QB365 QUESTION BANK SOFTWARE

10th Maths CBSE Important Case Study Questions for Circles 2024

SECTION A 2 x 4 = 8

1) Smita always finds it confusing with the concepts of tangent and secant of a circle. But this time she has determined herself to get concepts easier. So, she started listing down the differences between tangent and secant of a circle along with their relation. Here, some points in question form are listed by Smita in her notes. Try answering them to clear your concepts also.

(i) A line that intersects a circle exactly at two points is called

(a) Secant (b) Tangent (c) Chord (d) Both (a) and (b)

(ii) Number of tangents that can be drawn on a circle is

(a) 1 (b) 0 (c) 2 (d) Infinite

(iii) Number of tangents that can be drawn to a circle from a point not on it, is

(a) 1 (b) 2 (c) 0 (d) Infinite

(iv) Number of secants that can be drawn to a circle from a point on it is

(a) Infinite (b) 1 (c) 2 (d) 0

(v) A line that touches a circle at only one point is called

(a) Secant (b) Chord (c) Tangent (d) Diameter

Answer : (i) (a)

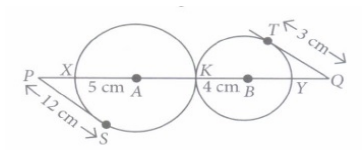
(ii) (d)

(iii) (b)

(iv) (a)

(v) (c)

2) In a maths class, the teacher draws two circles that touch each other externally at point K with centres A and B and radii 5 em and 4 em respectively as shown in the figure.



Based on the above information, answer the following questions.

(i) The value of PA =

(a) 12 cm (b) 5 cm (c) 13 cm (d) Can't be determined

(ii) The value of BQ =

(a) 4 cm (b) 5 cm (c) 6 cm (d) None of these

(iii) The value of PK =

(a) 13 cm (b) 15 cm (c) 16 cm (d) 18 cm

(iv) The value of QY =

(a) 2 cm (b) 5 cm (c) 1 cm (d) 3 cm

(v) Which of the following is true?

(a) $PS^2=PA.PK$ (b) $TQ^2=QB.QK$ (c) $PS^2=PX.PK$ (d) $TQ^2 = QA.QB$

Answer : Here, AS = 5 cm, BT = 4 cm [∵Radii of circles]

(i) (c): Since, radius at point of contact is perpendicular to tangent.

∴ By Pythagoras theorem, we have

$$PA = \sqrt{PS^2 + AS^2} = \sqrt{12^2 + 5^2} = \sqrt{169} = 13 \text{ cm}$$

(ii) (b): Again by Pythagoras theorem, we have

$$BQ = \sqrt{TQ^2 + BT^2} = \sqrt{3^2 + 4^2} = \sqrt{25} = 5 \text{ cm}$$

(iii) (d): PK = PA + AK = 13 + 5 = 18 cm

(iv) (c): QY = BQ - BY = 5 - 4 = 1 cm

(v) (c): $PS^2 = PA^2 - AS^2 = PA^2 - AK^2$

= (PA + AK)(PA - AK) = PK.PX [∵ AK = AX]