

$$= \frac{73.74^\circ}{360^\circ} \times 3.14 \times 10^2 - \frac{1}{2} \times 10^2 \times \sin 73.74^\circ$$

$$= 64.32 - 48$$

$$= 16.32 \text{ cm}^2$$

∴ Common area of intersection

$$= \text{Area of segment CND} + \text{area of segment CMD}$$

$$= 10.88 + 16.32$$

$$= 27.2 \text{ cm}^2$$

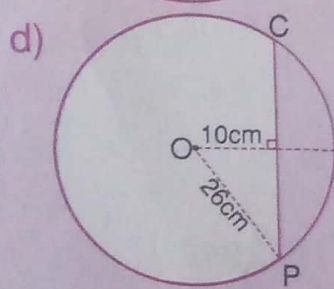
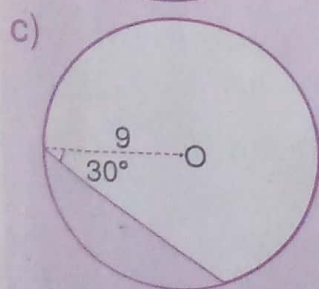
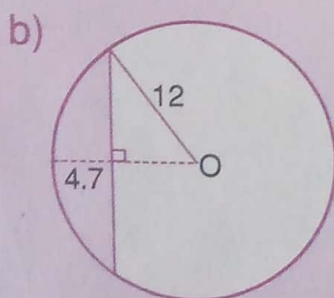
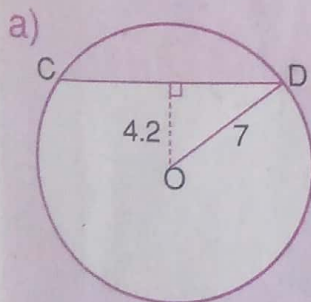
### Quick Practice

Two circles, each having the same radius of 8 cm, intersect at points A and B. If their centres are 12.8 cm apart, calculate

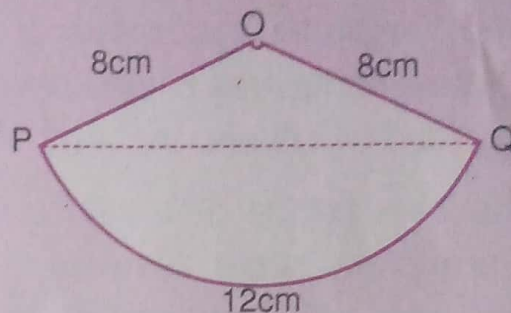
- The length of the common chord AB.
- The area common to both circles.

### Exercise 13.4

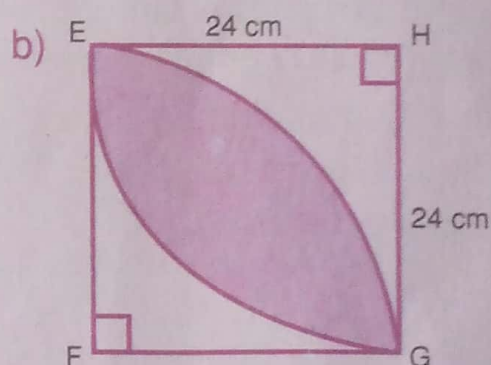
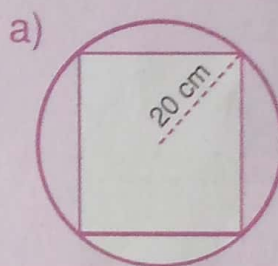
- Calculate the lengths of the chords in each of the diagrams below. O is the centre. Lengths are in cm.



- A sector of a circle is bounded by two radii 8 cm long and an arc PQ of length 12 cm. Find,

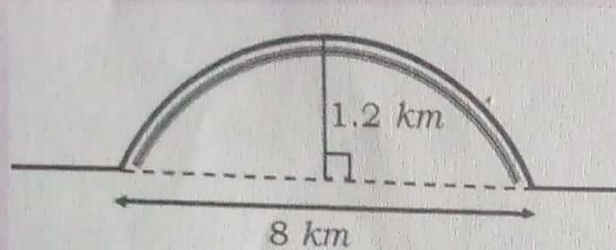


- The angle POQ
  - The length of the chord PQ
- Find the area of the shaded regions.

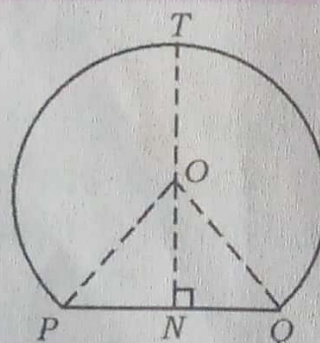


- Two circles of radii 10 cm and 17 cm intersect at two points A and B. If the length between their centres is 21 cm, find the length of the common chord.
- Two circles of radii 10 cm and 6 cm intersect at two points and the distance between their centres is 8 cm. Find the area common to their intersection.

6. The arc LMN of a circle, centre O and radius 11cm, is one third of the circumference of the circle. Find the angle subtended at the centre and the area of the segment bounded by LN and the arc LMN.
7. The true shape of a rainbow is a complete circle. However, we use only the arc of the circle that appears above the earth's horizon. What is the radius of the circle containing the arc of the rainbow shown?



8. The figure shows an archway which is a segment of a circle, centre O and diameter 5.6 m. N is the mid point of PQ and TN is perpendicular to PQ.



- a) Given that  $PN = NQ = ON$ , calculate the length of PQ.
- b) Calculate also the perimeter PTQ of the archway.