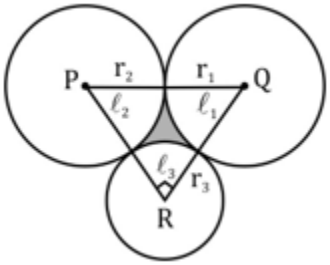
Quant Mega Quiz for SSC CGL Tier - 2

Q1. Three circles P, Q and R touch each other as shown below. The radius of each of the circle P and Q is $(\sqrt{2}+1)$ cm, while that of the smaller circle is 1 cm. The perimeter of the shaded region is



(a) $\frac{\pi}{4}(2\sqrt{2}-1)$ cm

(b) $\frac{\pi}{2}(2+\sqrt{2})$ cm

(c) $\frac{\pi}{2}(2+\sqrt{1})$ cm

(d) $\frac{\pi}{4}(2-1)$ cm

Q2. In a triangle ABC, AB + BC = 12 cm, BC + CA = 14 cm and CA + AB = 18 cm. Find the radius of the circle (in cm) which has the same perimeter as the triangle.

(a) 5/2

(b) 7/2

(c) 9/2

(d) 11/2

Q3. A circle is inscribed in a square whose length of the diagonal is $12\sqrt{2}$ cm. An equilateral triangle is inscribed in that circle. The length of the side of the triangle is

(a) $4\sqrt{3}$ cm

(b) $8\sqrt{3}$ cm

(c) $6\sqrt{3}$ cm

(d) $11\sqrt{3}$ cm

Q4. The ratio of the areas of a regular hexagon and an equilateral triangle having same perimeter is

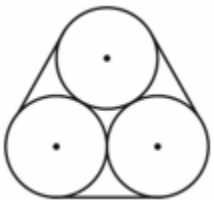
(a) 2 : 3

(b) 6 : 1

(c) 3 : 2

(d) 1 : 6

Q5. Three circles of diameter 10 cm each, are bound together by a rubber band, as shown in the figure. The length of the rubber band (in cm), if it is stretched as shown, is



(a) 30
(b) 30 + 10π
(c) 10π
(d) 77

Q6. By melting a solid lead sphere of diameter 12 cm, three small spheres are made whose diameters are in the ratio 3 : 4 : 5. The radius (in cm) of the smallest sphere is
(a) 3
(b) 6
(c) 1.5
(d) 4

Q7. The ratio of the surface area of a sphere and the curved surface area of the cylinder circumscribing the sphere is
(a) 1 : 2
(b) 1 : 1
(c) 2 : 1
(d) 2 : 3

Q8. The radii of the base of two cylinders A and B are in the ratio 3 : 2 and their height in the ratio x : 1. If the volume of cylinder A is 3 times that of cylinder B, the value of x is
(a) 4/3
(b) 2/3
(c) 3/4
(d) 3/2

Q9. The radius of base and slant height of a cone are in the ratio 4 : 7. If slant height is 14 cm then the radius (in cm) of its base is (use π = 22/7)
(a) 8
(b) 12
(c) 14
(d) 16

Q10. The ratio of the volume of a cube and of a solid sphere is 363 : 49. The ratio of an edge of the cube and the radius of the sphere is (use π = 22/7)
(a) 7 : 11
(b) 22 : 7
(c) 11 : 7
(d) 7 : 22

Q11.

The value of the expression $2(\sin^6\theta + \cos^6\theta) - 3(\sin^4\theta + \cos^4\theta)+2$.

(a) –1

(b) 0

(c) 1

(d) 2

Q12. If x =cosec θ + sin θ and y =sec θ + cos θ, then the relation b/w x and y is.

(a) $xy\,(x^2 - y^2) = 2$

(b) $xy\,(x^2 + y^2) = 2$

(c) $xy\left(\frac{1}{x^2} + \frac{1}{y^2}\right) = 2$

(d) $xy\left(\frac{1}{x^2} - \frac{1}{y^2}\right) = 2$

Q13.If cosec A + cot A = p, then the value of sinA is.

(a) $\frac{p^2+1}{2p}$

(b) $\frac{2p}{p^2+1}$

(c) $\frac{p^2-1}{2p}$

(d) $\frac{2p}{p^2-1}$

Q14.

Evaluate: $\frac{\sin 36^\circ}{\cos 54^\circ} - \frac{\sin 54^\circ}{\cos 36^\circ}$

(a) 1

(b) 0

(c) –1

(d) 2

Q15.

Evaluate: $\cos(40^\circ - \theta) - \sin(50^\circ + \theta) + \frac{\cos^2 40^\circ + \cos^2 50^\circ}{\sin^2 40^\circ + \sin^2 50^\circ}$

(a) 1

(b) –1

(c) –2

(d) 0

Q16. Evaluate: cot 12° cot 38° cot 52° cot 60° cot 78°

(a) $\frac{1}{2}$

(b) $\frac{1}{\sqrt{3}}$

(c) $\frac{2}{\sqrt{3}}$

(d) $\sqrt{3}$

Q17.

If A + B = 90°, then $\sqrt{\frac{\tan A \tan B + \tan A \cot B}{\sin A \sec B} - \frac{\sin^2 B}{\cos^2 A}} = ?$

(a) tan A

(b) sin A

(c) cot A

(d) cosec A

Q18. If sec 5A = cosec (A + 36°), where 5A is an acute angle, find the value of A.

(a) 8°

(b) 7°

(c) 9°

(d) 11°

Q19.

Evaluate: $(\sin\theta + \sec\theta)^2 + (\cos\theta + \operatorname{cosec}\theta)^2$

(a) $(1+\sec\theta.\operatorname{cosec}\theta)^2$

(b) $1 + \sec\theta.\operatorname{cosec}\theta$

(c) $1 - \sec\theta$

(d) None of these

Q20. If $\sin\theta + \cos\theta = p$ and $\sec\theta + \operatorname{cosec}\theta = q$, then $q(p^2 - 1) = ?$

(a) p

(b) 2p

(c) 3p

(d) $2p^2$

Q21. The degree measure of each of the three angles of a triangle is an integer. Which of the following could not be the ratio of their measures?

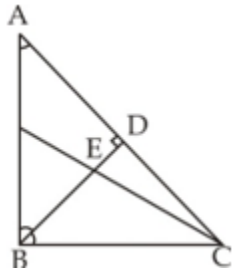
(a) 2 : 3 : 4

(b) 3 : 4 : 5

(c) 5 : 6 : 7

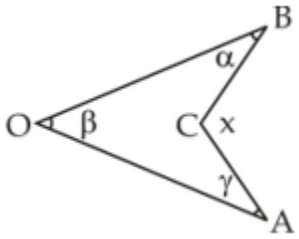
(d) 6 : 7 : 8

Q22. AB ⊥ BC, BD ⊥ AC and CE bisects ∠C, ∠A = 30°, then what is ∠CED?



(a) 30°
(b) 60°
(c) 45°
(d) 65°

Q23. In the given figure, x = ?



(a) α+β-γ
(b) α-β+γ
(c) α+β+γ
(d) α+γ-β

Q24. The angles of a triangle are arranged in ascending order of magnitude. If the difference between two consecutive angles is 10°, find largest angle:
(a) 60°
(b) 100°
(c) 50°
(d) 70°

Q25. If the side BC of a Δ ABC is produced on both sides, then the sum of the exterior angles so formed is greater than ∠A by :
(a) one right angle
(b) three right angles
(c) two right angles
(d) None of these

Q26. The side BC of Δ is produced to D. If ∠ACD = 108° and ∠B = ½ ∠A then ∠A is :
(a) 36°
(b) 108°
(c) 59°
(d) 72°

Q27. We have an angle of $2\frac{1}{2}°$. How big will it look through a glass that magnifies things three times?

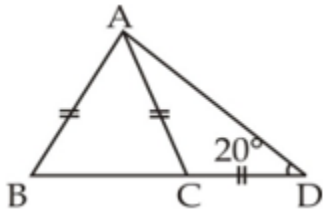
(a) $2\frac{1°}{2} \times 4$

(b) $2\frac{1°}{2} \times 3$

(c) $2\frac{1°}{2} \times 2$

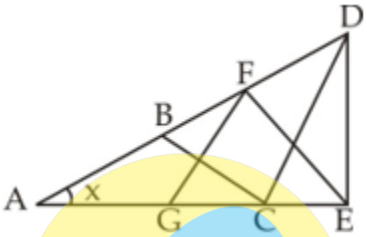
(d) None of these

Q28. Consider ΔABD such that ∠ADB = 20° and C is a point on BD such that AB =AC and CD = CA. Then the measure of ∠ABC is :



(a) 40°
(b) 45°
(c) 60°
(d) 30°

Q29. In the given figure, if AB = BC = CD = EF = DE = GA = FG, then x =



(a) 153/7
(b) 28°
(c) 180/7
(d) None of these

Q30. Two sides of a triangle are of length 4 cm and 10 cm. If the length of the third side is 'a' cm, then :

(a) a > 5
(b) 6 ≤ a ≤ 12
(c) a < 6
(d) 6 < a < 14