Q1. The sum of two numbers is equal to 25 and their difference is 20. The ratio of the two numbers is
(a) 9 : 1
(b) 7 : 9
(c) 3 : 5
(d) 2 : 7

Q2. A man travelled a distance of 80 km in 7 hrs partly on foot at the rate of 8 km per hour and partly on bicycle at 16 km per hour. The distance travelled on the foot is
(a) 32 km
(b) 48 km
(c) 36 km
(d) 44 km

Q3. The frequency distribution data is given below. If the average age is 17 years, the value of m is
Age (in years) : 8 20 26 29
Number of people : 3 2 m 1
(a) 1
(b) 2
(c) 3
(d) 4

Q4. The average monthly expenditure of a family for the first four months is Rs. 2570, for the next three months Rs. 2490 and for the last five months Rs. 3030. If the family saves Rs. 5320 during the whole year, the average monthly income of the family during the year is
(a) Rs. 3000
(b) Rs. 3185
(c) Rs. 3200
(d) Rs. 3580

Q5. After replacing an old member by a new member, it was found that the average age of five members of a club is the same as it was 3 years ago. The difference between the ages of the replaced and the new members is
(a) 2 years
(b) 4 years
(c) 8 years
(d) 15 years
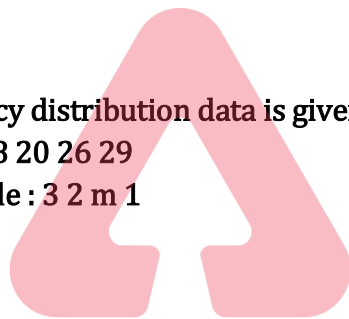
Q6. A man spends Rs. 1800 monthly on an average for the first four months and Rs. 2000 monthly for the next eight months and saves Rs. 5600 a year. His average monthly income is
(a) Rs. 2000
(b) Rs. 2200
(c) Rs. 2400
(d) Rs. 2600

Q7. The arithmetic mean of the following numbers 1, 2, 2, 3, 3, 4, 4, 4, 4, 5, 5, 5, 5, 5, 6, 6, 6, 6, 6 and 7, 7, 7, 7, 7, 7, 7 is
(a) 4
(b) 5
(c) 14
(d) 20

Q8. The average of six numbers is 20. If one number is removed, the average becomes 15. What is the number removed?
(a) 5
(b) 35
(c) 112
(d) 45

Q9. An item costing Rs. 200 is being sold at 10% loss. If the price is further reduced by 5%, the selling price will be
(a) Rs. 170
(b) Rs. 171
(c) Rs. 175
(d) Rs. 179

Q10. A shopkeeper buys 144 items at 90 paise each. On the way 20 items are broken. He sells the remainder at Rs. 1.20 each. His gain per cent correct to one place of decimal is
(a) 13.8%
(b) 14.6%
(c) 14.8%
(d) 15.8%

Q11. G is the centroid of the equilateral ΔABC. If AB = 10 cm then length of AG is
(a) $\frac{5\sqrt{3}}{3}$ cm
(b) $\frac{10\sqrt{3}}{3}$ cm
(c) $5\sqrt{3}$ cm
(d) $10\sqrt{3}$ cm

Q12. Two chords AB and CD of a circle with centre O, intersect each other at P. If ∠AOD=100° and ∠BOC=70°, then the value of ∠APC is

(a) 80°

(b) 70°

(c) 85°

(d) 95°

Q13. ABCD is a cyclic quadrilateral and AD is a diameter. If ∠DAC=55° then value of ∠ABC is

(a) 55°

(b) 35°

(c) 145°

(d) 125°

Q14. In triangle ABC a straight line parallel to BC intersects AB and AC at D and E respectively. If AB = 2AD then DE : BC is

(a) 2 : 3

(b) 2 : 1

(c) 1 : 2

(d) 1 : 3

Q15. ABC is an isosceles triangle such that AB = AC and AD is the median to the base BC with ∠ABC=35°. Then ∠BAD is

(a) 35°

(b) 55°

(c) 70°

(d) 110°

Q16. A man goes 24 m due west and then 10 m due north. Then the distance of him from the starting point is

(a) 17 m

(b) 26 m

(c) 28 m

(d) 34 m

Q17. From the top of a tower of height 180 m the angles of depression of two objects on either sides of the tower are 30° and 45°. Then the distance between the objects are

(a) $180(3+\sqrt{3})$m

(b) $180(3-\sqrt{3})$m

(c) $180(\sqrt{3}-1)$m

(d) $180(\sqrt{3}+1)$m
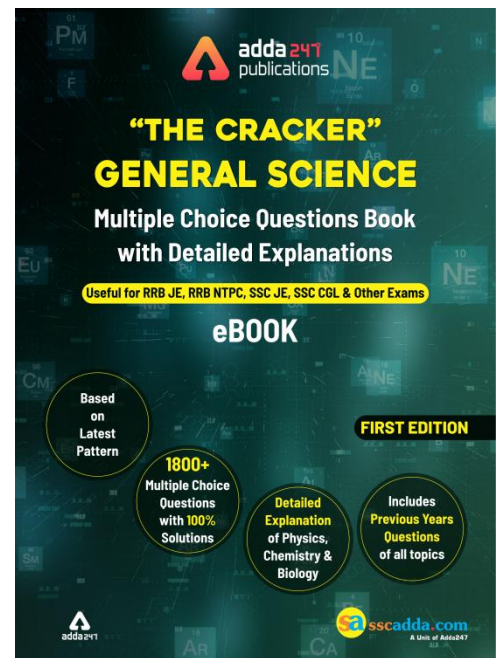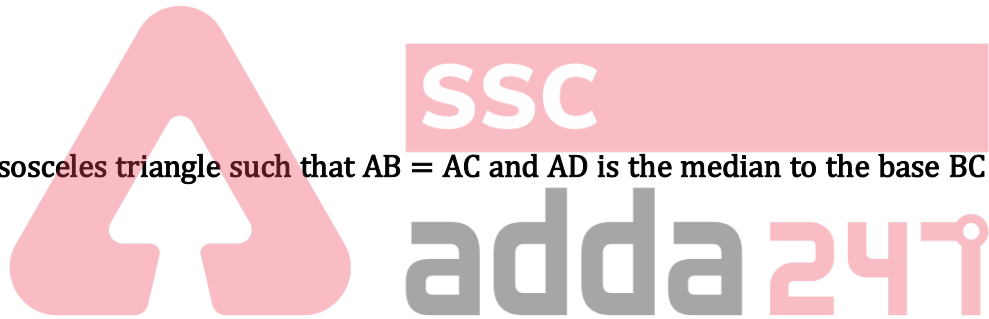
Q18. ABCD is a rectangle of which AC is a diagonal. The value of $(\tan^2 \angle CAD + 1)\sin^2 \angle BAC$ is

(a) 2

(b) 1/4

(c) 1

(d) 0

Q19. If $\tan x = \sin 45°.\ \cos 45° + \sin 30°$ then the value of x is

(a) 30°

(b) 45°

(c) 60°

(d) 90°

Q20. For any real values of θ, $\sqrt{\dfrac{\sec\theta-1}{\sec\theta+1}} = ?$

(a) $\cot\theta$-$\csc\theta$

(b) $\sec\theta$-$\tan\theta$

(c) $\csc\theta$-$\cot\theta$

(d) $\tan\theta$-$\sec\theta$

Q21. If the sum and difference of two angles are 135° and π/12 respectively, then the value of the angles in degree measure are
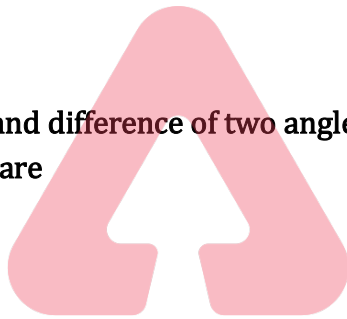
(a) 70°, 65°

(b) 75°, 60°

(c) 45°, 90°

(d) 80°, 55°

Q22. In a $\triangle ABC, \angle B = \dfrac{\pi}{3}, \angle C = \dfrac{\pi}{4}$ and D divides BC internally in the ratio 1 : 3 then $\dfrac{\sin\angle BAD}{\sin\angle CAD}$ is equal to

(a) $\dfrac{1}{\sqrt{2}}$

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

(c) $\dfrac{1}{\sqrt{6}}$

(d) $\sqrt{6}$

Q23. If $\sin 3A = \cos (A–26°)$, where 3A is an acute angle then the value of A is

(a) 29°

(b) 26°

(c) 23°

(d) 28°

Q24. Value of $\sec^2\theta - \dfrac{\sin^2\theta - 2\sin^4\theta}{2\cos^4\theta - \cos^2\theta}$ is

(a) 1
(b) 2
(c) −1
(d) 0

Q25. If x = a (sinθ + cosθ), y = b(sinθ − cosθ) then the value of $\dfrac{x^2}{a^2} + \dfrac{y^2}{b^2}$ is

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

Q26. If $\sin 5\theta = \cos 20°(0^0 < \theta < 90°)$ then the value of θ is

(a) 4°
(b) 22°
(c) 10°
(d) 14°

Q27. Find the least number which when divided separately by 15, 20, 36 and 48 leaves 3 as remainder in each case.

(a) 183
(b) 243
(c) 483
(d) 723

Q28. Find the sum of all positive multiples of 3 less than 50

(a) 400
(b) 404
(c) 408
(d) 412

Q29. If a = 64 and b = 289, then the value of $\left(\sqrt{\sqrt{a}+\sqrt{b}} - \sqrt{\sqrt{b}-\sqrt{a}}\right)^{\frac{1}{2}}$ is

(a) √2
(b) 2
(c) 4
(d) −2

Q30. If the L.C.M. and H.C.F. of two expressions are $(x^2+6x+8)(x+1)$ and (x+1) respectively is x^2+3x+2, find the other.

(a) x^2+5x+4
(b) x^2-5x+4
(c) x^2+4x+5
(d) x^2-4x+5