Geometry – Circles

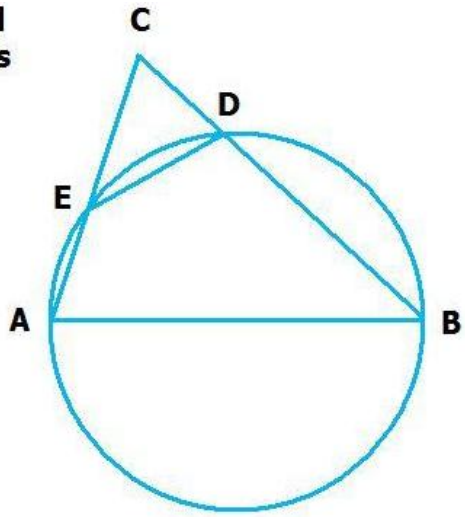
Q1. It is given that AEBD is a cyclic quadrilateral and AB is the diameter of the circle and ED is equal to the radius of the circle. AE and BD are extended to meet at C. Find the angle ACB

a) 30

b) 45

c) 60

d) 75



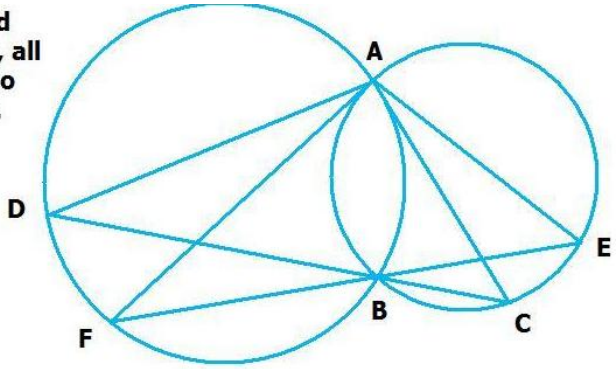
Q2. It is given that two circles intersect at A and B. CBD and EBF are two straight lines. Now, all the points C, D, E, F are joined to A. It is also given that angle DAF = 25°. Find angle CAE.

a) 12.5

b) 25

c) 50

d) None



Q3. Two tangents AB and AC are drawn from an external point A to a circle with a centre at O. Find the angle BAC, if angle OBC = 30°.

a) 30
b) 45
c) 60
d) 90

Q4. AB is chord of length 24 units of the circle with centre O and radius 13. Tangents at the point A and B intersects at C. Find the length AC

a) 28
b) 30
c) 31.2
d) 33.8
e)

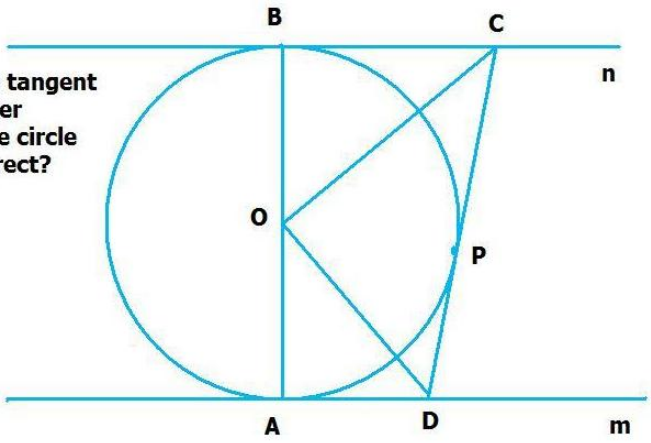
Q5. A circle is inscribed inside a quadrilateral ABCD such that it touches all the sides of the quadrilateral at P, Q, R, and S. Which of the following is correct?

i) AB + BC = CD + DA
ii) AB + DA = BC + CD
iii) AB + CD = BC + DA
iv) None of the above

Q6. m and n are two parallel lines such they are tangent to the circle having centre at O. CD is another tangent to the circle such that it touches the circle at P. Which of the following are always correct?

I. BC + AD = CD
II. ∠COD = 90°

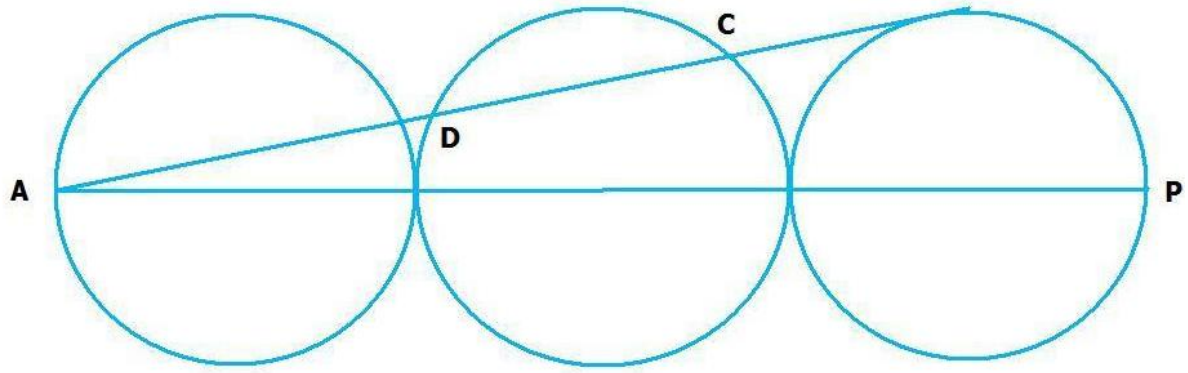
a) Only I
b) Only II
c) Both
d) None of the two



Q7. A circle of radius 4 units is inscribed in a triangle ABC (means circle touches all the sides of the triangle). It is given that circle touches BC at D such that BD = 6 and DC = 8. Find the length of sides AB and AC.

a) 13 and 15
b) 12 and 14
c) 13 and 16
d) 14 and 16

Q8. Figure shows three circle of equal radius. AB is tangent to the last circle and AP passes through the center of all the circles. Find CD is radius of circles is 5



a) 6 **b) 7** **c) 8** **d) 10**

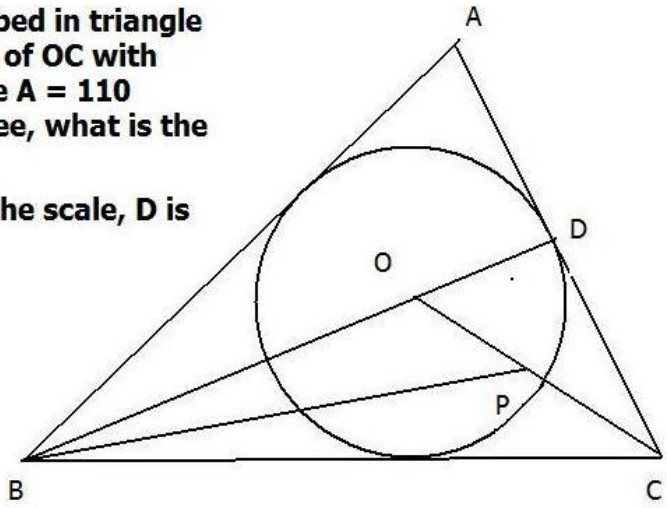
Q9. Two circles with centre A and B are inside a bigger circle with centre C and radius 10, they all are tangent to each other. If ABC forms a triangle, then find the perimeter of the triangle

a) 15
b) 20
c) 25
d) 30

Q10. A circle with center O is inscribed in triangle ABC. Let P be the intersection of OC with bisector of angle OBC. If angle A = 110 degree and angle B = 40 degree, what is the measure of angle BPD?

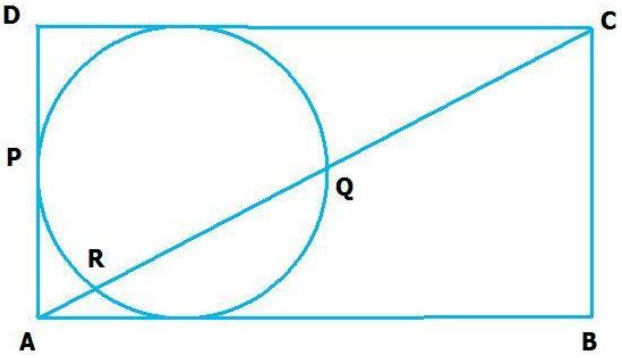
Note:- Figure is not drawn to the scale, D is not the point of tangent.

a) 100
b) 105
c) 110
d) 120



Q11. ABCD is a rectangle such that AB = 2AD. A circle is grawn such that it touches AB, CD and AD. If radius of circle is 10 units, then find the length of chord PR. P is the point where circle touches AD

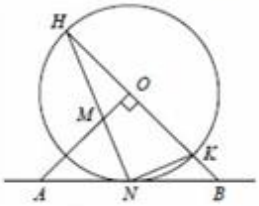
a) 10
b) 4√5
c) 2√10
d) 4√6



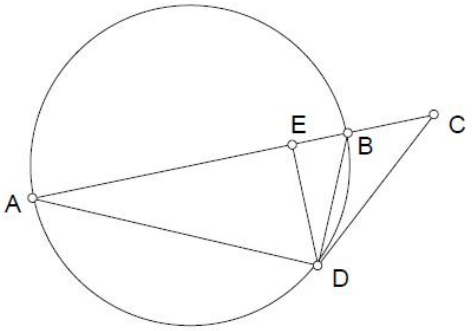
Q 12 In the figure, *O* is the center of the circle. *AB* touches the circle at *N*. Which of the following is **/are** correct?

I. *M*, *N*, *K*, *O* are concyclic. II. $\Delta HNB - \Delta NKB$ III. $\angle OAN = \angle NOB$

a. I only b. II only c. III only d. I and II only e. I, II and **III**



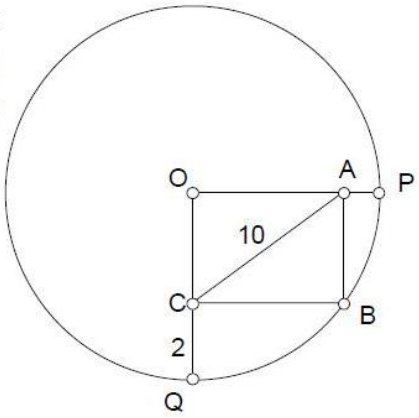
Q13. In the figure, AB is a diameter of the circle and C is a point on AB produced. CD is tangent to the circle at D and E is the foot of the perpendicular from D to AB. If $AD = 6$ and $\angle CDB = 30°$, find the area of ΔDEB.



a) 3 b) $(3\sqrt{3})/2$

c) $2\sqrt{3}$ d) $3\sqrt{3}$

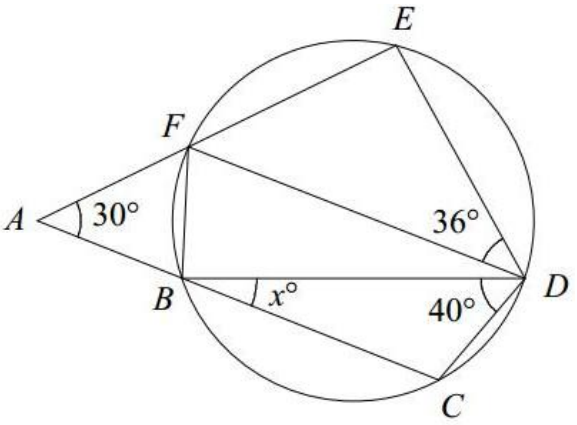
Q14 In the figure, O is the centre of the circle, B is a point on the circumference and $OABC$ is a rectangle. OA and OC are produced to meet the circle at P and Q respectively. If $AC = 10$ and $CQ = 2$, find AP.



a) 2 b) $2\sqrt{2}$

b) 4 d) $4\sqrt{2}$

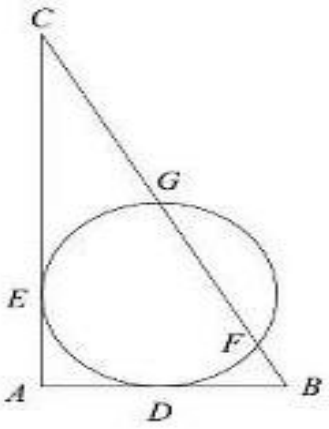
Q15 In the figure, $BCDEF$ is a cyclic pentagon. CB and EF are produced to meet at A. If $\angle EAC = 30°$, $\angle EDF = 36°$, $\angle BDC = 40°$, $\angle DBC = x°$ and $\overset{\frown}{DE} = 3\overset{\frown}{DC}$, find x.



a) 24 b) 18

c) 69/4 d) 67/4

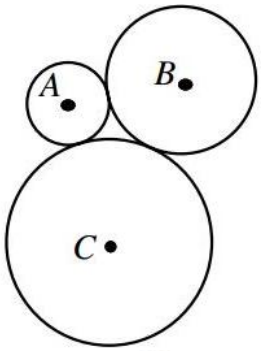
Q16 In the figure, ΔABC is right-angled at A. AB and AC are tangent to the circle at D and E respectively, and BC meets the circle at F and G. If $AE = 8$, $EC = 15$ and $CG = 9$, and that $AB = \frac{m}{n}$ in lowest term, find $m+n$.



a) 184 b) 189

c) 195 d) 199

Q17 Three circles have centres A, B and C with radii 2, 4 and 6 respectively. The circles are tangent to each other as shown. Triangle ABC has



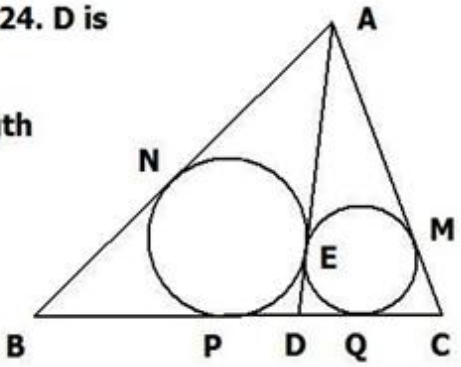
(**A**) $\angle A$ obtuse (**B**) $\angle B = 90°$ (**C**) $\angle A = 90°$

(**D**) all angles acute (**E**) $\angle B = \angle C$

Q18. In the triangle ABC, AC = 10, AB = 18,BC= 24. D is point on BC such that the two circles inscribed in the triangles ABD and ADC each other at a point E on AD. Find the length of DC

a) 8 **b) 6**

c) 10 **d) 7.5**



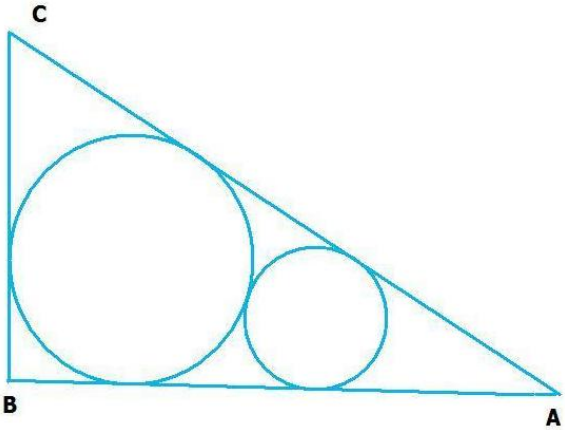
Q19. Two circles are inscribed in the right angle triangle triangle ABC such that the smaller circle touches the sides AB and AB while the larger one touches all the sides, also they touch each other. If radius of smaller circle is 1 and that of larger is 4, the find the length of side BC.

a) 28

b) 30

c) 32

d) None

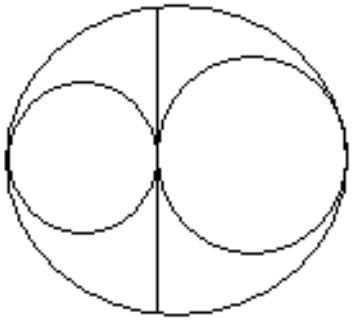


Q20. ABC is a triangle such that AB = AC and P is a point on AC such that $BC^2 = CP \times CA$. If length of BC is 7 units, then find the length of BP.

a) 5
b) 6
c) 7
d) None

Q21. Centre of the two circles C1 and C2 lies on the diameter of third circle C0 such that both C1 and C2 touch each other externally and they touch C0 internally. A chord is drawn inside C0 which is tangent to C1 and C2 of length 16. Find area of the part which is inside C0 but outside C1 and C2

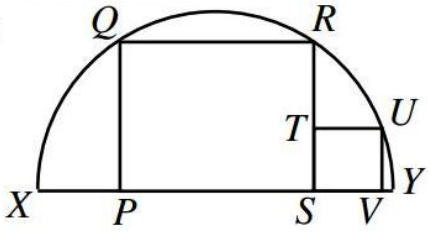
a) 32pi
b) 16pi
c) 64pi
d) None



Q22 In the diagram, a semi-circle has diameter XY. Rectangle $PQRS$ is inscribed in the semi-circle with $PQ = 12$ and $QR = 28$. Square $STUV$ has T on RS, U on the semi-circle and V on XY. The area of $STUV$ is closest to

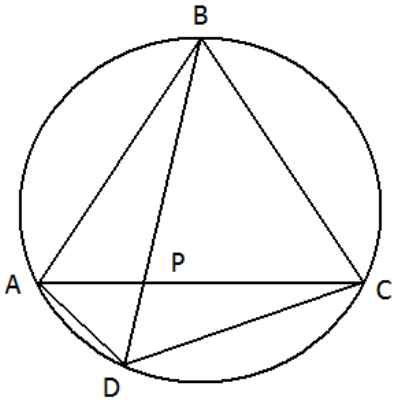
(A) 12 **(B)** 13 **(C)** 16

(D) 14 **(E)** 15



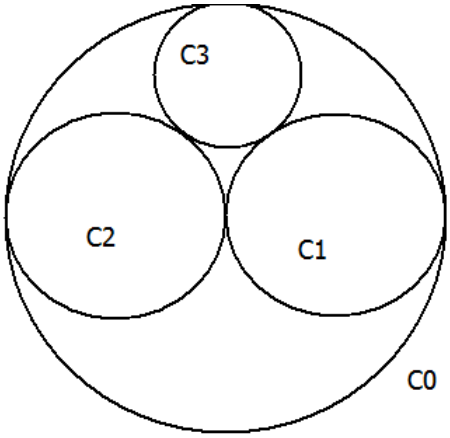
Q23 In the given figure ABCD is a cyclic quadrilateral, such that ABC is an equilateral triangle. It is given that AB = 36, AD = 20 and CD = 25, then find the length of AP.

a) 16
b) 18
c) 20
d) 24



Q24. In the shown figure center of circle C1, C2 and C0 lie on the same straight line. If radius of C0 is 12, then find the radius of C3

a) 1.5
b) 2
c) 2.5
d) 3



Q25. In the figure ABCD is a square with side 6 units. Two quarter circles of radius 6 units are drawn with center A and B. Now a third circle is drawn which is tangent to the two arcs and the side AD. Find the radius of the smaller circle.

a) 1 b) 1.5

c) 0.75 d) 1.25