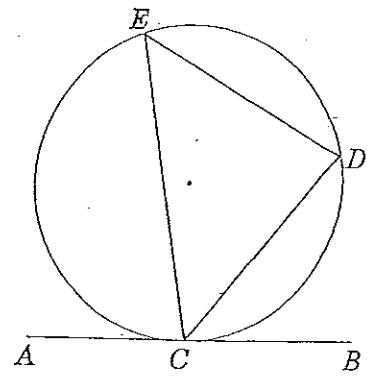


ACB is a tangent. DC bisects ∠ECB.

Prove that DE = DC.

_____
_____
_____
_____
_____
_____
_____

## Question 7

(a)
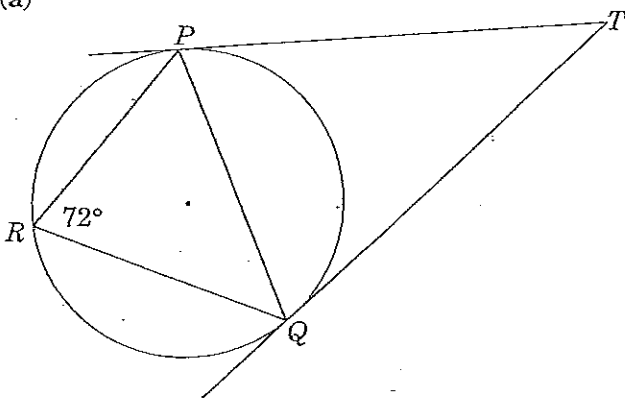


PT, QT are tangents.

Find ∠PTQ.

_____
_____
_____
_____
_____

(b)



_____
_____
_____
_____
_____

**)**
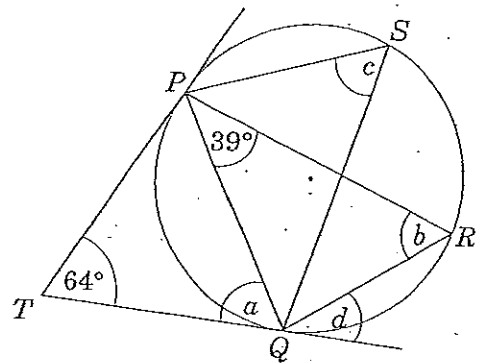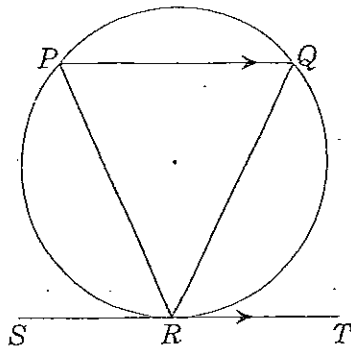
PQ $\parallel$ ST     ST  is a tangent.
Prove that  PR = QR.

_____

_____

_____

_____

_____

_____

**(b)**
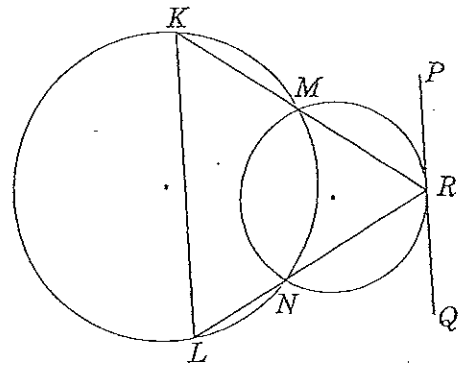
PQ  is a tangent.
Prove that  KL $\parallel$ PQ.

_____

_____

_____

_____

_____

_____

**)**
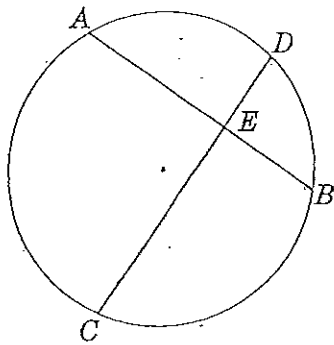
AE = 6 cm,  EB = 4 cm,  CE = 8 cm
Find  CD.

_____

_____

_____

_____

**(b)**
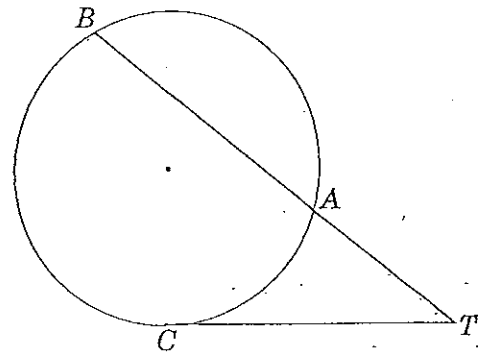
CT  is a tangent.    AT = 4 cm,  AB = 5 cm
Find  CT.

_____

_____

_____

_____

Question 10

(a)
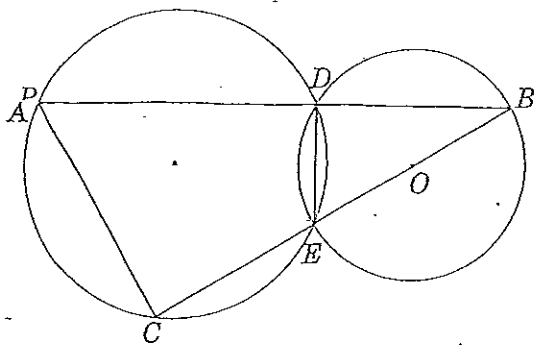


BE is a diameter of the smaller circle.

Prove that ∠ACB = 90°.

_____

_____

_____

_____

_____

_____

(b)
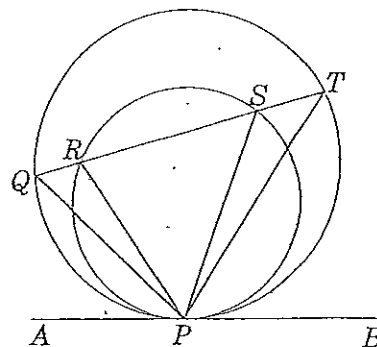


AB is a tangent.

Prove that ∠QPR = ∠SPT.

_____

_____

_____

_____

_____

_____