

Class - VIII

Olympiad Worksheets

CHAPTER 1

NUMBER SYSTEMS AND OPERATIONS

- Q1. Which among the following pair of numbers are co-primes?
(A) 204 and 189 (B) 10353 and 1073
(C) 3553 and 1755 (D) 2233 and 3689
(E) None of these
- Q2. How many composite numbers are there in between 150 and 200 (including 150 and 200 both)?
(A) 40 (B) 42 (C) 41 (D) 39
(E) None of these
- Q3. The HCF and LCM of two numbers are 16 and 336 respectively. If one of them is 48, then find the other.
(A) 116 (B) 112 (C) 118 (D) 158
(E) None of these
- Q4. If $3a52895b7$ is exactly divisible by 3 and 11 both, then find the value of $a + b$. (where a and b are digits from 0 to 9.)
(A) 6 (B) 9 (C) 12 (D) 15
(E) None of these
- Q5. Find the LCM of the least 4-digit number and the greatest 4-digit even number.
(A) 9998000 (B) 4567800 (C) 4999000 (D) 5260000
(E) None of these
- Q6. The greatest five digit number exactly divisible by 7 and 23 is _____
(A) 99995 (B) 99981
(C) 99974 (D) 99988
(E) None of these
- Q7. How many pairs of co-primes can be formed from the set $\{2,5,6,7,8,9,12\}$.
(A) 14 (B) 13 (C) 12 (D) 18
(E) None of these
- Q8. Find the unit's digit in the product of the first 50 even natural numbers.
(A) 2 (B) 4 (C) 6 (D) 0
(E) None of these

Q9. If $3^m = (81)^n = (729)^r = 243$ then find the value of $\left(\frac{3m}{4} + n\right)^3 - (4n + 6r)^3$

- (A) 1125
(B) 875
(C) -875
(D) -1125
(E) None of these

Q10. $\sqrt[3]{1+3+5+7+\dots+685} = \underline{\hspace{2cm}}$

- (A) 9
(B) 27
(C) 49
(D) 7
(E) None of these

Q11. If $\sqrt[3]{a} + \frac{64}{\sqrt[3]{a}} = 20$, then the value of a can be $\underline{\hspace{2cm}}$

- (A) 4 and 32
(B) 8 and 4
(C) 16 and 8
(D) 4 and 16
(E) None of these

Q12. In a five digit number $1p68q$, $p = q^2$ and $p \neq q$. If the given number is a perfect cube, then find the difference between the sum of its digits and the cube root of the number.

- (A) 0
(B) 1
(C) 2
(D) 9
(E) None of these

Q13. Find the number of four digit cubes which end with a non-zero perfect square digit.

- (A) 2
(B) 4
(C) 6
(D) 7
(E) None of these

- Q14. The dimensions of a rectangular box are represented as $(a + 2b)$ $(a^2 + 4b^2)$ and $(a - 2b)$ then what will be the volume of the rectangular box?
- (A) $a^4 + 8b^4 + 6a^2b^2$ (B) $a^4 + 16b^4 - 8a^2b^2$
(C) $a^4 - 16b^4$ (D) $a^4 + 8b^4 + 12a^2b^2$
(E) None of these

- Q15. Solve: $\frac{3m-2}{4} + m = \frac{2}{3} + \frac{2m+3}{3}$
- (1) $m = -1$ (B) $m = -2$ (C) $m = 2$ (D) $m = 1$
(E) None of these

- Q16. Find the Value of t if $\frac{1}{t+1} + \frac{1}{t+2} = \frac{2}{t+10}$
- (A) $t = \frac{-26}{17}$ (B) $t = \frac{-17}{8}$ (C) $t = 2$ (D) $t = -3$
(E) None of these

- Q17. Divide 84 into two parts such that $\left(\frac{4}{17}\right)^{\text{th}}$ of one part is equal to other part. Find the product of both the parts.
- (A) 1078 (B) 1088
(C) 2032 (D) 3076
(E) None of these

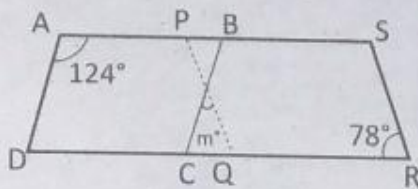
- Q18. In a fraction, if both the numerator and denominator are decreased by thrice, it is equal to $\frac{2}{5}$. If the numerator is increased by 3 and denominator is increased by 2, the fraction becomes $\frac{2}{3}$. Find the fraction.
- (A) $\frac{5}{8}$ (B) $\frac{7}{13}$ (C) $\frac{8}{13}$ (D) $\frac{8}{11}$
(E) None of these

- Q19. The sum of the digits of a two digit number is 9. If 27 is subtracted from the number, the resultant number becomes the number obtained on reversing the digits of the original number. Find the original number.
- (A) 54 (B) 45
(C) 63 (D) 81
(E) None of these
- Q20. The sum of three consecutive even numbers is 330, then find $\frac{3}{4}$ th of the greatest number.
- (A) 72 (B) 84
(C) 112 (D) 140
(E) None of these
- Q21. If the side of a chess board is smaller than its perimeter by 42 cm then find the area of the chess board.
- (A) 100 cm^2 (B) 144 cm^2
(C) 196 cm^2 (D) 180 m cm^2
(E) None of these
- Q22. Cost of two chairs and three tables is ₹3320, while the cost of one chair and two tables is ₹2020. Find the cost of each chair.
- (A) ₹780 (B) ₹620
(C) ₹580 (D) ₹720
(E) None of these
- Q23. A number is 20 less than ten times of the average of its fifth, quarter and one-fourteenth. Find $\frac{2}{9}$ of the number.
- (A) 380 (B) 440
(C) 320 (D) 480
(E) None of these

- Q24. In a parallelogram PQRS, the bisectors of $\angle P$ and $\angle Q$ meet at M. Find $\angle PMQ$.
- (A) 45° (B) 90°
 (C) 30° (D) 60°
 (E) None of these

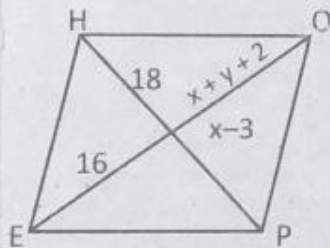
- Q25. Two adjacent angles of a parallelogram are $(5x + 1)^\circ$ and $(6x - 8)^\circ$. The angles of the parallelogram are _____.
- (A) $86^\circ, 94^\circ, 86^\circ, 94^\circ$ (B) $76^\circ, 104^\circ, 76^\circ, 104^\circ$
 (C) $84^\circ, 96^\circ, 84^\circ, 96^\circ$ (D) $78^\circ, 102^\circ, 78^\circ, 102^\circ$
 (E) Name of these

- Q26. In the following figure, find the measure of m° where ABCD and PQRS are the parallelograms.



- (A) 46° (B) 34°
 (C) 62° (D) 39°
 (E) None of these

- Q27. In the following figure, HOPE is a parallelogram. Find the value of $\frac{3}{4}(x-y)$



- (A) 7 (B) $\frac{21}{2}$ (C) 21 (D) 14
 (E) None of these

- Q28. The diameter of the base of a right circular cylinder is 42 cm and its height is 10 cm. Find its total surface area.
- (A) 4092 cm^2 (B) 4075 cm^2 (C) 4094 cm^2 (D) 4100 cm^2
(E) None of these
- Q29. In a temple, there are 25 cylindrical pillars. The radius of each pillar is 28 cm and height 4 m. Find the total cost of painting its outer surface at ₹ 8 per m^2 .
- (A) ₹ 1400 (B) ₹ 1525
(C) ₹ 1408 (D) ₹ 1309
(E) None of these
- Q30. The curved surface area of a right circular cylinder of height 14 cm is 88 cm^2 . The diameter of its base is:
- (A) 2 cm (B) 1 cm
(C) 2.5 cm (D) 1.5 cm
(E) None of these
- Q31. The radii of two right circular cylinders are in the ratio 2 : 3 and their heights are in the ratio 5:4 calculate the ratio of their curved surface areas.
- (A) 6 : 5 (B) 5 : 9
(C) 6 : 11 (D) 5 : 4
(E) None of these
- Q32. A road roller takes 750 complete revolutions to move once over to level a road. Find the area of the road if the diameter of a road roller is 91 cm and length is 1.25 m.
- (A) 2685.5 m^2 (B) 2681.25 m^2
(C) 2690 m^2 (D) 2641 m^2
(E) None of these
- Q33. An iron pipe 20 cm long has exterior diameter equal to 25 cm. If the thickness of the pipe is 1 cm, then find the whole surface area of the pipe.
- (A) 3120 cm^2 (B) 3210 cm^2
(C) 3168 cm^2 (D) 3250 cm^2
(E) None of these

Q 34.

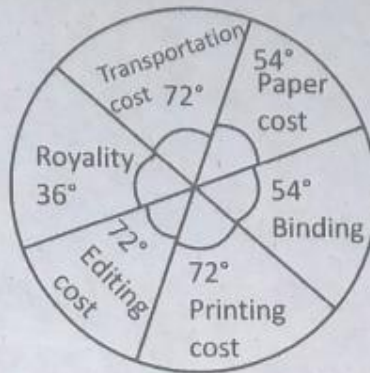
Find the cumulative frequency of the number 5 from the data given below.

1, 1, 2, 2, 2, 2, 2, 3, 3, 3, 3, 4, 4, 4, 4, 4, 4, 4, 5, 5, 5, 6, 6, 6, 6, 6, 7, 7, 7, 7, 7, 7, 7, 7, 7

- (A) 35 (B) 21
(C) 18 (D) 26
(E) None of these

Q 35.

Directions for Q. 35 ~~is~~ The following pie chart shows the distribution of the expenditure incurred for publishing a book.



(a)

The percentage of the central angle corresponding to the expenditure incurred on paper cost is:

- (A) 10% (B) 15%
(C) 20% (D) 30%
(E) None of these

(b)

Royalty on the book is less than the editing cost by:

- (A) 10% (B) 15%
(C) 20% (D) 25%
(E) None of these

(c)

If the transportation cost is ₹ 1,80,000 then the binding cost is:

- (A) ₹ 90,000 (B) ₹ 1,12,000
(C) ₹ 1,35,000 (D) ₹ 1,80,000
(E) None of these