11. From a point P which is at a distance of 13 cm from centre O of a circle of radius 5 cm, in the same plane, a pair of tangents PQ and PR are drawn to the circle. Area of quadrilateral PQOR is

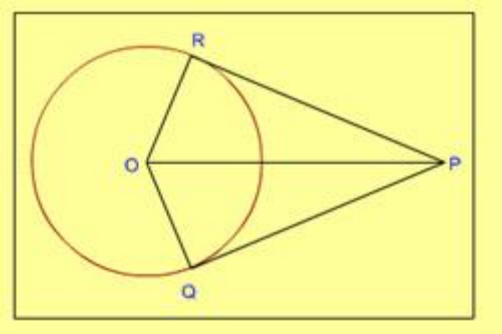
65 sq cm

60 sq cm

30 sq cm

90 sq cm

Answer (b). OP = 13 cm and OR = OQ = 5 cm ....given
Angle ORP and OQP = 90^{o} ...radius is perpendicular to a tangent at the point of incidence.
Applying Pythagoras PR and PQ = 12 cm.
Area of each triangle = (5 x 12)/2 = 30 sq cm.



Thus area of quadrilateral = 60 sq cm.

12. The diameters of two circles are the side of a square and the diagonal of the square. The ratio of the areas of the smaller circle and the larger circle is

$\sqrt{2} : \sqrt{3}$

$1 : \sqrt{2}$

1 : 2

1 : 4

Answer (c). Let the side of the square be 1 unit. The diagonal of the square would be $\sqrt{2}$ units. (since area of a square is given by $side^2$ or $diagonal^2/2$.)
Radius of smaller circle = 1/2 unit and its area = $\pi/4$
Radius of greater circle $1/\sqrt{2}$ and its area $\pi/2$
The ratio of areas is 1/4 : 1/2 or 1 : 2.

13. N is the foot of t\he perpendicular from a point P of a circle with radius 7 cm, on a diameter AB of the circle. If the length of the chord PB is 12 cm, the distance of the point N from the point B is

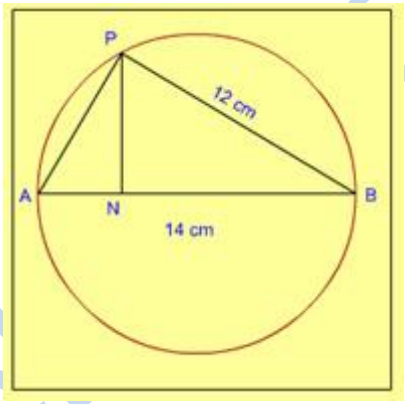
$3\ ^{5}/_{7}$ cm

$10\ ^{2}/_{7}$ cm

$6\ ^{5}/_{7}$ cm

$12\ ^{2}/_{7}$ cm

Answer (b). In the right triangle APB, AP can be found out using Pythagoras which comes to $\sqrt{52}$.
In triangle PNB, $PN^2 = PB^2 - NB^2$
$= PB^2 - (14 - AN)^2$ 1
In triangle ANP, $PN^2 = AP^2 - AN^2$ 2
Equating (1) and (2), $PB^2 - (14 - AN)^2 = AP^2 - AN^2$
$144 - 196 - AN^2 + 28AN = (\sqrt{52})^2 - AN^2$
$AN = 3\ ^{5}/_{7}$



$NB = 14 - 3\ ^{5}/_{7} = 10\ ^{2}/_{7}$

14. A,B.C,D are four points on a circle,AC and BD intersect at a point E such that angle BEC=130˚ and ECD=20˚.Angle BAC is

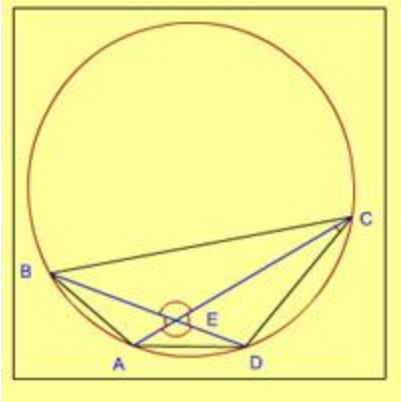
100˚

110˚

120˚

90˚

Answer (b). In triangle ECD,
angle ECD = 20°
angle CED = 50° (180° - 130° = 50°)
Therefore angle EDC = 110°.
Angle BAC is also = 110° (since angles subtended in the same segment are equal.)



15. The radius of a circle is a side of a square. The ratio of the areas of the circle and the square is

π : 2

2 : π

1 : π

π : 1

Answer (d). Let the side of the square be 1 unit
Area of the square = 1 sq unit.
Area of the circle = π x 1^2 = π sq units.
The required ratio = π : 1.