

1. In a fort, there was sufficient food for 200 soldiers for 31 days. After 27 days, 120 soldiers left the fort. For how many extra days will the rest of the food last for the remaining soldiers ?  
 (A) 4 days (B) 12 days  
 (C) 10 days (D) 6 days
2. Equal amounts of water were poured into two empty jars of different capacities, which made one jar  $\frac{1}{4}$  full and the other jar  $\frac{1}{3}$  full. If the water in the jar with lesser capacity is then poured into the jar with greater capacity, then the part of the larger jar filled with water is—  
 (A)  $\frac{1}{4}$  (B)  $\frac{1}{3}$   
 (C)  $\frac{1}{2}$  (D)  $\frac{7}{12}$
3. A bookseller makes 8% profit after selling the book at 10% discount. The ratio of the cost price to the marked price is—  
 (A) 5 : 6 (B) 6 : 5  
 (C) 4 : 5 (D) 5 : 4
4. A certain sum of money is distributed to A and B in the ratio 2 : 5. If A received ₹ 100, then the money received by B is—  
 (A) ₹ 250 (B) ₹ 300  
 (C) ₹ 200 (D) ₹ 150
5. Last year my age was a perfect square number. Next year it will be a cubic number. What is my present age ?  
 (A) 26 years (B) 24 years  
 (C) 25 years (D) 27 years
6. What is the value of  $(2.1)^2 \times \sqrt{0.0441}$  ?  
 (A) 92.51 (B) 0.9251  
 (C) 0.9261 (D) 92.61
7. The greatest number that can divide 140, 176, 264 leaving remainders of 4, 6 and 9 respectively is—  
 (A) 17 (B) 2  
 (C) 85 (D) 34
8. There are 4 terms in an A.P. such that the sum of two means is 110 and product of their extremes is 2125. The 3rd term is—  
 (A) 55 (B) 45  
 (C) 65 (D) 75
9. The value of  $\sqrt[3]{1372} \times \sqrt[3]{1458}$  is—  
 (A) 106 (B) 136  
 (C) 116 (D) 126
10. If 10 men or 18 boys can do a work in 15 days, then the number of days required by 15 men and 33 boys to do twice the work is—  
 (A) 9 (B) 36  
 (C)  $4\frac{1}{2}$  (D) 8
11. A man walks a certain distance and rides back taking a total time of 37 minute. He could walk both ways in 55 minute. How long would he take to ride both ways ?  
 (A) 19 minute  
 (B) 20 minute  
 (C) 9.5 minute  
 (D) 18 minute
12. Mahesh starts work as a sales representative on an annual salary of ₹ 1,60,000. If he receives a 15% pay-rise each year, the number of years he has worked for the company, when his annual salary became ₹ 2,79,841 is—  
 (A) 4 (B) 5  
 (C) 2 (D) 3
13. The base of a triangle is 2 cm more than twice its altitude. If the area is 12 sq. cm, its altitude will be—  
 (A) 4 cm (B) 3 cm  
 (C) 6 cm (D) 5 cm
14. A man leaves ₹ 12,600 to be divided among 7 sons, 3 daughters and 5 nephews. If each daughter receives three times as much as each nephew and each son seven times as much as each nephew, then each daughter's share is—  
 (A) ₹ 600 (B) ₹ 750  
 (C) ₹ 700 (D) ₹ 650
15. The average of three numbers 70, \* 7 and 5 \* is 57. If \* represents the same digit, then it must be—  
 (A) 4 (B) 7  
 (C) 3 (D) 6
16. Three years ago, the average age of a family of 8 members was 30 years. If one child is also included in the family, the present average age of the family remained the same. Then the present age of the child is—  
 (A) 6 years (B) 1 year  
 (C) 3 years (D) 4 years
17. By selling an article for ₹ 21,000, a man gains 5%. To get a profit of 15%, he has to sell it for—  
 (A) ₹ 23,000 (B) ₹ 25,000  
 (C) ₹ 19,800 (D) ₹ 20,700
18. Rahul bought two cycles for a total sum of ₹ 1,500. He sold one cycle at 20% loss and the other cycle at 20% gain. If the selling price of both the cycles is the same, find the cost price of the two cycles.  
 (A) ₹ 750 each  
 (B) ₹ 550, ₹ 950  
 (C) ₹ 500, ₹ 1,000  
 (D) ₹ 600, ₹ 900
19. The salary of an employee increases every year in the month of July by 10%. If his salary in May 2000 was ₹ 15,000, his salary in October 2001 was—  
 (A) ₹ 18,150 (B) ₹ 19,965  
 (C) ₹ 16,500 (D) ₹ 18,000

20. 72% of the students of a certain class took Biology and 44% took Mathematics. If each student took Biology or Mathematics and 40 took both, the total number of students in the class was—

- (A) 250 (B) 320  
(C) 200 (D) 230

21. If the volume and the surface area of a sphere are numerically equal, then the numerical value of the radius of the sphere is—

- (A) 3 (B) 4  
(C) 1 (D) 2

22. If  $\frac{5x-3}{x} + \frac{5y-3}{y} + \frac{5z-3}{z} = 0$ , then the value of  $\frac{1}{x} + \frac{1}{y} + \frac{1}{z}$  is—

- (A) 5 (B) 10  
(C) 15 (D) 3

23. Minimum value of  $x^2 + \frac{1}{x^2+1} - 3$  is—

- (A) 0 (B) -1  
(C) -3 (D) -2

24. If  $a + b = 5$ ,  $a^2 + b^2 = 13$ , the value of  $a - b$  (where  $a > b$ ) is—

- (A) 1 (B) -2  
(C) 2 (D) -1

25. If  $(3x - y) : (x + 5y) = 5 : 7$ , then the value of  $(x + y) : (x - y)$  is—

- (A) 2 : 3 (B) 3 : 2  
(C) 3 : 1 (D) 1 : 3

26. The line passing through the points  $(-2, 8)$  and  $(5, 7)$ —

- (A) Cuts  $y$ -axis only  
(B) Cuts both the axes  
(C) Does not cut any axes  
(D) Cuts  $x$ -axis only

27. In  $\Delta ABC$ ,  $\angle B = 60^\circ$ ,  $\angle C = 40^\circ$ . If  $AD$  bisects  $\angle BAC$  and  $AE \perp BC$ , then  $\angle EAD$  is—

- (A)  $10^\circ$  (B)  $20^\circ$   
(C)  $40^\circ$  (D)  $80^\circ$

28. ABCD is a quadrilateral in which diagonal  $BD = 64$  cm,  $AL \perp BD$  and  $CM \perp BD$ , such that  $AL = 13.2$  cm and  $CM = 16.8$  cm. The area of the quadrilateral ABCD in square centimetres is—

- (A) 422.4 (B) 690.0  
(C) 537.6 (D) 960.0

29. The area of a semi-circular field is 308 sq. m; then taking  $\pi = \frac{22}{7}$ , the length of the railing to surround it has to be—

- (A) 88 m (B) 80 m  
(C) 44 m (D) 72 m

30. Volume of a right circular cone is numerically equal to its slant surface area. Then value of  $\left(\frac{1}{h^2} + \frac{1}{r^2}\right)$ , where  $h$  and  $r$  are

height and radius of the cone respectively, is—

- (A) 4 units (B)  $\frac{1}{4}$  unit  
(C) 9 units (D)  $\frac{1}{9}$  unit

31. If the numerical value of the volume of a right circular cylinder and its curved surface area are equal, then its radius is—

- (A) 3 units (B) 6 units  
(C) 2 units (D) 4 units

32. ABCDEF is a regular hexagon of side 2 feet. The area, in square feet, of the rectangle BCEF is—

- (A) 8 (B)  $4 + 4\sqrt{3}$   
(C) 4 (D)  $4\sqrt{3}$

33. If in  $\Delta ABC$ ,  $\angle A = 90^\circ$ ,  $BC = a$ ,  $AC = b$  and  $AB = c$ , then the value of  $\tan B + \tan C$  is—

- (A)  $\frac{c^2}{ab}$  (B)  $\frac{a^2 + c^2}{b}$   
(C)  $\frac{b^2}{ac}$  (D)  $\frac{a^2}{bc}$

34. A ladder is resting against a wall at a height of 10 m. If the ladder is inclined with the ground at an angle of  $30^\circ$ , then the distance of the foot of the ladder from the wall is—

- (A)  $10/\sqrt{3}$  m (B)  $20/\sqrt{3}$  m  
(C)  $10\sqrt{3}$  m (D)  $20\sqrt{3}$  m

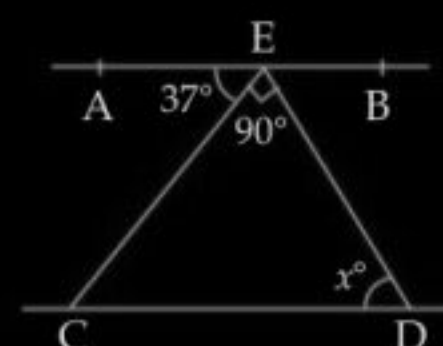
35.  $\tan 7^\circ \tan 23^\circ \tan 60^\circ \tan 67^\circ \tan 83^\circ$  is equal to—

- (A) 0 (B)  $\sqrt{3}$   
(C)  $\frac{1}{\sqrt{3}}$  (D) 1

36. The value of  $(\sec \theta - \cos \theta) (\operatorname{cosec} \theta - \sin \theta) (\tan \theta + \cot \theta)$  is—

- (A) 1 (B)  $\frac{3}{2}$   
(C) 2 (D) 0

37. In the figure below, if  $AB \parallel CD$  and  $CE \perp ED$ , then the value of  $x$  is—



- (A) 53 (B) 63  
(C) 37 (D) 45

38. PA and PB are two tangents drawn from an external point P to a circle with centre O where the points A and B are the points of contact. The quadrilateral OAPB must be—

- (A) A rectangle  
(B) A rhombus  
(C) A square  
(D) Cyclic

39. G is the centroid of  $\Delta ABC$ . If  $AG = BC$ , then  $\angle BGC$  is—

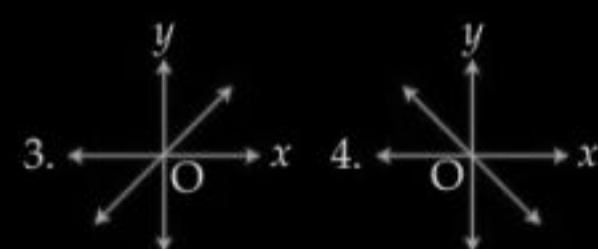
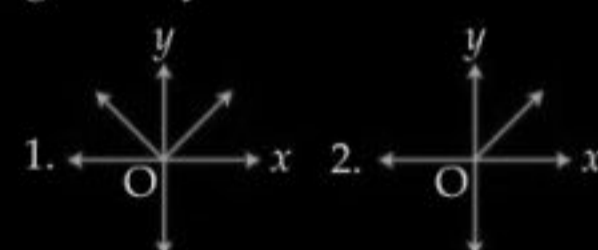
- (A)  $90^\circ$  (B)  $30^\circ$   
(C)  $60^\circ$  (D)  $120^\circ$

40. In the following figure, if  $OA = 10$  and  $AC = 16$ , then  $OB$  must be—



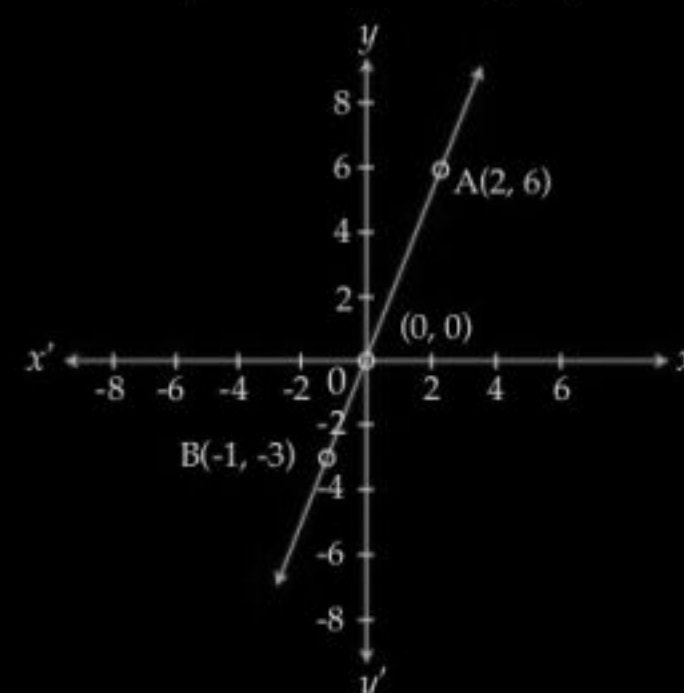
- (A) 5 (B) 6  
(C) 3 (D) 4

41. The graph of  $y = x + |x|$  is given by—



- (A) 3 (B) 4  
(C) 1 (D) 2

42. The equation of this graph is—



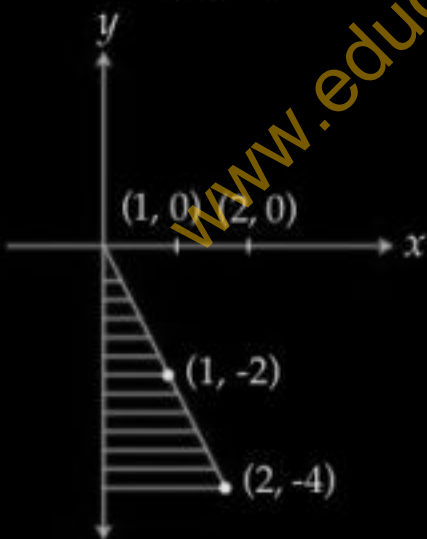
- (A)  $y = x$   
 (B)  $y = 3x$   
 (C)  $y = -x$   
 (D)  $y = -3x$

43. If  $\tan(\theta_1 + \theta_2) = \sqrt{3}$ ,  
 and  $\sec(\theta_1 - \theta_2) = \frac{2}{\sqrt{3}}$ ,

Then the value of  $\sin 2\theta_1 + \tan 3\theta_2$   
 is equal to— (assume that  
 $0 < \theta_1 - \theta_2 < \theta_1 + \theta_2 < 90^\circ$ )

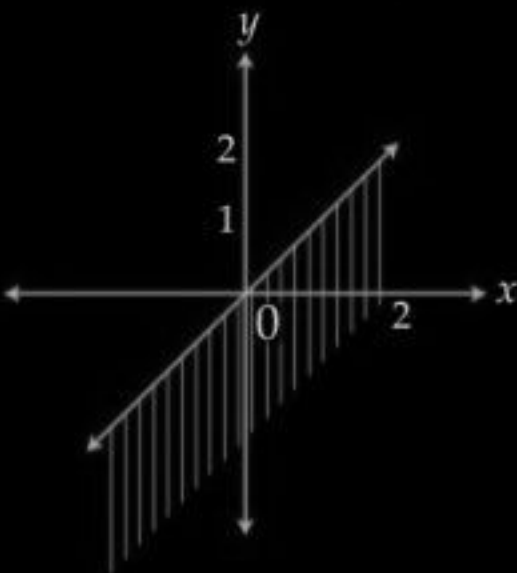
- (A) 0 (B) 3  
 (C) 1 (D) 2

44. The area of the shaded region in  
 the following graph is—



- (A) 6 units (B) 8 units  
 (C) 2 units (D) 4 units

45. The shaded region represents—



- (A)  $y \geq x$  (B)  $y \leq -x$   
 (C)  $y \leq x$  (D)  $y \geq -x$

**Directions—**(Q. 46–50) The pie-  
 chart given below shows the distri-  
 bution of workforce by occupational  
 category for country X in 1981 and  
 1995. Study the chart and answer the  
 questions.



46. The increase in the number of  
 Clerical workers in the workforce  
 of country X from 1981 to 1995  
 (in millions) is—

- (A) 0.5 (B) 1.25  
 (C) 0.75 (D) 1.5

47. The percentage decrease in the  
 number of Blue-Collar workers  
 in the workforce of country X  
 from 1981 to 1995 is—

- (A) 20 (B)  $16\frac{2}{3}$   
 (C)  $42\frac{1}{2}$  (D) 35

48. In 1981, the number of Service  
 workers in the workforce, in  
 millions, was—

- (A) 22.5 (B) 28.0  
 (C) 15.0 (D) 20.5

49. In 1981, the number of categories  
 which comprised of more than 25  
 million workers each, is—

- (A) Four (B) Five  
 (C) Two (D) Three

50. The ratio of the number of  
 workers in the Professional  
 category in 1981 to the number of  
 such workers in 1995 is—

- (A) 9 : 14 (B) 14 : 9  
 (C) 4 : 9 (D) 5 : 14

