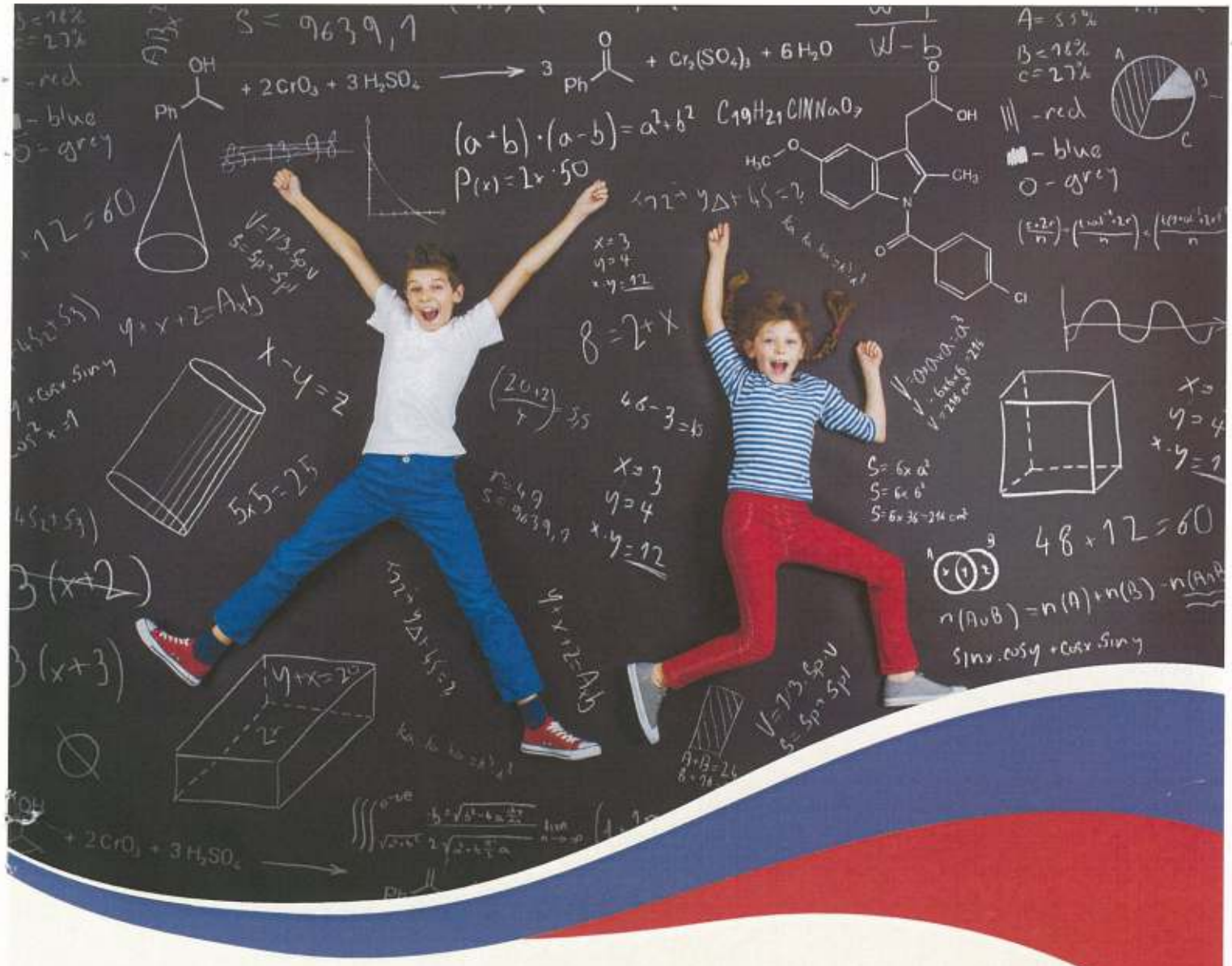

GRADE 7
SET 1

MATHEMATICS OLYMPIAD

Official Guide

International Olympiad Foundation

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CONTENTS

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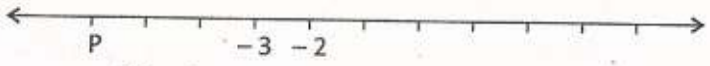
1. Integers

Tick the correct option from the four options given below

1. **The letter P represents the number _____ on the number line.**



(A) −5 **(B)** −6 **(C)** −1 **(D)** 0

2. **Which of the following statement is false :**

(A) When a positive integer and a negative integer are added, the result is always a negative integer.

(B) The additive inverse of (−9) is 9.

(C) For subtraction, we add the additive inverse of the integer that is being subtracted to the other integer.

(D) The difference of two integers is an integer.

3. **In columns I and II there are given some integers. With each integer in column I match an integer from column II so that two are equidistant from − 4.**

Column I	*Column II*
(*i*) 3	(*a*) − 6
(*ii*) 2	(*b*) − 10
(*iii*) −1	(*c*) − 7
(*iv*) −2	(*d*) − 11

(A) (*i*) → (*d*), (*ii*) → (*b*), (*iii*) → (*c*), (*iv*) → (*a*) **(B)** (*i*) → (*b*), (*ii*) → (*d*), (*iii*) → (*c*), (*iv*) → (*a*)

(C) (*i*) → (*d*), (*ii*) → (*c*), (*iii*) → (*b*), (*iv*) → (*a*) **(D)** (*i*) → (*d*), (*ii*) → (*b*), (*iii*) → (*a*), (*iv*) → (*c*)

4. **Which of the following gives a positive result ?**

(A) The product of one negative integer and five positive integers

(B) The product of five negative integers and one positive integer

(C) The product of two negative integers and five positive integers

(D) The product of five negative integers and two positive integers

5. **Given below are statements in column I and some integers in column II. Match each statement of column I with the corresponding item of column II.**

Column I	*Column II*
(*i*) The sum of an integer and its additive inverse	(*a*) 2
(*ii*) $(-1)^{2n+1}$, $n \in N$	(*b*) 1
(*iii*) The product of a non-zero integer and its reciprocal	(*c*) 0
(*iv*) The absolute value of the difference of two consecutive even integers	(*d*) – 1

(A) (*i*) → (*d*), (*ii*) → (*c*), (*iii*) → (*b*), (*iv*) → (*a*) **(B)** (*i*) → (*c*), (*ii*) → (*b*), (*iii*) → (*d*), (*iv*) → (*a*)

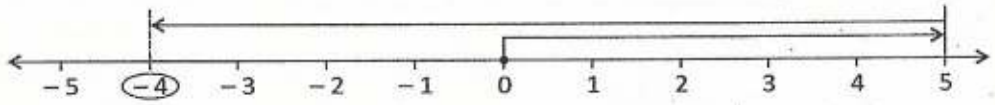
(C) (*i*) → (*c*), (*ii*) → (*d*), (*iii*) → (*b*), (*iv*) → (*a*) **(D)** (*i*) → (*c*), (*ii*) → (*d*), (*iii*) → (*a*), (*iv*) → (*b*)

6. **If n is a non-zero integer, then $(-1)^{2n+1}(-15)$ is**

(A) definitely positive **(B)** definitely negative

(C) either positive or negative **(D)** neither positive nor negative

7. **Which of the following addition sentence best describes the problem on the diagram.**



(A) 5 + (– 9) **(B)** (– 4) + 5 **(C)** 5 – (– 9) **(D)** 5 + 9

8. **In a quiz, positive marks are given for correct answers and negative marks are given for incorrect answers. If Radhika's score in five successive rounds were 25, – 5, – 10, 15 and 10, what was her total at the end ?**

(A) 45 **(B)** 25 **(C)** 35 **(D)** 40

9. **What value of p makes the following statement true ?**

$$(-4) + p = -2$$

(A) 2 **(B)** – 2 **(C)** 6 **(D)** – 6

10. **Which of the following is incorrect ?**

(A) 0 > 1 **(B)** 0 > – 40 **(C)** – 1 < 1 **(D)** – 3 < – 1

11. **The cube of positive integer multiplied to the square of a negative gives the result as a _____.**

(A) positive integer **(B)** zero **(C)** negative integer **(D)** none of these

12. **The expression – 105 + (– 14) + 34 simplifies to which of the following ?**

(A) – 57 **(B)** – 75 **(C)** – 85 **(D)** 153

13. **On simplification, the expression $1 - [1 - \{1 - (1 - \overline{1 - 1})\}]$ yields _____.**

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

14. **Which pair of numbers does not have a product as 48 ?**

(A) – 4, – 12 **(B)** – 6, – 8 **(C)** $\frac{1}{4}, -192$ **(D)** 1 × 48

15. Use the information below to answer the question that follows.

Monday	Tuesday	Wednesday	Thursday	Friday
7°C	12°C	4°C	– 13°C	– 15°C

As part of a unit on weather, students recorded the outdoor temperature at 8.30 a.m. for five mornings. What was the difference between the week's highest and lowest morning temperatures ?

(A) – 3°C (B) – 1°C (C) 8°C (D) 27°C

16. What is the number of integers in the pair of integers + 1 and – 1 (excluding the integers) ?

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

17. In which pair of integers (excluding the integers), there are less than two integers lying between them ?

(A) + 1 and + 4 (B) + 1 and – 2 (C) 0 and – 4 (D) 0 and – 1

18. Which of the following represents the statement "4 times the sum of (– 2) and 5" ?

(A) $4 \times (-2) + 5$ (B) $4 + ((-2) \times 5)$ (C) $4 \times 5 + (-2)$ (D) $4 \times ((-2) + 5)$

19. If ★ is an operation such that for integers a and b, we have

$$a \star b = a^2 + b^2 - ab$$

Then, $(-7) \star (-3)$ is equal to _____.

(A) – 37 (B) 37 (C) 79 (D) – 79

20. If ★ is an operation such that for integers a and b, we have

$$a \star b = a^2 - b^2 - 3ab(a - b)$$

Then, $2 \star 3$ is equal to _____.

(A) 13 (B) – 13 (C) 31 (D) – 31

21. The value of $(-3) \times (-1) \times (-1) \times (-3) \times (-1) \times (-1) \times (-3) \times (-1) \times (-1) \times (-3) \times (-1)$ is ____.

(A) 27 (B) – 54 (C) – 81 (D) – 27

22. The value of $(-6) \times (-5) \times (-4) \times (-3) \times (-2) \times (-1) \times 0 + 0 \times (1) \times (2) \times (3) \times (4) \times (5) \times (6)$ is _____.

(A) 720 (B) – 720 (C) 120 (D) 0

23. In a magic square each row, column and diagonal have the same sum, then the values of A and B are _____.

3	– 14	11
A	0	– 8
– 11	14	B

(A) – 8, – 3 (B) 8, 3
(C) 8, – 3 (D) – 8, 3

24. Which of the following is false ?

(A) $|5 + 3| = |5| + |3|$ (B) $|3 - 5| = |3| - |5|$
(C) $|5 - 3| = |5| - |3|$ (D) $|(-3) + (-5)| = |-3| + |-5|$

25. The value of $|8| + |6| - |8| - |-4|$ is equal to _____.

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

26. Which integer is the additive inverse of itself ?

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

27. The predecessor of the successor of -31 is _____.

(A) -30 (B) -29 (C) -32 (D) -31

28. If $17 \times (a + 5) = 17 \times (-6) + 17 \times 5$, then a is _____.

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

29. If $(-3) + 7 - 19 \boxed{?} 15 - 8 + (-9)$. Then, ? mark should be replaced with _____.

(A) $>$ (B) $<$ (C) $\geq$ (D) $\leq$

30. A plane is flying at the height of 5000 m above the sea level. At a particular point, it is exactly above submarine floating 1200 m below the sea level. The vertical distance between them is _____.

(A) 6200 m (B) 3800 m (C) -3800 m (D) 6000 m

31. If $p : 0 \div (-3) = 0$ and

$q : (-5) \div 0$ = undefined, then

(A) p is true and q is false (B) p is false and q is true

(C) Both p and q are true (D) Both p and q are false

32. If $p : 18 - (2 + 9) \neq (18 \div 2) + (18 \div 9)$ and

q : Distributive law over addition holds in division. Then

(A) p is true and q is false (B) p is false and q is true

(C) Both p and q are true (D) Both p and q are false

33. A monkey jumps up 5 m every minute on a 60 m minar and then slips 2 m over the next minute. How many minutes will it take to climb the minar ?

(A) 20 minutes (B) 40 minutes (C) 60 minutes (D) 30 minutes

34. A certain freezing process requires that room temperature be lowered from 40°C at the rate of 5°C every hour. What will be the room temperature 10 hours after the process begins ?

(A) 35°C (B) 30°C (C) -10°C (D) 25°C

35. In a test (+ 5) marks are given for every correct answer and (– 2) marks are given for every incorrect answer. Inderjot answered all the questions and scored 30 marks though she got 10 correct answers. How many incorrect answers had she attempted ?

(A) 12 (B) 10 (C) 8 (D) 6

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2. Fractions and Decimals

Tick the correct option from the four options given below

1. Choose the fraction which is equivalent to $\frac{3}{4}$:

   (A) $\frac{12}{20}$ (B) $\frac{51}{12}$ (C) $\frac{4}{3}$ (D) $\frac{12}{16}$

2. Which of the following is not a proper fraction ?

   (A) $\frac{2}{3}$ (B) $\frac{3}{4}$ (C) $\frac{5}{7}$ (D) $\frac{6}{5}$

3. Which of the following is not an improper fraction ?

   (A) $\frac{4}{3}$ (B) $\frac{3}{2}$ (C) $\frac{5}{3}$ (D) $\frac{7}{11}$

4. Which of the following is a mixed fraction for $\frac{39}{12}$?

   (A) $2\frac{14}{12}$ (B) $3\frac{2}{12}$ (C) $3\frac{3}{12}$ (D) $3\frac{1}{12}$

5. Fraction is a part of _____.

   (A) whole (B) half (C) quarter (D) none of these

6. The fractions with the same denominator are called _____.

   (A) unit (B) like (C) unlike (D) none of these

7. The product of a fractional number and its multiplicative inverse is _____.

   (A) 0 (B) 1 (C) number itself (D) none of these

8. The fractions which have a common denominator are called _____ fractions.

   (A) like (B) proper (C) unlike (D) improper

9. The fractions with different denominators are called _____ fractions.

   (A) like (B) unlike (C) proper (D) improper

10. Two fractions are equivalent if their cross-multiplications are _____.

(A) 0 (B) 1 (C) equal (D) unequal

11. Which of the following sets of fractions is in descending order ?

(A) $\frac{3}{5}, \frac{7}{9}, \frac{6}{7}$ (B) $\frac{7}{9}, \frac{3}{5}, \frac{6}{7}$ (C) $\frac{7}{9}, \frac{6}{7}, \frac{3}{5}$ (D) $\frac{6}{7}, \frac{7}{9}, \frac{3}{5}$

12. Which of the following sets of fractions is in ascending order ?

(A) $\frac{5}{6}, \frac{6}{8}, \frac{7}{9}, \frac{11}{13}$ (B) $\frac{6}{8}, \frac{7}{9}, \frac{5}{6}, \frac{11}{13}$ (C) $\frac{11}{13}, \frac{5}{6}, \frac{7}{9}, \frac{6}{8}$ (D) $\frac{11}{13}, \frac{7}{9}, \frac{6}{8}, \frac{5}{6}$

13. Which part contains the fractions in ascending order ?

(A) $\frac{11}{14}, \frac{16}{19}, \frac{19}{21}$ (B) $\frac{16}{19}, \frac{11}{14}, \frac{19}{21}$ (C) $\frac{19}{21}, \frac{11}{14}, \frac{16}{19}$ (D) $\frac{16}{19}, \frac{19}{21}, \frac{11}{14}$

14. Which of the following fractions is the smallest ?

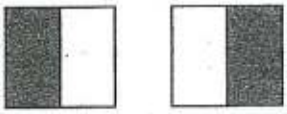
(A) $\frac{13}{16}$ (B) $\frac{15}{19}$ (C) $\frac{17}{21}$ (D) $\frac{7}{8}$

15. Which of the following fractions is less than $\frac{7}{8}$ and greater than $\frac{1}{3}$?

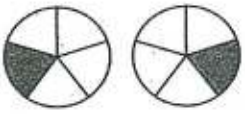
(A) $\frac{1}{4}$ (B) $\frac{23}{24}$ (C) $\frac{11}{12}$ (D) $\frac{17}{24}$

16. Which of the drawings show $3 \times \frac{2}{3}$?

(A) 

(B) 

(C) 

(D) 

17. Sameera purchased $3\frac{1}{2}$ kg apples and $5\frac{3}{4}$ kg oranges. The total weight of fruits purchased by her is _____.

(A) $8\frac{1}{2}$ kg (B) $8\frac{3}{4}$ kg (C) $9\frac{1}{4}$ kg (D) $9\frac{3}{4}$ kg

18. Suman studies $5\frac{2}{3}$ hours daily. She devotes $2\frac{4}{5}$ hours of her time for Mathematics. How much time does she devote for other subjects ?

(A) $2\frac{13}{15}$ hours (B) $3\frac{13}{15}$ hours (C) $2\frac{15}{13}$ hours (D) $1\frac{13}{15}$ hours

19. Salil wants to put a picture in a frame. The picture is $7\frac{3}{5}$ cm wide. To fit in the frame the picture cannot be more than $7\frac{3}{10}$ cm wide. How much should the picture be trimmed ?

(A) $\frac{3}{5}$ cm (B) $\frac{3}{10}$ cm (C) $\frac{6}{10}$ cm (D) $\frac{6}{15}$ cm

20. What fraction must be subtracted from the sum of $\frac{1}{4}$ and $\frac{1}{6}$ to have an average of $\frac{1}{12}$ of all the three fractions ?

(A) $\frac{1}{2}$ (B) $\frac{1}{3}$ (C) $\frac{1}{4}$ (D) $\frac{1}{6}$

21. The smallest fraction which should be subtracted from the sum of $1\frac{3}{4}, 2\frac{1}{2}, 5\frac{7}{12}, 3\frac{1}{3}$ and $2\frac{1}{4}$ to make the result a whole number is _____.

(A) $\frac{5}{12}$ (B) $\frac{7}{12}$ (C) $\frac{1}{2}$ (D) 7

22. If $\frac{1}{8}$ of a pencil is black, $\frac{1}{2}$ of the remaining is white and the remaining $3\frac{1}{2}$ cm is blue, then the total length of pencil is _____.

(A) 6 cm (B) 7 cm (C) 8 cm (D) 11 cm

23. In a school, $\frac{1}{6}$th of the girls and $\frac{1}{7}$th of the boys took part in NCC camp. What fraction of the total number of students in the school took part in the camp ?

(A) $\frac{13}{40}$ (B) $\frac{13}{80}$ (C) $\frac{2}{13}$ (D) Data insufficient

24. If we multiply a fraction by itself and divide the product by its reciprocal, the fraction obtained is $18\frac{26}{27}$. The original fraction is _____.

(A) $\frac{8}{27}$ (B) $2\frac{2}{3}$ (C) $1\frac{1}{3}$ (D) none of these

25. A student was asked to multiply a given number by $\frac{8}{17}$. Instead, he divided the given number by $\frac{8}{17}$. His answer was 225 more than the correct answer. The given number is _____.

(A) 8 (B) 17 (C) 64 (D) 136

26. How many $\frac{1}{8}$s are there in $37\frac{1}{2}$?

(A) 300 (B) 400 (C) 500 (D) Can't be determined

27. $\frac{3}{8}$ is what part of $\frac{1}{12}$?

(A) $\frac{3}{7}$ (B) $\frac{1}{12}$ (C) $\frac{4}{3}$ (D) $\frac{9}{2}$

28. By how much is two-third of 57 more than one-third of 90 ?

(A) 8 (B) 38 (C) 30 (D) 28

29. The expression $\left(1-\frac{1}{3}\right)\left(1-\frac{1}{4}\right)\left(1-\frac{1}{5}\right)\ldots\left(1-\frac{1}{m}\right)$ when simplified yields _____.

(A) $\frac{1-m}{m}$ (B) $\frac{2}{m}$ (C) $\frac{2}{m}(m-1)$ (D) $\frac{2}{m(m+1)}$

30. If $\frac{x}{y}=\frac{4}{5}$, the value of $\left(\frac{5}{8}+\frac{y-x}{y+x}\right)$ is _____.

(A) $\frac{49}{72}$ (B) $\frac{53}{72}$ (C) $\frac{23}{72}$ (D) none of these

31. If $\frac{a}{b}=\frac{1}{5}$, then $\frac{5a+2b}{5a-2b}$ is equal to _____.

(A) 3 (B) -3 (C) -5 (D) -1

32. The decimal number 7.8 is read as _____.

(A) seven eight (B) seventy eight (C) seven point eight (D) none of these

33. The place value of 7 in 27.5 is _____.

(A) 7 (B) 70 (C) $\frac{7}{10}$ (D) $\frac{7}{100}$

34. The place value of 5 in 3.465 is _____.

(A) 5 (B) $\frac{5}{10}$ (C) $\frac{5}{100}$ (D) $\frac{5}{1000}$

35. $3+\frac{1}{100}+\frac{7}{1000}=$ _____.

(A) 0.317 (B) 3.17 (C) 3.017 (D) 3.170

36. $14.3+16.78-\boxed{?}=9.009$. Then $\boxed{?}$ mark should be replaced by _____.

(A) 40.089 (B) 22.071 (C) 21.810 (D) none of these

37. 0.000006723 when expressed in scientific notation, is _____.

(A) 6723×10^{-5} (B) 67.23×10^{-7} (C) 6.723×10^{-6} (D) none of these

38. What decimal of an hour is a second ?
(A) 0.0025 (B) 0.0256 (C) 0.00027 (D) 0.000126

39. (0.08 × 0.007) is equal to _____.
(A) 0.056 (B) 0.0056 (C) 0.00056 (D) 0.56

40. 0.6 × 0.6 + 0.6 ÷ 6 = ?
(A) 0.16 (B) 0.46 (C) 0.37 (D) 0.42

41. The number of digits in the decimal part of 22.444 is
(A) 2 (B) 3 (C) 4 (D) not finite

42. 0.7499 lies between
(A) 0.7 and 0.74 (B) 0.75 and 0.79 (C) – 0.749 and – 0.75 (D) 0.74 and 0.75

43. 0.023 lies between
(A) 0.2 and 0.3 (B) 0.03 and 0.02 (C) – 0.02 and 0.03 (D) – 0.03 and 0.02

44. Which of the following is not equal to $\frac{1}{2}$?
(A) 5×10^{-1} (B) 0.5×10^{-1} (C) 0.05×10 (D) 0.005×10^{2}

45. Which one is correct ?
(A) 0.769 < 0.843 < 0.625 < 0.924 (B) 0.625 < 0.769 < 0.843 < 0.924
(C) 0.924 < 0.843 < 0.769 < 0.625 (D) 0.625 < 0.843 < 0.769 < 0.924

46. A shopkeeper sold 19.750 kg of sugar on a day. On the next day he sold 36.250 kg of sugar. On the third day he sold 45.500 kg of sugar. How much of sugar in all did the shopkeeper sell ?
(A) 100 kg (B) 101 kg (C) 101.500 kg (D) 102.500 kg

47. A vehicle covers a distance of 43.2 km in 2.4 litres of petrol. How much distance will it cover in one litre of petrol ?
(A) 15 km (B) 16 km (C) 17 km (D) 18 km

48. Lipika purchased a note book for ₹ 21.75, a pencil for ₹ 1.85 and a pen for ₹ 18.90. She gave a 50 rupee note to the shopkeeper. The amount she got back is _____.
(A) ₹ 7.50 (B) ₹ 42.50 (C) ₹ 45.50 (D) ₹ 92.50

49. 0.342 expressed as a vulgar fraction is _____.
(A) $\frac{340}{990}$ (B) $\frac{340}{900}$ (C) $\frac{342}{1000}$ (D) $\frac{342}{999}$

50. On simplification $\cfrac{1}{2+\cfrac{1}{2+\cfrac{1}{2-\frac{1}{2}}}}$ yields :
(A) $\frac{4}{9}$ (B) $\frac{8}{19}$ (C) $\frac{4}{18}$ (D) $\frac{8}{21}$

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3. Data Handling

Tick the correct option from the four options given below

1. The arithmetic mean of first 50 natural numbers is _____.

   (A) 12.25 (B) 21.25 (C) 25 (D) 25.5

2. The mean of first five prime numbers is _____.

   (A) 4.5 (B) 5 (C) 5.6 (D) 7.5

3. The mean of first five multiples of 3 is _____.

   (A) 3 (B) 9 (C) 12 (D) 15

4. If a, b, c, d, e are five consecutive odd numbers, their mean is _____.

   (A) $5(a+4)$ (B) $\frac{abcde}{5}$ (C) $5(a+b+c+d+e)$ (D) none of these

5. The mean of 7 consecutive numbers is 33. The largest of these numbers is _____.

   (A) 36 (B) 33 (C) 30 (D) 28

6. On a certain day, temperatures recorded in a city are as under :

Time	6 am	12 noon	6 pm	12 night
Temperature	12.4°C	18.8°C	16.6°C	10°C

   The mean temperature for the day is _____.

   (A) 12°C (B) 14.45°C (C) 15.2°C (D) 15.8°C

7. The mean of three numbers is 20. If two numbers are 16 and 22, the third number is _____.

   (A) 22 (B) 20 (C) 19 (D) 18

8. The arithmetic mean of two numbers is M. If one number is N, then the other number is _____.

   (A) 2N (B) 2M (C) M – N (D) 2M – N

9. **The mean of eight numbers is 14. The mean of six of these numbers is 16. The mean of the remaining two numbers is _____.**

(A) 4 (B) 8 (C) 16 (D) Insufficient data

10. **The mean of ten numbers is 7. If each number is multiplied by 12, then the mean of new set of numbers is _____.**

(A) 7 (B) 19 (C) 82 (D) 84

11. **If each entry of a data is increased by 7, then their arithmetic mean _____.**

(A) remains the same (B) increases by 7 (C) decreases by 7 (D) none of these

12. **The mean age of 30 students is 9 years. If the age of their teacher is included, it becomes 10 years. The age of the teacher (in years) is _____.**

(A) 27 (B) 31 (C) 35 (D) 40

13. **The mean age of 5 numbers is 27. If one of the numbers is excluded the mean gets reduced by 2. The excluded number is _____.**

(A) 25 (B) 27 (C) 35 (D) 40

14. **The mean of 50 numbers is 38. If two numbers namely 45 and 55 are discarded, the average of the remaining numbers is _____.**

(A) 36.5 (B) 37 (C) 37.5 (D) 37.52

15. **The mean of 11 observations is 60. If the mean of first five observations is 58 and that of the last five is 56, then the sixth observation is _____.**

(A) 85 (B) 90 (C) 100 (D) 110

16. **The heights of 10 girls were measured in cm and the results are as follows :**

135, 150, 139, 128, 151, 132, 146, 149, 143, 141

What is the range of the data ?

(A) 151 cm (B) 128 cm (C) 23 cm (D) 141.4 cm

17. **The mean of 100 observations was calculated as 40. It was found later that one of the observations was misread as 83 instead of 53. The correct mean is _____.**

(A) 39 (B) 39.7 (C) 40.3 (D) 42.7

18. **The mode of a set of observations is the value which _____.**

(A) occurs most often (B) is central

(C) is between maximum and minimum (D) none of these

19. **Following are the margins of victory in the football matches of a league :**

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

The mode of this data is _____.

(A) 2 (B) 14 (C) 3 (D) 6

20. For what value of p, the mode of the following data is 12 ?

12, 15, 11, 12, 18, 15, 9, p, 12, 16, 17, 15, 18

(A) 3 (B) 12 (C) 2 (D) 1

21. The mode of following distribution is :

Size	2	3	4	5	6	7	8
Frequency	12	14	27	22	27	17	13

(A) Only 4 (B) Only 6 (C) 4 and 6 (D) 5

22. **The runs scored in a cricket match by 11 players is as follows :**

6, 15, 120, 50, 100, 80, 10, 15, 8, 10, 15

Then, the median is _____.

(A) 15 (B) 10 (C) 50 (D) 8

23. **If in a data, 10 numbers are arranged in increasing order. If the 7th entry is increased by 5, then the median increases by _____.**

(A) zero (B) 5 (C) 6 (D) 7

24. **Which of the following statement is false ?**

(A) The mode is always one of the numbers in a data

(B) The mean is one of the numbers in a data

(C) The median is always one of the numbers in a data

(D) The data 24, 36, 46, 17, 18, 25, 35 has median 25

25. **A coin is tossed 50 times and head is obtained 31 times. On tossing a coin at random, the probability of getting a tail is _____.**

(A) $\frac{31}{50}$ (B) 0 (C) 1 (D) $\frac{19}{50}$

26. **A die is tossed, then the probability that it lands up with 7 on top is _____.**

(A) 0 (B) $\frac{1}{2}$ (C) $\frac{1}{4}$ (D) 1

27. **There are 6 marbles in a box with number 1 to 6 marked on each of them, then the probability of drawing a marble with number as a multiple of 2 is _____.**

(A) $\frac{1}{6}$ (B) $\frac{1}{3}$ (C) $\frac{1}{2}$ (D) 1

28. **A coin is flipped to decide which team starts the game. The probability that your team will start the game is _____.**

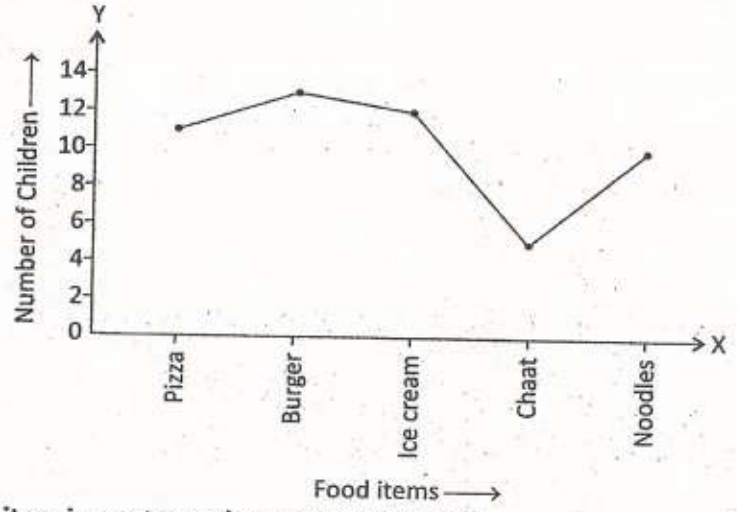
(A) 0 (B) 1 (C) $\frac{1}{2}$ (D) $\frac{1}{4}$

29. Ashish found the mean and median of the data 15, 13, 12, 11, 13. If the number 16 is added to the above list, then

(A) the mean decreases **(B)** the mean increases

(C) the median remains unchanged **(D)** the median decreases

The line graph below shows the favourite items of 50 children. Read the graph to answer questions (30 – 31) :



30. Which food item is most popular among children ?

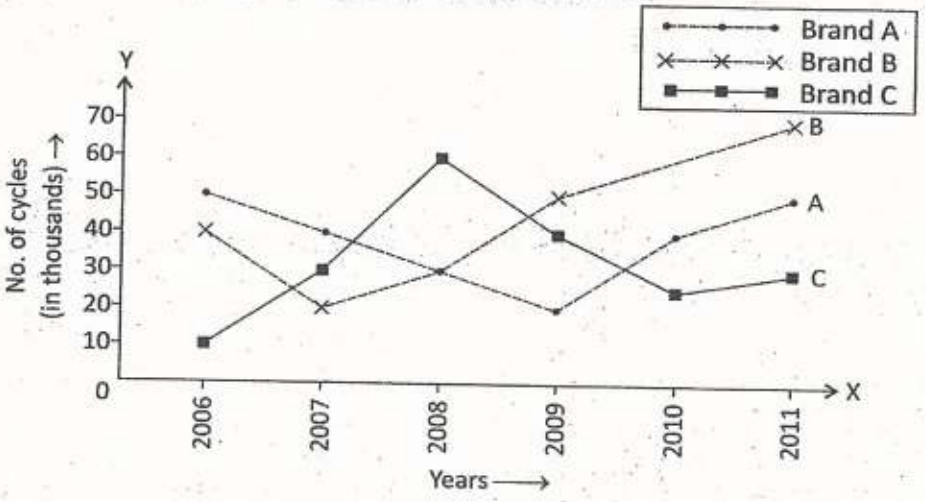
(A) Pizza **(B)** Burger **(C)** Ice cream **(D)** Noodles

31. How many more children like ice cream than chaat ?

(A) 2 **(B)** 1 **(C)** 7 **(D)** 3

Study the following graph and answer the questions (32 – 36) :

Sales of 3 brands of Cycles



32. In which of the following years was the sale of total number of cycles of three brands taken together the lowest.

(A) 2006 (B) 2007 (C) 2009 (D) 2010

33. In which of the following years was the sale of cycles of brand A and brand B exactly the same ?

(A) 2007 (B) 2010 (C) 2008 (D) 2009

34. In which of the following years the sale of cycles of brand C exactly one-fourth of the sale of cycles of brand B ?

(A) 2010 (B) 2009 (C) 2008 (D) 2006

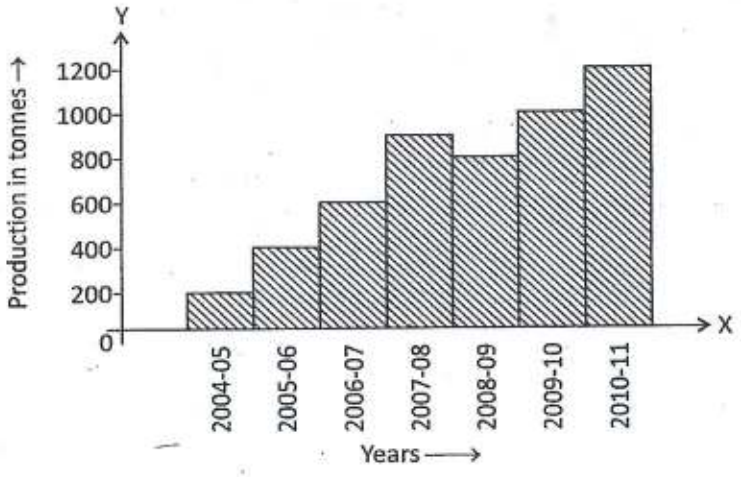
35. The sale of cycles of brand A in 2008 was what per cent of sale of cycles of brand B in 2010 ?

(A) 25 (B) 50 (C) 100 (D) 150

36. What was the percentage decrease in sale of number of cycles of brand C from 2009 to 2010 ?

(A) 50 (B) 125 (C) 70 (D) 37.5

Study the given graph and answer the questions (37 – 41) :



37. During which year the per cent increase in production was lowest as compared to the previous year ?

(A) 2006-07 (B) 2007-08 (C) 2009-10 (D) 2010-11

38. The per cent decrease in the production from 2007-08 to 2008-09 is _____.

(A) 10% (B) $11\frac{1}{9}\%$ (C) $88\frac{8}{9}\%$ (D) 90%

39. During which year, the per cent increase in production was highest as compared to the previous year ?

(A) 2005-06 (B) 2006-07 (C) 2007-08 (D) 2009-10

40. The production in 2005-06 in comparison to the production in 2004-05 was _____.

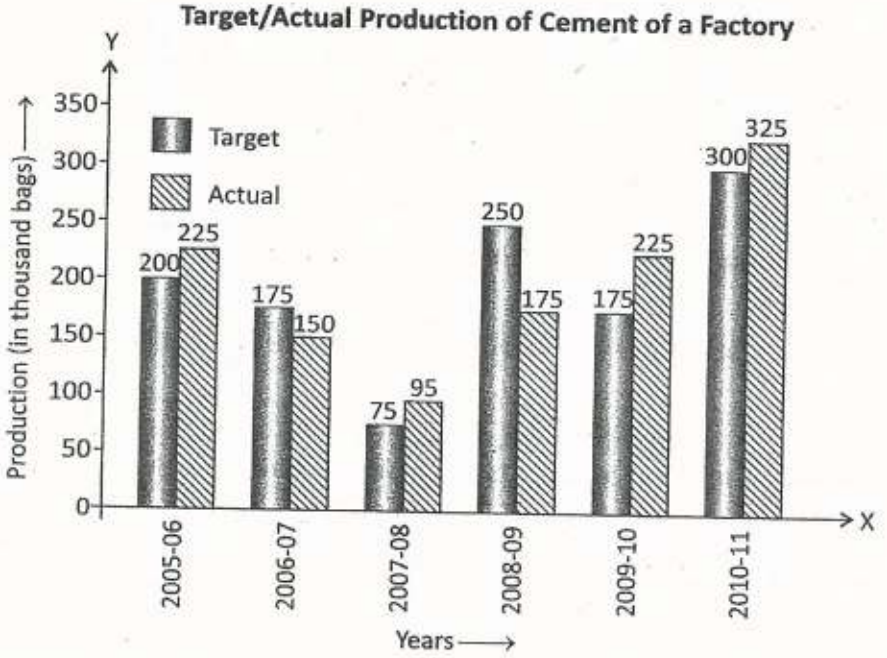
(A) 100% more (B) 75% more (C) 50% more (D) none of these

41. The per cent increase in production from 2004-05 to 2010-11 is _____.

(A) 1000% (B) 600% (C) 500% (D) 300%

Study the following graph carefully and answer the questions (42 – 45) :

Target/Actual Production of Cement of a Factory



42. In which of the following years was the actual production as percentage of target production the highest ?

(A) 2005-06 (B) 2007-08 (C) 2010-11 (D) 2009-10

43. The actual production of cement for 2005-06 was how many times that of the targeted production set for that year ?

(A) 0.88 (B) 1.025 (C) 1.25 (D) 1.125

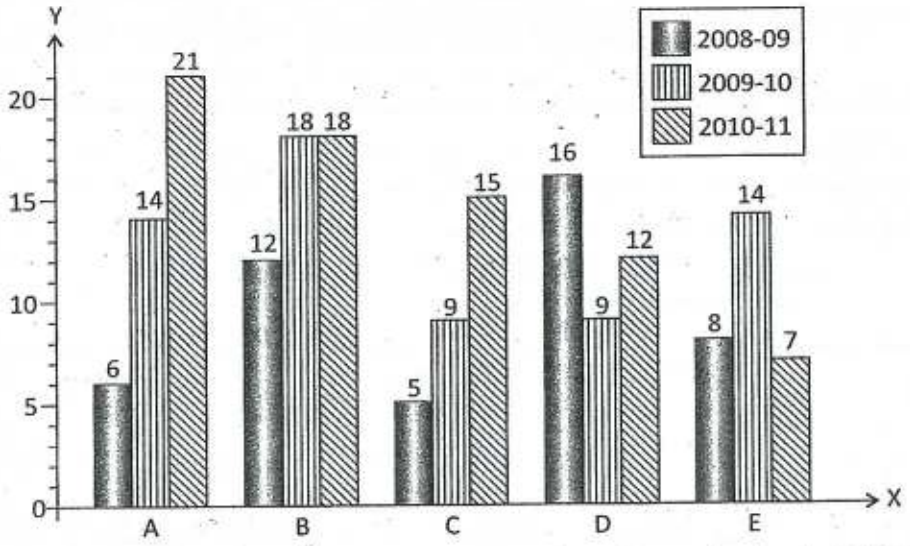
44. What is the ratio of years in which actual production was above average to those below it ?

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

45. What was the difference between the target set and the actual production for the year 2008-09 ?

(A) 75000 (B) 25000 (C) 12500 (D) 7500

Study the graph carefully and answer the questions (46 – 50) :



46. The production of state D in 2009-10 is how many times its production in 2010-11 ?

(A) 0.56 **(B)** 0.75 **(C)** 1.33 **(D)** 1.77

47. In which of the states there is a steady increase in the production of cotton during the given period ?

(A) A and B **(B)** A and C **(C)** B only **(D)** D and E

48. How many tonnes of cotton was produced by state E during the given period ?

(A) 2900 tonnes **(B)** 29000 tonnes **(C)** 290000 tonnes **(D)** 2900000 tonnes

49. How many states showing below average production in 2008-09 showed above average production in 2009-10 ?

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

50. Which of the following statement is false ?

(A) States A and E showed the same production in 2009-10

(B) There is no improvement in the production of cotton in state B during 2010-11

(C) State A has produced maximum cotton during the given period

(D) Produce of states C and D together is equal to that of state B during 2009-10

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4. Algebraic Expressions

Tick the correct option from the four options given below

1. **Which of the following is equivalent to the expression $(3)(-x)(-y)$?**
   (A) $3xy$ **(B)** $-3xy$ **(C)** $(-3)(x)(y)$ **(D)** $(-4)(-x)(-y)$
2. **Which of the following is equivalent to the expression $(-4)(p)(-q)(-q)$?**
   (A) $4pq^2$ **(B)** $-4pq^2$ **(C)** $(-4)(-p)(-q)(-q)$ **(D)** $-4p^2q$
3. **Identify, the expression $5-3pq^2$, term which is not constant :**
   (A) 5 **(B)** $3pq^2$ **(C)** $-3pq^2$ **(D)** none of these
4. What is the coefficient of x in the expression $2z-5xz$?
   (A) 5 (B) -5 (C) $5x$ (D) $-5z$
5. **Statements p : $3x^2+y-x^2$ is trinomial**
   q : An algebraic expression containing three unlike terms is called a trinomial
   (A) Both p and q are true **(B)** Both p and q are false
   (C) p is true and q is false **(D)** p is false and q is true
6. **The algebraic expression $4x^2-7x+11-\frac{3}{x}$ is _____.**
   (A) binomial **(B)** trinomial **(C)** multinomial **(D)** monomial
7. **What is the degree of the polynomial $2p^4q-3p^2q^6+5pq^4+3p-\frac{7}{2}q+2$**
   (A) 4 **(B)** 6 **(C)** 5 **(D)** 8
8. **Which of the following does not have $2a$ as a factor ?**
   (A) $2a$ **(B)** $2a^2$ **(C)** $2a^0$ **(D)** $2a^3$
9. **The value of the expression $3x^2-6x+7$ at $x=2$ is**
   (A) $322-62+7$ **(B)** 7 **(C)** -7 **(D)** 32^2-12+7
10. **The value of t^3-t^2+t-1 for $t=-1$ is**
    (A) -4 **(B)** 0 **(C)** -2 **(D)** 1

11. The expression $5(x-3)+4(x-2)$ is equal to

(A) $9x+23$ (B) $9x-23$ (C) $8x+22$ (D) $8x-22$

12. The value of p^3+5p^2+5p-2 when $p=-2$ is

(A) 0 (B) 10 (C) 16 (D) -40

13. The value of $9m^2-42mn+49n^2$ when $m=15$, $n=3$ is _____.

(A) 386 (B) 456 (C) 576 (D) 636

14. What is the value of px^2+qx+r at $x=\frac{-q}{p}$?

(A) p (B) r (C) 0 (D) q^2-4pr

15. The value of $2ab^3-3a^2b^2+5$ for $a=\frac{1}{4}$, $b=-\frac{1}{2}$ is _____.

(A) $\frac{313}{64}$ (B) $\frac{-310}{64}$ (C) $\frac{-309}{64}$ (D) $\frac{327}{64}$

16. Given below are some expressions in column A and their factors in column B, but not necessarily in the same order. Match the expressions with their factors :

Column A	*Column B*
(a) $3a^2-75$	(i) $(a+b)^2$
(b) $a^2+2ab+b^2$	(ii) $(a-b)^2$
(c) $a^2-2ab+b^2$	(iii) $(a-b)(a+b)$
(d) a^2-b^2	(iv) $3(a+5)(a-5)$

(A) $(a)\rightarrow(iv)$, $b\rightarrow(i)$, $(c)\rightarrow(ii)$, $(d)\rightarrow(iii)$

(B) $(a)\rightarrow(iv)$, $(b)\rightarrow(iii)$, $(c)\rightarrow(ii)$, $(d)\rightarrow(i)$

(C) $(a)\rightarrow(iv)$, $(b)\rightarrow(i)$, $(c)\rightarrow(iii)$, $(d)\rightarrow(ii)$

(D) $(a)\rightarrow(iii)$, $(b)\rightarrow(i)$, $(c)\rightarrow(ii)$, $(d)\rightarrow(iv)$

17. Addition of $5x^2-\frac{1}{3}x+\frac{5}{2}$, $-\frac{1}{2}x^2+\frac{1}{2}x-\frac{1}{3}$ and $-2x^2+\frac{1}{5}x-\frac{1}{6}$ is _____.

(A) $\frac{7}{2}x^2-\frac{31}{30}x+\frac{7}{3}$ (B) $\frac{5}{2}x^2+\frac{11}{30}x+2$ (C) $\frac{13}{2}x^2-\frac{1}{30}x-2$ (D) $\frac{15}{2}x^2-\frac{19}{30}x+3$

18. Addition of 2, $\frac{2m}{3}-\frac{5m^2}{3}+\frac{5m^3}{2}$, $-\frac{4}{3}+\frac{2m^2}{3}-\frac{m}{2}$, $\frac{5m^3}{3}+3m^2+3m+\frac{6}{5}$

(A) $\frac{32}{15}+\frac{25}{6}m+\frac{11}{3}m^2+\frac{25}{6}m^3$ (B) $\frac{8}{5}+\frac{19}{6}m+\frac{16}{3}m^2-\frac{25}{6}m^3$

(C) $\frac{28}{15}+\frac{19}{6}m+2m^2+\frac{25}{6}m^3$ (D) $\frac{68}{15}-\frac{19}{6}m+2m^2+\frac{5}{6}m^3$

19. How much is $5x^3 - 2x^2 + 7x + 3$ less than $7x^3 + 4x^2 - 5x + 6$?

(A) $-2x^3 - 6x^2 + 12x - 3$ (B) $12x^3 + 2x^2 + 2x + 9$

(C) $2x^3 - 6x^2 + 12x - 3$ (D) $2x^3 + 6x^2 - 12x + 3$

20. What is the excess of $2x^3 - 3x^2y - 5xy^2 + 7y^3$ over $3x^3 + 2x^2y - 3xy^2 - 8y^3$?

(A) $-x^3 - 5x^2y - 2xy^2 + 15y^3$ (B) $5x^3 - x^2y - 8xy^2 - y^3$

(C) $x^3 + 5x^2y + 2xy^2 - 15y^3$ (D) $-x^3 + 5x^2y + 2xy^2 - 15y^3$

21. How much should $5x^3 + 3x^2 - 2x + 1$ be increased to get $6x^2 + 7$?

(A) $5x^3 - 3x^2 - 2x + 6$ (B) $-5x^3 + 3x^2 + 2x + 6$ (C) $-5x^3 + 3x^2 - 2x - 6$ (D) $-5x^3 - 3x^2 + 2x + 6$

22. The sides of a triangle are $5a - 3b$, $3a + 2b$ and $5b - 2a$, then its perimeter is _____.

(A) $6a + 4b$ (B) $6a - 4b$ (C) $10a + 10b$ (D) $6a - 8b$

23. If two adjacent sides of a rectangle are $4x + 7y$ and $3y - x$, then its perimeter is _____.

(A) $3x + 10y$ (B) $6x + 20y$ (C) $3x - 10y$ (D) $6x - 20y$

24. The perimeter of a triangle is $7x^2 + 5 - 3x$ and two of its sides are $-2 + 3x + 2x^2$ and $-x + 3 + 3x^2$, then its third side is _____.

(A) $5x^2 + 2x + 1$ (B) $5x^2 - 6x + 7$ (C) $4x^2 - 2x + 2$ (D) $2x^2 - 5x + 4$

25. The value of $(-xy^2) \times \left(-\frac{1}{3}x^2y^2z\right) \times \left(\frac{16}{15}xz^2\right) \times \left(-\frac{5}{4}z\right)$

(A) $\frac{4}{9}x^3y^3z^3$ (B) $\frac{4}{9}x^4y^4z^4$ (C) $-\frac{4}{9}x^3y^3z^3$ (D) $-\frac{4}{9}x^4y^4z^4$

26. Simplify : $(x^3 - 2x^2 + 4x - 5) - (-x^3 - 8x + 2x^2 + 5)$.

(A) $2x^3 + 7x^2 + 6x - 10$ (B) $2x^3 + 7x^2 + 12x - 10$ (C) $2x^3 - 4x^2 + 12x - 10$ (D) $2x^3 - 4x^2 + 6x - 10$

27. Write the following algebraic expression is in ascending order

$$m - m^8 + m^2 - 1.7m^{10} + 1.4m^8 - 7.8m^2 + 4 - 8m$$

(A) $4 - 8m - 6.8m^2 + 0.4m^8 - 1.7m^{10}$ (B) $-1.7m^{10} + 0.4m^8 - 6.8m^2 - 8m + 4$

(C) $4 - 6.8m - 8m^2 + 0.4m^8 - 1.7m^{10}$ (D) None of these

28. If $p = \frac{xyz}{x - y}$, then z equals _____.

(A) $\frac{p(x - y)}{xy}$ (B) $\frac{zxy - px}{-p}$ (C) $\frac{1}{1 + x}$ (D) $\frac{px}{p + xy}$

29. $(x + y)(x - y) + x^2 + y^2$ equals _____.

(A) $2x^2$ (B) $2y^2$ (C) $-2x^2$ (D) $-2y^2$

30. $(p + q)(p + q) - p^2 - 2pq - q^2$ equals _____.

(A) $2p^2$ (B) $2q^2$ (C) $4pq$ (D) 0

31. Simplify : $4xy(x-y)-6x^2(y-y^2)-3y^2(2x^2-x)+2xy(x-y)$

(A) $-xt^2$ (B) $-2xy^2$ (C) $-3xy^2$ (D) $-4xy^2$

32. Simplify : $p(q-r)-q(r-p)-r(p-q)$

(A) $2p(q-r)$ (B) $2q(r-p)$ (C) $2p(r-q)$ (D) none of these

33. If $x+\frac{1}{x}=4$, then the value of $x^2+\frac{1}{x^2}$ is _____.

(A) 16 (B) 18 (C) 20 (D) 14

34. If $x-\frac{1}{x}=9$, then the value of $x^2+\frac{1}{x^2}$ is _____.

(A) 79 (B) 83 (C) 81 (D) 85

35. If $x+\frac{1}{x}=12$, then the value of $x-\frac{1}{x}$ is _____.

(A) $\sqrt{140}$ (B) $\sqrt{120}$ (C) 10 (D) 11

36. If $x+y=12$ and $xy=14$, then the value of x^2+y^2 is _____.

(A) 144 (B) 172 (C) 116 (D) 130

37. What must be added to $9x^2-24x+10$ to make it a perfect square ?

(A) 6 (B) 15 (C) 26 (D) 39

38. What must be subtracted from $4x^2-20x+30$ to make it a perfect square ?

(A) 6 (B) 5 (C) 14 (D) 21

39. If $\frac{a}{b}=\frac{3}{4}$, then the incorrect expression is _____.

(A) $\frac{a+b}{b}=\frac{5}{4}$ (B) $\frac{a-b}{b}=\frac{1}{4}$ (C) $\frac{b}{b+a}=4$ (D) $\frac{a+2b}{a}=\frac{11}{3}$

40. A stone is dropped from a plane flying at a height of 10000 m above the ground. As the stone falls d, its distance above the ground after t seconds is given by the formula

$$d=-16t^2+10000$$

How far above the ground is the stone, when it has fallen for 20 seconds ?

(A) 9984 m (B) 9680 m (C) 9360 m (D) 3600 m

41. An object falling under gravity covers a distance $4.9t^2$ metres in t seconds. How far would an object falling under gravity fall in 8 seconds ?

(A) 4.9 m (B) 39.2 m (C) 78.4 m (D) 313.6 m

42. For what value of k, $4x^2+(k+10)xy+25y^2$ is a perfect square ?

(A) -9 (B) 0 (C) 5 (D) 10

43. For what value of k, $x^4-(k+2)x^2y^2+25y^4$ is a perfect square ?

(A) 0 (B) 6 (C) 8 (D) 10

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5. Linear Equations

Tick the correct option from the four options given below

1. **An equation containing only one variable (literal) with highest power 1 is called a _____.**

   (A) simple equation **(B)** linear equation **(C)** linear polynomial **(D)** multi equation

2. **The equation of the statement : 'one-third of a number *m* is 4 more than 9' is**

   (A) $\frac{m}{3}-9=4$ **(B)** $\frac{m}{3}-9+4$ **(C)** $9-\frac{m}{3}=4$ **(D)** $\frac{m}{3}-4=9$

3. **The equation for the statement : 'one-fourth of a number *x* exceeds one-fifth of its succeeding number by 3' is**

   (A) $\frac{1}{5}(x+1)+3=\frac{1}{4}x$ **(B)** $\frac{1}{4}x+3=\frac{1}{5}(x+1)$ **(C)** $\frac{1}{5}(x+1)-\frac{1}{4}x=3$ **(D)** $\frac{1}{4}x-\frac{1}{5}(x+1)=3$

4. **Which of the following might destroy a given equation ?**

   (A) Adding the same number to both sides of the equation

   (B) Subtracting the same number from both sides of the equation

   (C) Multiplying both sides of the equation by the same number

   (D) Dividing both sides of the equation by the same non-zero number

5. **The solution of the equation $ax + b = 0$ $(a \neq 0)$ is _____.**

   (A) $\frac{a}{b}$ **(B)** $-b$ **(C)** $\frac{-b}{a}$ **(D)** $\frac{b}{a}$

6. **-1 is not a root of the equation**

   (A) $x+1=0$ **(B)** $x-1=2$ **(C)** $2y+3=1$ **(D)** $2t+7+t=t+5$

7. **If *a* and *b* are positive integers, then the root of the equation $ax - b = 0$ has to be always a _____.**

   (A) positive integer **(B)** negative integer

   (C) positive rational number **(D)** negative rational number

8. The solution of which of the following equations is neither a fraction nor an integer ?

(A) $2x+8=0$ (B) $7x-9=0$ (C) $7x-8=x+4$ (D) $4x+7=x+2$

9. The equation whose solution cannot be found in integers is

(A) $7y+3=-18$ (B) $5x-10=0$ (C) $3z+8=3+z$ (D) $9x+8=4x-7$

10. If $9x+4=22$, what is the value of $9x-4$?

(A) 18 (B) 14 (C) 0 (D) -4

11. If $0.2y+9=0.3y+7$, then the value of y^2-8y+1 is _____.

(A) -241 (B) 239 (C) 241 (D) 561

12. Value of x in $\frac{x}{2}-\frac{x}{3}=8$ is _____.

(A) 48 (B) -48 (C) 24 (D) -24

13. Value of y in $\frac{7}{y}+\frac{1}{2}=14$ is _____.

(A) $\frac{-27}{14}$ (B) $\frac{27}{14}$ (C) $\frac{14}{27}$ (D) $-\frac{14}{27}$

14. Value of x is $\frac{x-1}{3}-\frac{x-2}{4}=1$ is _____.

(A) 14 (B) 12 (C) 10 (D) -10

15. Value of x in $0.18(5x-4)=0.5x+0.8$ is _____.

(A) 3.8 (B) -3.8 (C) 2.8 (D) 1.8

16. If $p: lx+m=n$, $l=0$, then equation p is linear

$q: lx+m=n$, $l\neq m=n=0$, then equation q has solution $x=0$

(A) Both p and q are true (B) p is true and q is false

(C) p is false and q is true (D) Both p and q are false

17. What value of x makes the given equation true ?

$$2\left(x-\frac{3}{2}\right)=11$$

(A) 21 (B) 28 (C) 7 (D) 14

18. Use the given balance to find out the value of x.

$5x+4=20-(2x-5)$

(A) 2 (B) 3

(C) 4 (D) 6

19. The sum of three consecutive multiples of 12 is 324. Then, the greatest among them is _____.

(A) 120 (B) 108 (C) 132 (D) 144

20. If $\frac{1}{2}$ is subtracted from a number and the difference is multiplied by 4, the result is 14. What is the number ?

(A) 0 (B) 2 (C) 4 (D) 6

21. The sum of four consecutive integers is 266. Then the least integer among them is _____.

(A) 67 (B) 65 (C) 63 (D) 68

22. A number is such that it is as much greater than 84 as it is less than 108. What is the number ?

(A) 90 (B) 92 (C) 94 (D) 96

23. The length of a rectangle is three times its width. If the perimeter is 84 m, then its length is _____.

(A) 10.5 m (B) 21 m (C) 31.5 m (D) none of these

24. The length of a rectangle is 6 m less than three times its breadth. If the perimeter is 148 m, then its length is _____.

(A) 20 m (B) 60 m (C) 66 m (D) 54 m

25. The length of a rectangle is three times its width. If the perimeter is 96 m, then its area is _____.

(A) 144 m^2 (B) 430 m^2 (C) 432 m^2 (D) 440 m^2

26. A number consists of two digits whose sum is 8. If 18 is added to the number its digits are reversed. The number is _____.

(A) 35 (B) 53 (C) 26 (D) 46

27. In a certain examination, a total of 3768 students secured first division in the years 2010 and 2011. The number of the first divisions in 2011 exceeded those in 2010 by 34. How many students got first division in 2010 ?

(A) 1957 (B) 1884 (C) 1901 (D) 1867

28. A number is 56 greater than the arithmetic mean of its third, quarter and one-twelfth. Then, the number is _____.

(A) 72 (B) 90 (C) 108 (D) 126

29. A number consists of two digits whose ten's digit is twice the unit's digit. The number formed by interchanging the digits to 36 less than the original number. The number is _____.

(A) 48 (B) 70 (C) 72 (D) 84

30. Two supplementary angles differ by 30°. Then the measure of one of the angle is _____.

(A) 75° (B) 70° (C) 110° (D) 72°

31. In a two digit number, the unit's digit is 2. If the digits are interchanged, the new number formed is $\frac{3}{8}$ times the old number. The number is _____.

(A) 27 (B) 36 (C) 63 (D) 72

32. Make v as the subject in $\frac{1}{u}+\frac{1}{v}=\frac{1}{f}$.

(A) $\frac{fu}{u+f}$ (B) $\frac{fu}{u-f}$ (C) $\frac{u+f}{fu}$ (D) $\frac{u-f}{fu}$

33. In a class of 48 students, the number of boys is three-fifth of the number of girls. Then, the number of boys is _____.

(A) 18 (B) 30 (C) 28 (D) 20

34. The ancient-Hindu Mathematicians wrote their books entirely in verse. Even the subject-matter used to have a touch of fancy. A typical problem in the solution of equations would be something like this : "Half the flowers in this garland are jasmines, one-fourth of the total being roses. The remaining seventeen are as lovely as your face. Tell me quickly, O' pretty maiden! the number of flowers in this garland."

(A) 48 (B) 58 (C) 68 (D) 78

35. There are some bees hovering around lotus flowers in a pond. If one bee lands on each flower, one bee will be left. If two bees land on each flower, one flower will be left. Then, the number of flowers and bees respectively are

(A) 2, 3 (B) 3, 2 (C) 3, 4 (D) 4, 3

36. If $x-y=2$, then x^2+2y-4 in terms of y is _____.

(A) y^2-6y+4 (B) y^2+4y (C) y^2+6y (D) y^2+6y-4

37. A man travelled $\frac{3}{5}$ of his journey by train, $\frac{1}{4}$ by a taxi, $\frac{1}{8}$ by a bus and the remaining 8 km on foot. What is the length of his total journey.

(A) 290 km (B) 320 km (C) 350 km (D) 380 km

38. Three villagers met under a tree on an afternoon. One of them had 250 g of sattu whereas another one had 350 g of the same. The third offered to pay for his share of sattu. They distributed the total amount equally amongst them and the third villager paid ₹ 2 for his share. How should the first two divide this amount between them ?

(A) ₹ 0.5, ₹ 150 (B) ₹ 150, ₹ 0.50 (C) ₹ 1, ₹ 1 (D) none of these

39. A child had a certain number of peanuts. He gave two-thirds of these to the squirrels and one-fourth of the remaining ones to the crows. He was then left with 12 peanuts. How many did he have in the beginning ?

(A) 48 (B) 24 (C) 72 (D) 96

40. The present age of a man is thrice that of his daughter. Six years ago, the age of the father was four times that of his daughter. The ratio of their ages 6 years latter will be _____.

(A) 2 : 5 (B) 5 : 2 (C) 3 : 4 (D) 4 : 3

41. **My age is four times the difference of my age after 4 years and my age 3 years back. How old am I ?**

(A) 28 years (B) 26 years (C) 24 years (D) 30 years

42. **A son's present age is half the present age of his mother. Ten years ago, the mother was thrice as old as her son. What is the present age of the son ?**

(A) 40 years (B) 30 years (C) 20 years (D) 15 years

43. **The ages of Rahul and Swaraj are in the ratio 5 : 3. After 6 years, their ages will be in the ratio 7 : 5. The sum of their present ages is**

(A) 9 years (B) 10 years (C) 15 years (D) 24 years

44. **If $\sqrt{1+\frac{x}{625}}=\frac{26}{25}$, then x is equal to**

(A) 0 (B) 25 (C) 26 (D) 51

45. **For what value of p, $2(2p+1)-30\%$ of $(5p-2)=7.6$ is true ?**

(A) 2 (B) 3 (C) 4 (D) 0

46. **The three consecutive even numbers whose sum is 90 are _____.**

(A) 24, 28, 38 (B) 24, 32, 34 (C) 26, 30, 34 (D) 28, 30, 32

47. **The three consecutive odd numbers whose sum is 51 are _____.**

(A) 15, 17, 19 (B) 13, 17, 21 (C) 11, 17, 23 (D) 11, 15, 25

48. **If $3(x-3)=5(2x+1)$ and $\frac{y-8}{3}=\frac{y-3}{2}$, then the value of $(2x+3y)(2x-3y)$ is _____.**

(A) 425 (B) -425 (C) 160 (D) -160

49. **If $\frac{6}{2y-(3-4y)}=\frac{2}{3}$, then the value of y is _____.**

(A) 2 (B) $\frac{21}{8}$ (C) 3 (D) -6

50. **If the sum of two positive numbers is 36 and one number x is double the other, then the equation is _____.**

(A) $\frac{x}{x+36}=2$ (B) $\frac{x-36}{2}=x$ (C) $\frac{x}{36-x}=2$ (D) $\frac{36-x}{x}=2$

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6. Lines and Angles

Tick the correct option from the four options given below

1. **At what time will the hands of a clock make an angle of 0° ?**
   (A) 6 O'clock **(B)** 12 O'clock **(C)** 9 O'clock **(D)** 3 O'clock
2. **What will be the measure of the angle between the minute hand and the hour hand of a clock at 4 O'clock ?**
   (A) 180° **(B)** 90° **(C)** 120° **(D)** 150°
3. **Through what angle does the minute hand of a clock turn in 5 minutes ?**
   (A) 30° **(B)** 18° **(C)** 36° **(D)** none of these
4. **How many degrees does the hour hand of a clock rotate in 24 hours ?**
   (A) 180° **(B)** 360° **(C)** 540° **(D)** 720°
5. **Through what angle does the earth rotate in 4 hours 30 minutes, if it makes one complete revolution about its axis in 24 hours ?**
   (A) $67\frac{1^\circ}{2}$ **(B)** 60° **(C)** $52\frac{1^\circ}{2}$ **(D)** $37\frac{1^\circ}{2}$
6. **Which pairs of the following angles are not complementary ?**
   (A) 70°, 20° **(B)** 75°, 25° **(C)** 48°, 52° **(D)** 45°55°
7. **The angle which exceeds its complement by 20° is _____.**
   (A) 45° **(B)** 55° **(C)** 70° **(D)** 110°
8. **The angle that is three times as large as its complement is _____.**
   (A) 135° **(B)** 67.5° **(C)** 50.5° **(D)** 45°
9. **The angle that is half of its complement is _____.**
   (A) 30° **(B)** 60° **(C)** 120° **(D)** 150°
10. **The angle which is one fifth of its complement is _____.**
    (A) 15° **(B)** 30° **(C)** 45° **(D)** 60°

11. **Which pairs of the following angles are supplementary ?**

(A) 110°, 50° (B) 105°, 65° (C) 50°, 130° (D) 45°, 45°

12. **The angle which is twice its supplement is _____.**

(A) 120° (B) 90° (C) 60° (D) 30°

13. **The angle which is one-fifth of its supplement is _____.**

(A) 15° (B) 30° (C) 45° (D) 60°

14. **If the angles $(2x - 3)°$ and $(5x + 9)°$ are complementary angles, then the value of x is _____.**

(A) 21 (B) 69 (C) 12 (D) none of these

15. **The angle at a point is _____.**

(A) 90° (B) 180° (C) 300° (D) 360°

16. **Two angles are called adjacent if**

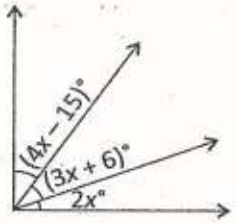
(A) they lie in the same plane and have a common vertex

(B) they have a ray in common

(C) the intersection of their interiors is empty

(D) all of these

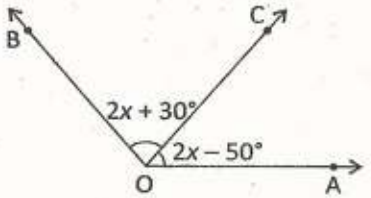
17. **In the figure, the angle between the outermost uncommon arms is 90°. This angle is further subdivided into different parts. Which of the following does not represent any of the subdivided angles ?**



(A) 22° (B) 39°

(C) 29° (D) 19°

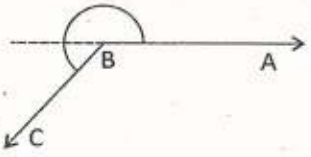
18. **What value of x will make AOB a straight line ?**



(A) 30° (B) 50°

(C) 49° (D) none of these

19. **Angle ABC in the figure is a/an _____.**



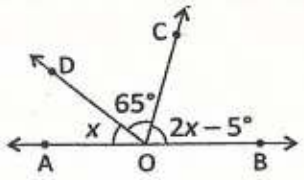
(A) acute angle (B) obtuse angle

(C) reflex angle (D) straight angle

20. **The opening between two lines is called _____.**

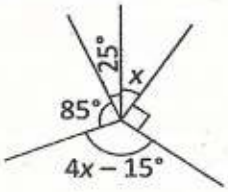
(A) angle (B) point (C) transversal (D) line

21. **The points A, O and B are collinear. The value of ∠BOC is _____.**



(A) 40° (B) 75°
(C) 115° (D) 85°

22. **In the adjoining diagram, the value of x is _____.**



(A) 35° (B) 125°
(C) 140° (D) 60°

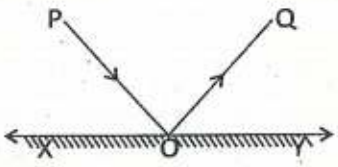
23. **When an arm of an angle is extended then the measure of angle _____.**

(A) doubles (B) triples (C) remains the same (D) none of these

24. **If two straight lines intersect, the measures of the vertically opposite angles are _____.**

(A) equal (B) unequal
(C) cannot be determined (D) none of these

25. **In the figure, XY is a plane mirror, PO and OQ are the incident and reflected rays respectively. If ∠POQ = 80°, then ∠POX = _____.**

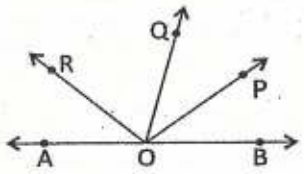


(A) 80° (B) 100°
(C) 50° (D) none of these

26. **Which of the following pairs of angles form a linear pair ?**

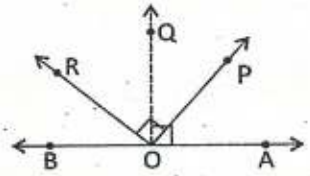
(A) 140°, 50° (B) 60°, 70° (C) 90°, 80° (D) 115°, 65°

27. **Which pairs of adjacent angles form linear pair in the adjoining figure ?**



(A) ∠BOP, ∠POA (B) ∠BOQ, ∠QOA
(C) ∠BOR, ∠ROA (D) all of these

28. **Which pairs of angles in the adjoining figure form complementary angles.**



(A) ∠POQ, ∠QOR (B) ∠AOP, ∠POQ
(C) ∠QOR, ∠ROB (D) all of these

29. **A wheel has 6 spokes equally spaced. The angle between any two adjacent spokes is _____.**

(A) 30° (B) 60° (C) 90° (D) 120°

30. Which of the following statement is true ?

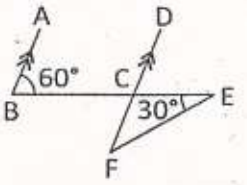
(A) If two adjacent angles are equal, then their sum is always equal to 180°

(B) If two adjacent angles are equal, then each angle is always equal to 90°

(C) Angles forming a linear pair are supplementary

(D) Angles forming a linear pair can both be either obtuse angles or acute angles

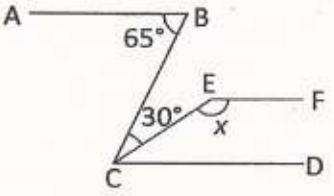
31. In the figure AB || CD, then ∠EFD is equal to _____.



(A) 20° **(B)** 25°

(C) 30° **(D)** 35°

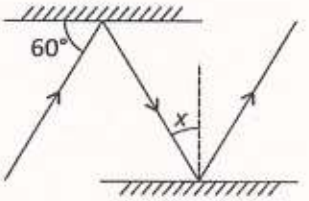
32. What value of *x* will make CD || EF, if AB || CD ?



(A) 150° **(B)** 145°

(C) 140° **(D)** 135°

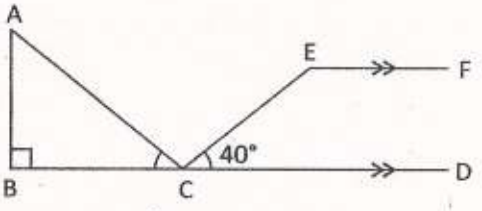
33. The value of *x* in the adjoining figure is _____.



(A) 30° **(B)** 45°

(C) 60° **(D)** none of these

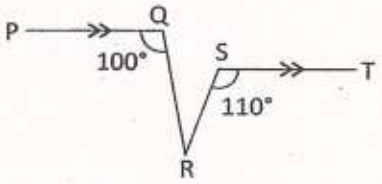
34. In the given figure, if BD || EF, then ∠CEF = _____.



(A) 100° **(B)** 120°

(C) 140° **(D)** 160°

35. In the adjoining figure, PQ || ST, then ∠QRS is equal to _____.



(A) 30° **(B)** 40°

(C) 50° **(D)** 60°

36. A line which intersects two or more lines at distinct points is called a _____.

(A) plane **(B)** transversal **(C)** straight line **(D)** none of these

37. If two lines are perpendicular to the third line, then those two lines are _____.

(A) parallel to each other **(B)** perpendicular to each other

(C) either parallel or perpendicular **(D)** neither parallel nor perpendicular

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7. The Triangle and its Properties

Tick the correct option from the four options given below

1. If all the three angles of a triangle are equal, then each of them is equal to _____.

   (A) 90° (B) 45° (C) 60° (D) 30°

2. If the two acute angles of a right triangle are equal, then each acute angle is equal to _____.

   (A) 30° (B) 45° (C) 60° (D) 90°

3. An exterior angle of a triangle is equal to 105° and two interior opposite angles are equal. Each of these angles is equal to _____.

   (A) 75° (B) $72\frac{1^\circ}{2}$ (C) $52\frac{1^\circ}{2}$ (D) $37\frac{1^\circ}{2}$

4. If two sides of a triangle are of lengths 6 cm and 4 cm, then the third side must be

   (A) > 10 cm (B) < 10 cm (C) = 10 cm (D) ≤ 10 cm

5. If one angle of a triangle is equal to the sum of the other two angles, then the triangle is a/an _____.

   (A) isosceles triangle (B) obtuse triangle

   (C) equilateral triangle (D) right triangle

6. Side BC of a Δ ABC has been produced to a point D such that ∠ACD = 120°. If $\angle B = \frac{1}{2}\angle A$, then ∠A is equal to _____.

   (A) 80° (B) 75° (C) 60° (D) 90°

7. The sum of angles of a triangle is equal to _____.

   (A) 90° (B) 120° (C) 150° (D) 180°

8. If ∠P and ∠Q are complementary in a triangle PQR, then the measure of ∠R is _____.

   (A) 45° (B) 60° (C) 75° (D) 90°

9. **ABC is a triangle whose sides BC and CA are produced to D and E respectively. If $\angle DCA = 108°$, $\angle EAB = 124°$, then the value of $\angle ABC$ is _____.**

(A) 72° (B) 56° (C) 52° (D) 150°

10. **If the sides of a triangle are in the ratio 4 : 6 : 7, then the**

(A) triangle is obtuse angled (B) triangle is acute angled

(C) triangle is right angled (D) none of these

11. **If the ratio of the angles of a triangle are 3 : 4 : 5, then its angles (in degrees) are _____.**

(A) 45, 75, 90 (B) 48, 52, 80 (C) 45, 60, 75 (D) 45, 65, 70

12. **The three sides of a triangle are 6 cm, 12 cm and 13 cm, then**

(A) all the three angles are acute (B) one angle is acute and other obtuse

(C) one angle is right and other acute (D) none of these

13. **The sides of a triangle are in the ratio 2 : 6 : 7, then the triangle is _____.**

(A) acute angled (B) obtuse angled

(C) right angled (D) triangle can't be possible

14. **If one angle of a triangle is equal to half the sum of the other two equal angles, then the triangle is _____.**

(A) isosceles (B) scalene (C) equilateral (D) right angled

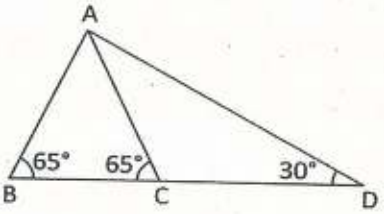
15. **A triangle can have _____.**

(A) two right angles (B) two obtuse angles (C) two acute angles (D) none of these

16. **In the given figure, the measure of $\angle BAC$ is _____.**

(A) 65° (B) 50°

(C) 55° (D) 60°



17. **In the figure of question 16, the measure of $\angle ACD$ is _____.**

(A) 125° (B) 120° (C) 105° (D) 115°

18. **In the figure of question 16, the measure of $\angle CAD$ is _____.**

(A) 45° (B) 35° (C) 25° (D) 15°

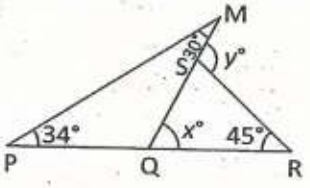
19. **In the figure of question 16, which of the following is true ?**

(A) BC < CA < CD (B) BC < CA > CD (C) BC = CA > CD (D) BC > CA = CD

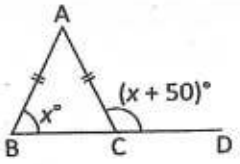
20. **In the figure, the value of x is _____.**

(A) 62 (B) 64

(C) 65 (D) 60



21. **In the given figure the value of x is _____.**



(A) 65 (B) 75
(C) 85 (D) 130

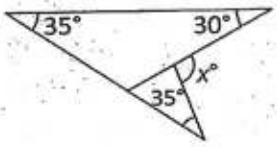
22. **The sum of exterior angles of a triangle is _____.**

(A) 180° (B) 270° (C) 360° (D) 540°

23. **In Δ PQR, PQ = PR, ∠QPR is equal to _____.**

(A) 20° (B) 30°
(C) 40° (D) 50°

24. **In the figure, the value of x is**



(A) 70 (B) 80
(C) 90 (D) 100

25. **If in Δ ABC, AB = AC and ∠B = 40°, then ∠C equals _____.**

(A) 40° (B) 80° (C) 100° (D) 140°

26. **If in Δ ABC, BC = AB and ∠B = 80°, then ∠C equals _____.**

(A) 30° (B) 50° (C) 80° (D) 100°

27. **If in Δ ABC, ∠C = ∠A and BC = 5 cm, then AB equals _____.**

(A) 4 cm (B) 5 cm (C) 6 cm (D) 10 cm

28. **If in Δ ABC, AB = 7 cm, BC = 24 cm and AC = 25 cm, then the Δ ABC is right angled at _____.**

(A) A (B) B (C) C (D) none of these

29. **If one of the angles of a triangle is 130°, then the angle between the bisectors of the other two angles is _____.**

(A) 50° (B) 65° (C) 145° (D) 155°

30. **In a right Δ ABC right ∠d at C, if ∠B = 2∠A, then**

(A) AC = 2BC (B) AB = 2BC (C) BC = 2AC (D) AB + BC = AC

31. **The triangle formed by AB = 3 cm, BC = 5 cm and AC = 9 cm is**

(A) a scalene triangle (B) an isosceles triangle
(C) an equilateral triangle (D) no triangle is formed

32. **Which of the statement is true ?**

(A) Any three line-segments make up a triangle
(B) The vertices of a triangle are three collinear points
(C) An equilateral triangle is isosceles also
(D) Every right triangle is scalene

33. **Which of the following statement is correct ?**

(A) No isosceles triangle is obtuse

(B) The sum of any two angles of a triangle is greater than the third angle

(C) If a triangle has one right angle, it also has another right angle

(D) The centroid of a triangle always lies in the interior of the triangle

34. **If two medians of a triangle are equal in length, then the triangle is _____.**

(A) right angled but not isosceles (B) isosceles but not right angled

(C) right angled isosceles (D) equilateral

35. **If two altitudes of a triangle are equal in length, then the triangle is _____.**

(A) right angled (B) equilateral (C) isosceles (D) scalene

36. **In any triangle the centroid divides the median in the ratio**

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

37. **The angles of a triangle, in ascending order, are x, y, z and $y - x = z - y = 10°$. The smallest angle is _____.**

(A) 40° (B) 60° (C) 50° (D) 70°

38. **If the three altitudes of a triangle are equal, then the triangle is _____.**

(A) isosceles (B) right angled triangle

(C) equilateral (D) none of these

39. **If G is the centroid of Δ ABC and the median AD is 12 cm, then the length of AG is _____.**

(A) 7 cm (B) 8 cm (C) 9 cm (D) 10 cm

40. **The orthocentre of an obtuse angled triangle lies _____.**

(A) outside the triangle (B) inside the triangle

(C) on the smallest side of the triangle (D) on the greatest side of the triangle

41. **In an equiangular triangle incentre, circumcentre and orthocentre are _____.**

(A) collinear (B) concyclic (C) coincident (D) none of these

42. **The point equidistant from the vertices of a triangle is its _____.**

(A) orthocentre (B) centroid (C) circumcentre (D) incentre

43. **The centroid of a triangle is the point of concurrence of its _____.**

(A) angle bisectors (B) perpendicular bisectors

(C) altitudes (D) median

44. **The incentre of a triangle is equidistant from its _____.**

(A) sides (B) vertices (C) both sides and vertices (D) none

45. Which of the following may lie outside or on the triangle ?

(*i*) circumcentre **(*ii*) centroid** **(*iii*) orthocentre** **(*iv*) incentre**

(A) (*i*) and (*ii*) **(B)** (*i*) and (*iii*) **(C)** (*i*) (*ii*) and (*iii*) **(D)** all of the above

46. The circumcentre of a triangle is the point where _____.

(A) the medians meet

(B) the altitudes meet

(C) the right bisectors of the sides of the triangle meet

(D) the bisectors of the angles of the triangle meet

47. P, Q and R are respectively the mid-points of the sides BC, CA and AB of Δ ABC. The orthocentre of Δ PQR is the _____.

(A) orthocentre of Δ ABC **(B)** circumcentre of Δ ABC

(C) incentre of Δ ABC **(D)** centroid of Δ ABC

48. If AD is a median of an equilateral Δ ABC, then

(A) $AB^2 = 2AD^2$ **(B)** $2AB^2 = 3AD^2$ **(C)** $3AB^2 = 4AD^2$ **(D)** $4AB^2 = 5AD^2$

49. An isosceles triangle can be obtuse angled.

(A) False **(B)** True **(C)** cannot say **(D)** none of these

50. In general, circumcentre (O), centroid (G) and orthocentre (H) in any triangle are collinear. G divides H and O in the ratio _____.

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

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8. Congruence of Triangles

Tick the correct option from the four options given below

1. **Which of the following groups of statements will make Δ LMN and Δ PQR always congruent ?**

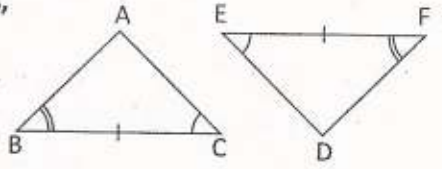
   (A) LM = PQ, MN = QR and LN = PR
   (B) LM = PQ, MN = QR and ∠LNM = ∠PRQ
   (C) MN = QR, ∠L = ∠P and LN = PR
   (D) ∠L = ∠P, ∠M = ∠Q and LM = QR

2. **Which of the following groups of statements will make Δ LMN and Δ PQR always congruent ?**

   (A) LM = QR, MN = PR and LN = PQ
   (B) ∠L = ∠P = 90°, MN = QR and LM = PR
   (C) ∠L = ∠P = 90°, MN = QR and LM = PQ
   (D) LN = PR, MN = QR and ∠LMN = ∠PRQ

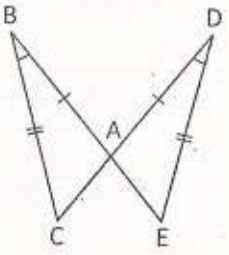
3. **State the condition under which the pairs of triangles, congruent parts as indicated are congruent.**

   (A) SSS
   (B) ASA
   (C) SAS
   (D) RHS



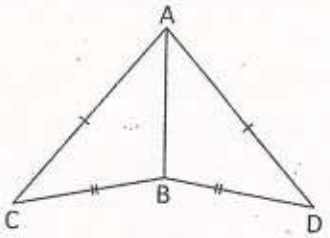
4. **State the condition under which the pairs of triangles, congruent parts as indicated are congruent.**

   (A) SSS
   (B) ASA
   (C) SAS
   (D) RHS

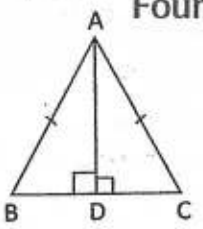


5. **State the condition under which the pairs of triangles, congruent parts as indicated are congruent.**

   (A) SSS
   (B) ASA
   (C) SAS
   (D) RHS



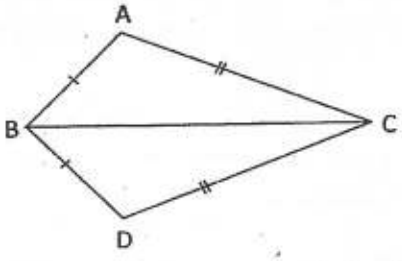
6. **State the condition under which the pairs of triangles, congruent parts as indicated are congruent.**



(A) SSS **(B)** ASA

(C) SAS **(D)** RHS

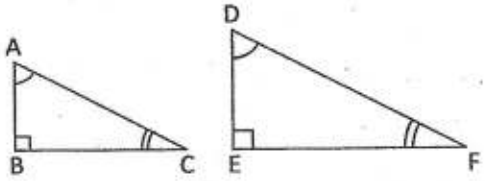
7. **Name the criterion of congruence, if any, that will prove that the given pair of triangles are congruent.**



(A) SAS **(B)** SSS

(C) RHS **(D)** ASA

8. **Name the criterion of congruence, if any, that will prove that the given pair of triangles are congruent.**



(A) SAS **(B)** ASA **(C)** RHS **(D)** not congruent

9. **In Δ PQR, the angle included between sides PR and QR is _____.**

(A) ∠P **(B)** ∠Q **(C)** ∠R **(D)** none of these

10. **In Δ DEF, the side included between E and F is _____.**

(A) DE **(B)** EF **(C)** FD **(D)** none of these

11. **If Δ ABC ≅ Δ LKM, then side of Δ LKM equal to side AC of Δ ABC is _____.**

(A) LK **(B)** KM **(C)** LM **(D)** none of these

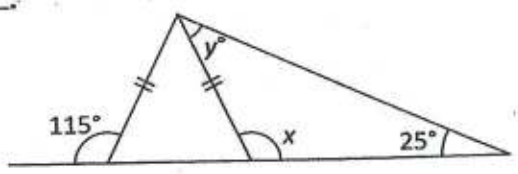
12. **If Δ ABC ≅ Δ ACB, then side of Δ ABC is isosceles with _____.**

(A) AB = AC **(B)** AB = BC **(C)** AC = BC **(D)** none of these

13. **If Δ ABC ≅ Δ PQR and Δ ABC is not congruent to Δ RPQ, then which of the following is not true :**

(A) BC = PQ **(B)** AC = PR **(C)** AB = PQ **(D)** QR = BC

14. **In the given figure, the value of *y* is _____.**



(A) 40 **(B)** 115

(C) 45 **(D)** 50

15. **Which of the following statement(s) is/are true ?**

(A) If two sides and one angle of a triangle are equal to the corresponding two sides and the angle of another triangle, then the two triangles are congruent

(B) If the hypotenuse of one right triangle is equal to the hypotenuse of another triangle, then the triangles are congruent

(C) Two triangles having same area are congruent

(D) All of these

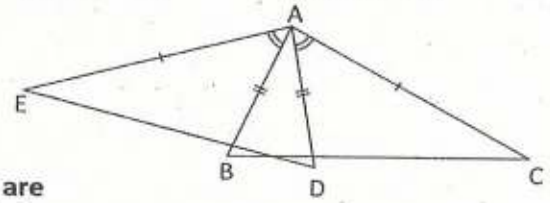
16. **In Δ PQR, PQ = PR and PM is the right bisector of QR. The criterion by which Δ PMQ is not congruent to Δ PMR is _____.**

(A) SAS (B) SSS (C) RHS (D) AAA

17. **If Δ LMN $\cong$ Δ QRP, then**

(A) $\angle L = \angle P$ (B) $\angle M = \angle P$ (C) $\angle N = \angle R$ (D) $\angle M = \angle R$

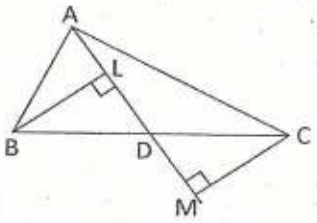
18. **Name the criterion of congruence, if any, that will make Δ AED $\cong$ Δ ACB.**



(A) SAS (B) ASA

(C) SSS (D) RHS

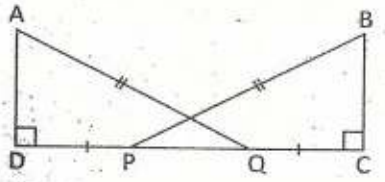
19. **In the figure, AD is a median and BL, CM are perpendiculars drawn from B and C respectively on AD and AD produced. By which criterion of congruence, Δ BDL $\cong$ Δ CDM.**



(A) AAS (B) SAS

(C) ASA (D) RHS

20. **In the figure, AD $\perp$ CD and BC $\perp$ CD. If AQ = BP and DP = CQ. By which criterion of congruence, Δ ADQ $\cong$ Δ BCP ?**



(A) AAS (B) SAS

(C) SSS (D) RHS

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9. Practical Geometry

Tick the correct option from the four options given below

1. **A triangle can be constructed by taking its sides as _____.**

   (A) 1.8 cm, 2.6 cm, 4.4 cm **(B)** 2 cm, 3 cm, 4 cm

   (C) 2.4 cm, 2.4 cm, 6.4 cm **(D)** 3.2 cm, 2.3 cm, 5.5 cm

2. **A triangle can be constructed by taking its two angles as _____.**

   (A) 80°, 60° **(B)** 75°, 115° **(C)** 135°, 45° **(D)** 90°, 90°

3. **In a Δ ABC, if $AB^2 = BC^2 + CA^2$, then the triangle is right angled at _____.**

   (A) A **(B)** B **(C)** C **(D)** Either A or B

4. **Two poles, 30 m and 15 m high stand upright on a ground. If their feet are 36 m apart, then the distance between their tops is _____.**

   (A) 15 m **(B)** 45 m **(C)** 39 m **(D)** 30 m

5. **A tree broke at a point but did not separate. Its top touched the ground at a distance of 6 m from its base. If the point where it broke be at a height 2.5 m from the ground, then the height of the tree before it broke is _____.**

   (A) 8.5 m **(B)** 6.5 m **(C)** 9 m **(D)** 12.5 m

6. **Two sides of a triangle are 8 cm and 11 cm. Which of the following can be the length of the third side ?**

   (A) 21 cm **(B)** 19 cm **(C)** 15 cm **(D)** 3 cm

7. **In a Δ ABC, if AB + BC = 18 cm, BC + CA = 17 cm and CA + AB = 25 cm then the perimeter of Δ ABC is _____.**

   (A) 30 cm **(B)** 28 cm **(C)** 60 cm **(D)** none of these

8. **If $\overline{AC}$ and $\overline{BD}$ intersect at O such that AO = CO and BO = DO, then**

   (A) BC = AD **(B)** BC || AD and BC = AD

   (C) BC || AD **(D)** none of these

9. **The minimum number of independent dimensions needed to construct a triangle is _____.**

(A) 2 (B) 3 (C) 4 (D) 5

10. **The sides of certain triangles are given below. Which of them does not form a right angled triangle ?**

(A) 7 cm, 24 cm and 25 cm (B) 8 cm, 10 cm and 6 cm

(C) 9 cm, 16 cm and 18 cm (D) 15 cm, 20 cm and 25 cm

11. **Is it possible to form a triangle by three line segments of the lengths : 8 cm, 6 cm and 15 cm ?**

(A) Yes (B) No

(C) Can't say (D) Data given is insufficient

12. **Is it possible to form a triangle with angles 25°, 65° and 90° ?**

(A) Yes (B) No

(C) Can't say (D) Data given is insufficient

13. **The sides of a triangle have lengths 6.8 cm, 10 cm. Its perimeter is a whole number. Then the smallest possible length of the third side is _____.**

(A) 3 cm (B) 19.2 cm (C) 3.2 cm (D) 4.2 cm

14. **To draw the circumcircle of a triangle, we must know the point equidistant from _____.**

(A) sides of the triangle (B) any two vertices of the triangle

(C) all the vertices of the triangle (D) any two sides of the triangle

15. **To construct a parallelogram, the minimum number of independent measurements required is _____.**

(A) 2 (B) 3 (C) 4 (D) 5

16. **The minimum number of independent dimensions needed to construct a rectangle is _____.**

(A) 2 (B) 3 (C) 4 (D) 5

17. **The number of triangles with any three of the lengths 1, 4, 6 and 8 cm is**

(A) one (B) two (C) three (D) four

18. **If two sides of a right-angle triangle are equal and the square of the hypotenuse is 64 cm then the length of each side is _____ cm.**

(A) 8 (B) $4\sqrt{2}$ (C) $3\sqrt{2}$ (D) none of these

19. **The angles of a right angled triangle other than the right angle are _____.**

(A) acute (B) obtuse (C) right (D) none of these

20. **If a, b and c are the sides of a triangle, then**

(A) $a-b>c$ (B) $c>a+b$ (C) $c=a+b$ (D) $b<c+a$

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10. Comparing Quantities

Tick the correct option from the four options given below

1. In a scout-camp, 40% of the scouts from the Gujarat State and 20% of these were from Ahmedabad. The percentage of scouts from Ahmedabad was _____.

   (A) 24 (B) 32.5 (C) 8 (D) 50

2. Gayatri's income is ₹ 16000 per month. She pays 15% of the income as house rent and 10% of the remainder on her child's education. The money left with her is _____.

   (A) ₹ 13600 (B) ₹ 12000 (C) ₹ 12240 (D) ₹ 14400

3. The ratio of Fatima's income to her savings is 4 : 1. The money saved by her is _____.

   (A) 20% (B) 25% (C) 40% (D) 0.08%

4. 15% is equal to _____.

   (A) $\frac{1}{20}$ (B) $\frac{2}{15}$ (C) $\frac{3}{20}$ (D) $\frac{20}{3}$

5. 0.07 is equal to _____.

   (A) 70% (B) 7% (C) 0.7% (D) 0.07%

6. 20% of 700 m is _____.

   (A) 560 m (B) 70 m (C) 210 m (D) 140 m

7. 5.2 is equal to _____.

   (A) 0.52% (B) 5.2% (C) 520% (D) 52%

8. ₹ 90 is what percentage of ₹ 45 ?

   (A) 200 (B) $\frac{1}{2}$ (C) 2 (D) 50

9. The ratio 3 : 8 is equal to _____.

   (A) 3.75% (B) 37.5% (C) 375% (D) 345%

10. 225% is equal to _____.

    (A) 9 : 4 (B) $\frac{4}{9}$ (C) 3 : 4 (D) $\frac{2}{3}$

11. A bicycle is purchased at ₹ 1600 and is sold at a profit of 12%. Its selling price is _____.
(A) ₹ 1624 (B) ₹ 1792 (C) ₹ 1408 (D) ₹ 1576

12. A cricket bat was purchased for ₹ 800 and was sold for ₹ 1600. Then, the profit earned is _____.
(A) 100% (B) 64% (C) 50% (D) 60%

13. If 90% of x is 315 km, then the value of x is _____.
(A) 325 km (B) 350 km (C) 405 km (D) 340 km

14. On selling an article for ₹ 329, a dealer lost 6%. The cost price of the article is _____.
(A) ₹ 310.37 (B) ₹ 348.74 (C) ₹ 335 (D) ₹ 350

15. Selling price of 9 articles is equal to the cost price of 15 articles. In the transaction there is a _____.
(A) loss of $66\frac{2}{3}\%$ (B) loss of 40% (C) profit of $66\frac{2}{3}\%$ (D) profit of 40%

16. 5 out of 2250 parts of earth is sulphur. What is the percentage of sulphur in earth ?
(A) $\frac{11}{50}$ (B) $\frac{2}{9}$ (C) $\frac{1}{45}$ (D) $\frac{2}{45}$

17. If 30% of a number is 12.6, then the number is _____.
(A) 41 (B) 51 (C) 52 (D) 42

18. What per cent is 3% of 5% ?
(A) 60% (B) 50% (C) 15% (D) 30%

19. What is 25% of 25% equal to ?
(A) 6.25 (B) 0.625 (C) 0.0625 (D) 0.00625

20. If 15% of 40 is greater than 25% of a number by 2, the number is _____.
(A) 16 (B) 20 (C) 24 (D) 32

21. If 75% of a number is added to 75, the result is the number itself. Then, the number is _____.
(A) 400 (B) 300 (C) 60 (D) 50

22. A student has to secure 40% marks to pass. He gets 178 marks and fails by 22 marks. The maximum marks are _____.
(A) 200 (B) 500 (C) 800 (D) 1000

23. 300 grams of sugar solution has 40% sugar in it. How much sugar should be added to make it 50% in the solution ?
(A) 10 gms (B) 40 gms (C) 60 gms (D) 80 gms

24. Raman's salary was decreased by 50% and subsequently increased by 50%. He has a loss of _____.
(A) 0% (B) 25% (C) 0.25% (D) 2.5%

25. The value of a sewing machine depreciates every year by 4%. Its value at present is ₹ 200. What will be its value after 2 years ?

(A) ₹ $\left(200 \times \frac{23}{25}\right)$ (B) ₹ $\left[200 \times \left(\frac{24}{25}\right)^2\right]$ (C) ₹ $\left[200 \times \left(\frac{25}{26}\right)^2\right]$ (D) ₹ $\left[200 \times \left(\frac{26}{25}\right)^2\right]$

26. A reduction of 21% in the price of wheat enables a person to buy 3.5 kg more for ₹ 100. What is the reduced price per kg ?

(A) ₹ 6 (B) ₹ 6.25 (C) ₹ 6.30 (D) ₹ 6.50

27. If length of a rectangle is increased by 20% and the width is decreased by 20%. The area decreases by _____.

(A) 0.8% (B) 1.2% (C) 4% (D) 8%

28. If the radius of a circle is decreased by 50%, its area is reduced by _____.

(A) 25% (B) 50% (C) 75% (D) none of these

29. If the selling price of an article is $\frac{4}{3}$ times its cost price, the profit per cent is _____.

(A) $33\frac{1}{3}$ (B) $25\frac{1}{4}$ (C) $20\frac{1}{2}$ (D) $20\frac{1}{3}$

30. If the cost price of 12 tables is equal to the selling price of 16 tables, the loss per cent is _____.

(A) 15% (B) 20% (C) 25% (D) 30%

31. A fruit seller purchases oranges at the rate of 3 for ₹ 5 and sells them 2 for ₹ 4. His profit in the transaction is _____.

(A) 10% (B) 15% (C) 20% (D) 25%

32. If a bookseller purchased 11 books for ₹ 10 and sold all the books at the rate of 10 books for ₹ 11, the profit per cent is _____.

(A) 10 (B) 11 (C) 21 (D) 100

33. Toffees are bought at the rate of 3 for a rupee. To gain 50%, they must be sold at _____.

(A) 2 for a rupee (B) 1 for a rupee (C) 4 for a rupee (D) 5 for a rupee

34. The marked price of a fan is ₹ 1240. Due to off season, a 15% discount is allowed. The S.P. of the fan is _____.

(A) ₹ 854 (B) ₹ 1054 (C) ₹ 1074 (D) ₹ 1094

35. A tradesman mark his goods 30% above the C.P. If he allows a discount of $6\frac{1}{4}$%, then his gain per cent is _____.

(A) $23\frac{3}{4}$% (B) 22% (C) $21\frac{7}{8}$% (D) none of these

36. At what percentage above the C.P. must an article be marked so as to gain 33% after allowing a customer a discount of 5% ?

(A) 38% (B) 40% (C) 43% (D) 48%

37. The salaries of A, B and C are in the ratio of 1 : 2 : 3. The salary of B and C together is ₹ 6000. By what per cent is the salary of C more than that of A ?

(A) 100% (B) 200% (C) 300% (D) 600%

38. A sum of money is to be divided among P, Q and R in the ratio of 3 : 5 : 7. If Q's share is ₹ 1500, what is the difference between P's and R's shares ?

(A) ₹ 1200 (B) ₹ 1500 (C) ₹ 1600 (D) ₹ 1900

39. What number should be subtracted from both the terms of the ratio 15 : 19 so as to make it as 3 : 4 ?

(A) 3 (B) 5 (C) 6 (D) 9

40. Five bananas and four apples cost as much as three bananas and seven apples. The ratio of the cost of one banana to that of one apple is _____.

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

41. In a college, the ratio of the number of boys to girls is 8 : 5. If there are 320 girls, the total number of students in the college is _____.

(A) 200 (B) 500 (C) 520 (D) 832

42. If $\frac{5}{7}$ of 49 + 20% of 130 = x + 49, then x is equal to _____.

(A) 10 (B) 12 (C) 16 (D) 18

43. A tradesman sells some articles at a gain of $12\frac{1}{2}$% and invests his proceeds to buy shirts which he sells at a gain of 20%. If he makes a net profit of ₹ 700, the cost of the article is _____.

(A) ₹ 2000 (B) ₹ 2300 (C) ₹ 2400 (D) ₹ 2500

44. The price of sugar decreases by 20%. By how much % excess sugar can be bought such that there is no change in the expenditure ?

(A) $16\frac{2}{3}$% (B) 20% (C) 25% (D) 50%

45. Ali read a book containing 100 pages in 5 hours. How long will it take to read a book of 160 pages ?

(A) 9 hours (B) 16 hours (C) 12.5 hours (D) 8 hours

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11. Rational Numbers

Tick the correct option from the four options given below

1. **If p : Every fraction is a rational number, and**
   q : Every rational number is a fraction, then which of the following is correct ?
   (A) p is true and q is false **(B)** p is false and q is true
   (C) Both p and q are true **(D)** Both p and q are false

2. **If p : Every integer is a rational number, and**
   q : Every rational number is an integer, then which of the following is correct ?
   (A) p is true and q is false **(B)** p is false and q is true
   (C) Both p and q are true **(D)** Both p and q are false

3. **Which of the following rational number is in the standard form ?**
   (A) $\frac{5}{10}$ **(B)** $\frac{-7}{9}$ **(C)** $\frac{7}{-9}$ **(D)** $\frac{-7}{-9}$

4. **Which of the following number is a positive rational number ?**
   (A) $\frac{-7}{8}$ **(B)** $\frac{7}{-8}$ **(C)** $\frac{0}{8}$ **(D)** $\frac{-7}{-8}$

5. **Which of the following is a rational number(s) ?**
   (A) $\frac{-2}{7}$ **(B)** $\frac{3}{-7}$ **(C)** $\frac{-4}{-11}$ **(D)** all of these

6. $\frac{0}{5}$ **is a** _____.
   (A) positive rational number
   (B) negative rational number
   (C) either positive or negative rational number
   (D) neither positive nor negative rational number

7. The number which is not equal to $\frac{4}{5}$ is _____.

(A) $\frac{40}{50}$ (B) $\frac{-12}{-15}$ (C) $\frac{-4}{-5}$ (D) $\frac{-4}{5}$

8. Which of the following rational number is not in its lowest terms ?

(A) $\frac{7}{5}$ (B) $\frac{15}{25}$ (C) $\frac{17}{37}$ (D) $\frac{29}{30}$

9. Which of the following is not equal to others ?

(A) $\frac{-3}{-4}$ (B) $\frac{6}{-8}$ (C) $\frac{-3}{4}$ (D) $-\frac{3}{4}$

10. Out of the following rational numbers, which is the greatest ?

(A) $\frac{-5}{6}$ (B) $\frac{5}{7}$ (C) $\frac{5}{4}$ (D) $\frac{5}{-9}$

11. Out of the following rational numbers, which is the smallest ?

(A) $\frac{2}{7}$ (B) $\frac{-5}{7}$ (C) $\frac{4}{-7}$ (D) $\frac{3}{7}$

12. A rational number equivalent to $\frac{-7}{-4}$ is _____.

(A) $\frac{-35}{20}$ (B) $\frac{35}{-20}$ (C) $\frac{35}{20}$ (D) none of these

13. $\frac{-7}{0}$ is a _____.

(A) positive rational number
(B) negative rational number
(C) either positive or negative rational number
(D) neither positive nor negative rational number

14. The rational number $\frac{0}{3}$ _____.

(A) has a positive numerator
(B) has a negative numerator
(C) has either a positive numerator or a negative numerator
(D) has neither a positive numerator nor a negative numerator

15. If $\frac{5}{8} = \frac{20}{p}$, then the value of p is _____.

(A) 8 (B) -8 (C) 32 (D) 48

16. If $\frac{-2}{x} = \frac{x}{8}$, then x is _____.

(A) a rational number (B) not a rational number

(C) an integer (D) a natural number

17. When $\frac{1}{4}$ is written as a rational number with denominator 12, the numerator would be _____.

(A) 8 (B) -8 (C) 3 (D) 48

18. When $\frac{-4}{5}$ is written as a rational number with denominator -30, the numerator would be _____.

(A) -35 (B) 35 (C) -150 (D) 24

19. When $\frac{-48}{60}$ is expressed as a rational number with denominator 5, the numerator would be _____.

(A) -4 (B) 4 (C) 12 (D) -12

20. When $\frac{-192}{108}$ is expressed as a rational number with numerator -48, the denominator would be _____.

(A) -16 (B) 16 (C) -27 (D) 27

21. Which of the following statements is/are true ?

(A) $-\frac{3}{5}$ lies to the left of 0 on the number line

(B) $\frac{2}{7}$ lies to the right of 0 on the number line

(C) The rational numbers $\frac{1}{11}$ and $\frac{-7}{3}$ lies on opposite of sides of 0 on the number line

(D) All of the above

22. Which of the following statement is true ?

(A) $\frac{4}{-9} > \frac{-16}{36}$ (B) $\frac{4}{-9} = \frac{-16}{36}$ (C) $\frac{4}{-9} < \frac{-16}{36}$ (D) $\frac{3}{7} > \frac{2}{3}$

23. Which one of the following rational number cannot be written with denominator 10 ?

(A) $\frac{0}{5}$ (B) $\frac{3}{7}$ (C) $\frac{9}{9}$ (D) $\frac{21}{14}$

24. Which of the following statement is false ?

(A) If $\frac{a}{b}$ is a rational number and m is any integer, then $\frac{a}{b}=\frac{a\times m}{b\times m}$

(B) If the rational number $\frac{p}{x}$ is greater than the rational number $\frac{p}{y}$ and p, x, y are positive, then x is less than y.

(C) $\frac{31}{41}$ is not equal to $\frac{3}{4}$.

(D) If $x>0$ and $y<0$, then $x>y$

25. Arrange $\frac{2}{3}, \frac{5}{7}, \frac{-4}{-9}, \frac{1}{4}$ in ascending order :

(A) $\frac{1}{4}<\frac{-4}{-9}<\frac{2}{3}<\frac{5}{7}$ **(B)** $\frac{1}{4}<\frac{2}{3}<\frac{-4}{9}<\frac{5}{7}$ **(C)** $\frac{-4}{-9}<\frac{1}{4}<\frac{2}{3}<\frac{5}{7}$ **(D)** $\frac{2}{3}<\frac{5}{7}<\frac{-4}{-9}<\frac{1}{4}$

26. Arrange $\frac{2}{5}, \frac{-3}{-4}, \frac{1}{2}, \frac{-7}{-6}, 0$ in descending order :

(A) $\frac{-7}{-6}>\frac{-3}{-4}>\frac{1}{2}>\frac{2}{5}>0$ **(B)** $\frac{-3}{-4}>\frac{-7}{-6}>\frac{1}{2}>\frac{2}{5}>0$

(C) $\frac{-7}{-6}>\frac{-3}{-4}>0>\frac{1}{2}>\frac{2}{5}$ **(D)** $\frac{-7}{-6}>\frac{-3}{4}>\frac{2}{5}>0>\frac{1}{2}$

27. If x, y, z be rational numbers such that $x>y$ and $z<y$, then _____.

(A) $z>x$ **(B)** $z<x$ **(C)** $y<z$ **(D)** $y>x$

28. For any two rational numbers x and y, which of the following properties are correct ?

(*i*) $x<y$ (*ii*) $x=y$ (*iii*) $x>y$

(A) Only (*i*) and (*ii*) are correct **(B)** Only (*ii*) and (*iii*) are correct

(C) Only (*ii*) is correct **(D)** All (*i*), (*ii*) and (*iii*) are correct

29. Sum of the rational numbers $\frac{4}{7}$ and $\frac{-15}{7}$ is _____.

(A) $\frac{19}{7}$ **(B)** $\frac{-11}{7}$ **(C)** $\frac{-21}{7}$ **(D)** $\frac{11}{7}$

30. In which pair, the numbers are not negatives of each other ?

(A) $\frac{2}{3}, \frac{2}{-3}$ **(B)** $\frac{-4}{5}, \frac{4}{5}$ **(C)** $\frac{1}{2}, \frac{-1}{-2}$ **(D)** 0, 0

31. In subtracting $\frac{-2}{7}$ from $\frac{3}{7}$, we get

(A) $\frac{5}{7}$ (B) $\frac{-5}{7}$ (C) $\frac{1}{7}$ (D) $\frac{-1}{7}$

32. Addition of rational numbers does not satisfy which of the following property ?

(A) Closure property (B) Commutativity (C) Associativity (D) none of these

33. $\frac{-3}{4}+\left(\frac{5}{6}+\frac{-4}{9}\right)=\left(\frac{-3}{4}+\frac{5}{6}\right)+\frac{-4}{9}$

This property is known as _____.

(A) Closure property (B) Commutativity (C) Associativity (D) identity

34. Name the property of multiplication of rational numbers illustrated by the statement :

$$\frac{7}{4}\times\left(\frac{-8}{3}+\frac{-13}{12}\right)=\frac{7}{4}\times\frac{-8}{3}+\frac{7}{4}\times\frac{-13}{12}$$

(A) Distributivity of multiplication over addition

(B) Associativity of multiplication

(C) Existence of identity for multiplication

(D) Existence of multiplication inverse

35. The sum of two rational numbers is – 5. If one of the numbers is $\frac{5}{6}$, then the other number is _____.

(A) $\frac{-35}{6}$ (B) $\frac{35}{6}$ (C) $\frac{-31}{6}$ (D) $\frac{31}{6}$

36. What should be added to -3 so as to get $\frac{-16}{9}$?

(A) $\frac{11}{9}$ (B) $-1\frac{2}{9}$ (C) $\frac{13}{9}$ (D) $\frac{-13}{9}$

37. The product of a rational number and its reciprocal is _____.

(A) 0 (B) 1 (C) -1 (D) none of these

38. The product of two rational numbers is $\frac{-9}{16}$. If one of the numbers is $\frac{-4}{3}$, then the other number is _____.

(A) $\frac{25}{64}$ (B) $\frac{27}{64}$ (C) $\frac{27}{49}$ (D) $\frac{36}{48}$

39. **By what number should we multiply $\frac{-1}{6}$ so that the product be $\frac{-23}{9}$?**

(A) $\frac{46}{3}$ (B) $\frac{-46}{3}$ (C) $\frac{26}{3}$ (D) none of these

40. $\left(-1\frac{2}{3}\right)+\left(-1\frac{2}{3}\right)+\left(-1\frac{2}{3}\right)+\ldots$ **upto 15 terms equals _____.**

(A) -35 (B) 25 (C) -25 (D) none of these

41. **Which of the following statement is false ?**

(A) The reciprocal of a non-zero rational number $\frac{p}{q}$ is the rational number $\frac{q}{p}$

(B) If $x + y = 0$, then $-y$ is known as the negative of x, where x and y are rational numbers

(C) For all rational numbers x and y, $x - y = y - x$

(D) The reciprocal of x^{-1} is x

42. **If $\frac{-9}{5}=\frac{p}{20}=\frac{27}{q}=\frac{-45}{r}$, then the values of p, q and r are _____.**

(A) $-15, -36, 25$ (B) $-15, 25, -36$ (C) $25, -36, -15$ (D) $-36, -15, 25$

43. **For which of the following question the answer is 'Yes' ?**

(A) Are rational numbers always closed under division ?

(B) Are rational numbers always associated under division ?

(C) Can we divide 1 by 0 ?

(D) None of these

44. **Which of the following statements is correct ?**

(A) The additive inverse of 0 is zero itself

(B) 0 is called the additive identity for rational numbers

(C) 1 is called the multiplicative identity for rational numbers

(D) All of these

45. **If p : Rational numbers are always closed under division and**

q : Division by zero is not defined, then which of the following statement is correct ?

(A) p is true and q is correct explanation of p

(B) p is false and q is the correct explanation of p

(C) p is true and q is false

(D) None of these

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12. Exponents and Powers

Tick the correct option from the four options given below

1. If a is any number and n is a natural number, then
$a \times a \times a \times \ldots n$ times is equal to _____.
(A) $n \times a$ (B) $a \div n$ (C) $n \div a$ (D) a^n

2. $3^2 + 3^2 + 3^2$ is equal to _____.
(A) 3^3 (B) 3^6 (C) 3^8 (D) none of these

3. $2^5 + 2^5 + 2^5 + 2^5$ is equal to _____.
(A) 2^7 (B) 2^{10} (C) 2^{20} (D) 2^{125}

4. $a \times a \times a \times c \times c \times c \times c \times d$ can be written in the exponential form as _____.
(A) $3a \times 4c \times d$ (B) $\frac{a}{3} \times \frac{c}{4} \times d$ (C) a^3c^4d (D) none of these

5. Express 432 using exponential notation :
(A) $4^2 \times 3^3$ (B) $2^3 \times 3^4$ (C) $2^4 \times 3^3$ (D) none of these

6. Express 16000 using exponential notation :
(A) $7^2 \times 5^3$ (B) $2^7 \times 3^5$ (C) $7^2 \times 3^5$ (D) $2^7 \times 5^3$

7. Express 0.0094 in scientific notation :
(A) 94×10^{-4} (B) 9.4×10^{-3} (C) 0.94×10^{-2} (D) 9.4×10^{-5}

8. Express the mass of the earth 5976000000000000000000000 in the standard form.
(A) 5976×10^{21} (B) 597.6×10^{22} (C) 59.76×10^{23} (D) 5.976×10^{24}

9. Which of the following number is in the scientific notation ?
(A) 1.36×10^{-5} m (B) 17.57×10^3 km (C) 0.21×10^{-9} km (D) 0.0017×10^{-10} km

10. The distance of the Earth from the Sun is 149000000 km. In scientific notation the distance is _____.
(A) 149×10^6 km (B) 14.9×10^7 km (C) 1.49×10^8 km (D) 0.149×10^9 km

11. The value of $(-8)\times(-8)\times(-8)\times(-8)\times(-8)+(-8)\times(-8)\times(-8)\times(-8)\times(-8)$ is _____.

(A) $-(2)^{16}$ (B) $-2(8)^5$ (C) $-(4)^8$ (D) none of these

12. The value of $(4^0-5^0)\times 7^2$ is _____.

(A) 49 (B) 0 (C) -49 (D) none of these

13. Square of $\left(-\frac{2}{3}\right)$ is _____.

(A) $-\frac{2}{3}$ (B) $\frac{2}{3}$ (C) $\frac{-4}{9}$ (D) $\frac{4}{9}$

14. Cube of $\frac{-1}{4}$ is _____.

(A) $\frac{-1}{4}$ (B) $\frac{1}{16}$ (C) $-\frac{1}{64}$ (D) $\frac{1}{64}$

15. Which of the following is not equal to $\left(\frac{-3}{4}\right)^4$?

(A) $\frac{(-3)^4}{4^4}$ (B) $\frac{3^4}{(-4)^4}$

(C) $-\frac{3^4}{4^4}$ (D) $\left(\frac{-3}{4}\right)\times\left(\frac{-3}{4}\right)\times\left(\frac{-3}{4}\right)\times\left(\frac{-3}{4}\right)$

16. Out of the following, the number which is not equal to $\frac{-8}{27}$ is _____.

(A) $\left(\frac{2}{3}\right)^{-3}$ (B) $-\left(\frac{2}{3}\right)^3$

(C) $\left(-\frac{2}{3}\right)^3$ (D) $\left(\frac{-2}{3}\right)\times\left(\frac{-2}{3}\right)\times\left(\frac{-2}{3}\right)$

17. Which of the following is not the reciprocal of $\left(\frac{2}{3}\right)^4$?

(A) $\left(\frac{3}{2}\right)^4$ (B) $\left(\frac{2}{3}\right)^{-4}$ (C) $\left(\frac{3}{2}\right)^{-4}$ (D) $\frac{3^4}{2^4}$

18. $\left(\frac{2}{3}\right)^{-5}$ is equal to _____.

(A) $\left(-\frac{2}{3}\right)^5$ (B) $\left(\frac{3}{2}\right)^5$ (C) $\frac{2\times(-5)}{3}$ (D) $\frac{2}{3\times 5}$

19. $\left(-\frac{1}{2}\right)^5 \times \left(-\frac{1}{2}\right)^3$ is equal to _____.

(A) $\left(-\frac{1}{2}\right)^8$ (B) $-\left(\frac{1}{2}\right)^8$ (C) $\left(\frac{1}{4}\right)^8$ (D) $\left(-\frac{1}{2}\right)^{15}$

20. $\left(-\frac{1}{3}\right)^3 \div \left(-\frac{1}{3}\right)^8$ is equal to _____.

(A) $\left(-\frac{1}{3}\right)^5$ (B) $\left(-\frac{1}{3}\right)^{11}$ (C) $(-3)^5$ (D) $\left(\frac{1}{3}\right)^5$

21. $\left(-\frac{1}{4}\right)^6 \div \left(-\frac{1}{4}\right)^2$ is equal to _____.

(A) $\left(-\frac{1}{4}\right)^3$ (B) $\left(\frac{1}{4}\right)^3$ (C) $\left(-\frac{1}{4}\right)^4$ (D) $-\left(\frac{1}{4}\right)^4$

22. $\left[\left(\frac{1}{2}\right)^2\right]^3$ is equal to _____.

(A) $\left(\frac{1}{2}\right)^8$ (B) $\left(\frac{1}{2}\right)^6$ (C) $\left(\frac{1}{2}\right)^5$ (D) $\left(\frac{1}{2}\right)^{23}$

23. $\left(\frac{1}{2}\right)^0$ is equal to _____.

(A) 0 (B) $\frac{1}{2}$ (C) 1 (D) 5

24. $\left(-\frac{2}{3}\right)^{-1}$ is equal to _____.

(A) $\frac{2}{3}$ (B) $\frac{3}{2}$ (C) $-\frac{5}{3}$ (D) $\frac{-3}{2}$

25. $\left(\frac{2}{3}\right)^{-3} \times \left(\frac{5}{7}\right)^{-3}$ is equal to _____.

(A) $\left(\frac{2}{3} \times \frac{5}{7}\right)^{-3}$ (B) $\left(\frac{2}{3} \times \frac{5}{7}\right)^{-6}$ (C) $\left(\frac{2}{3} \times \frac{5}{7}\right)^{6}$ (D) $\left(\frac{2}{3} \times \frac{5}{7}\right)^{9}$

26. $\left(\frac{3}{5}\right)^4 \div \left(\frac{2}{3}\right)^4$ is equal to _____.

(A) $\left(\frac{3}{5} \div \frac{2}{3}\right)^1$ (B) $\left(\frac{3}{5} \div \frac{2}{3}\right)^4$ (C) $\left(\frac{3}{5} \div \frac{2}{3}\right)^0$ (D) $\left(\frac{3}{5} \div \frac{2}{3}\right)^8$

27. The value of $[(-3)^{-2}]^{-3}$ is _____.

(A) 81 (B) 729
(C) cannot be determined (D) none of these

28. The value of $(128)^{-\frac{2}{7}}$ is _____.

(A) $\frac{1}{2}$ (B) 2 (C) 4 (D) $\frac{1}{4}$

29. The value of $(243)^{\frac{-2}{5}} \div (125)^{-\frac{2}{3}}$ is _____.

(A) $\frac{9}{25}$ (B) $\frac{25}{9}$ (C) $\frac{3}{5}$ (D) $\frac{5}{3}$

30. The value of $(\sqrt{8})^{\frac{1}{3}}$ is _____.

(A) 2 (B) 4 (C) $\sqrt{2}$ (D) 8

31. The value of $5^{\frac{1}{4}} \times (125)^{0.25}$ is _____.

(A) $\sqrt{5}$ (B) $5\sqrt{5}$ (C) 5 (D) 25

32. $\left(\frac{1}{216}\right)^{\frac{-2}{3}} \div \left(\frac{1}{27}\right)^{\frac{-4}{3}}$ equals _____.

(A) $\frac{3}{4}$ (B) $\frac{2}{3}$ (C) $\frac{4}{9}$ (D) $\frac{1}{8}$

33. $\frac{2^{n+4} - 2.2^n}{2.2^{n+3}} + 2^{-3}$ is equal to _____.

(A) 2^{n+1} (B) $-2^{n+1} + \frac{1}{8}$ (C) $\frac{9}{8} - 2^n$ (D) 1

34. If $\sqrt{2^n} = 64$, then the value of n is _____.

(A) 2 (B) 4 (C) 6 (D) 12

35. If $\frac{9^n \times 3^5 \times (27)^3}{3 \times (81)^4} = 27$, then n equals _____.

(A) 0 (B) 2 (C) 3 (D) 4

36. If $\frac{9^n (3^2)\left(3^{-\frac{n}{2}}\right)^{-2} - 27^n}{3^{3m}(2^3)} = \frac{1}{27}$, then

(A) $m-n=2$ (B) $m-n=1$ (C) $m-n=-2$ (D) $m-n=-1$

37. If $5^{x+3} = (25)^{3x-4}$, then the value of x is _____.

(A) $\frac{5}{11}$ (B) $\frac{11}{5}$ (C) $\frac{11}{3}$ (D) $\frac{13}{5}$

38. If $\sqrt[3]{32} = 2^x$, then x is equal to _____.

(A) 5 (B) 3 (C) $\frac{3}{5}$ (D) $\frac{5}{3}$

39. If $x^y = y^x$, then $\left(\frac{x}{y}\right)^{\frac{x}{y}}$ is equal to _____.

(A) $x^{\frac{x}{y}}$ (B) $x^{\frac{x}{y}-1}$ (C) $x^{\frac{y}{x}}$ (D) $x^{\frac{y}{x}-1}$

40. $\left(\frac{x^a}{x^b}\right)^c \times \left(\frac{x^b}{x^c}\right)^a \times \left(\frac{x^c}{x^a}\right)^b = ?$

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

41. $\left(\frac{x^a}{x^b}\right)^{(a+b-c)} \times \left(\frac{x^b}{x^c}\right)^{(b+c-a)} \times \left(\frac{x^c}{x^a}\right)^{(c+a-b)} = ?$

(A) x^{abc} (B) x^{a+b+c} (C) $x^{ab+bc+ca}$ (D) 1

42. $\left(\frac{x^a}{x^b}\right)^{\frac{1}{ab}} \times \left(\frac{x^b}{x^c}\right)^{\frac{1}{bc}} \times \left(\frac{x^c}{x^a}\right)^{\frac{1}{ca}} = ?$

(A) 1 (B) $x^{\frac{1}{abc}}$ (C) $x^{\frac{1}{ab+bc+ca}}$ (D) none of these

43. If $2^{x+4} - 2^{x+2} = 3$, then x is equal to _____.

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

44. If $2^{x-1} + 2^{x+1} = 320$, then x is equal to _____.

(A) 6 (B) 8 (C) 5 (D) 7

45. If $2^{2x-1} = \frac{1}{8^{x-3}}$, then the value of x is _____.

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

46. $\frac{\sqrt{2}-1}{\sqrt{2}+1}$ equals _____.

(A) $3-2\sqrt{2}$ (B) $3+2\sqrt{2}$ (C) $\frac{1}{\sqrt{2}}$ (D) 1.732

47. $\frac{7}{\sqrt{10}+\sqrt{3}}$ equals _____.

(A) $(\sqrt{10}+\sqrt{3})^2$ (B) $7(\sqrt{10}-\sqrt{3})$ (C) $\sqrt{10}-\sqrt{3}$ (D) none of these

48. $\left(\frac{1}{1+x^{n-m}}+\frac{1}{1+x^{m-n}}\right)$ is equal to _____.

(A) 0 (B) 1 (C) $\frac{1}{2}$ (D) x^{m+n}

49. The number which is multiplied by 5^{-9} so that the product is equal to 5 is

(A) 5^8 (B) 5^9 (C) 5^{10} (D) 5^{11}

50. The value of $\left(\frac{p^{-2}\times q^{-3}}{p^{-3}\times q^{-4}}\right)$ is _____.

(A) $p^{-1}\times q^{-1}$ (B) $\frac{1}{pq}$ (C) p^1q^{-1} (D) pq

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13. Area and Perimeter

Tick the correct option from the four options given below

1. **A square metre is equal to _____.**
   (A) 100 cm^2 **(B)** 1000 cm^2 **(C)** 10000 cm^2 **(D)** 100000 cm^2
2. **If the perimeter of a square is 20 m, then its area is _____.**
   (A) 25 m^2 **(B)** 80 m^2 **(C)** 100 m^2 **(D)** 400 m^2
3. **The length and area of a rectangle are respectively 15 cm and 150 cm^2. Its perimeter is _____.**
   (A) 10 cm **(B)** 25 cm **(C)** 30 cm **(D)** 50 cm
4. **Area (in cm^2) of a square of perimeter 1 m is _____.**
   (A) 1 **(B)** 25 **(C)** 625 **(D)** 10000
5. **Area (in m^2) of a square of side 90 cm is _____.**
   (A) 0.81 **(B)** 810 **(C)** 900 **(D)** 9000
6. **If the length of side of a square is doubled, its area will be _____.**
   (A) the same as of the original square **(B)** twice that of the original square
   (C) thrice that of the original square **(D)** four times that of the original square
7. **If the area of a square of side 24 cm is equal to the area of a rectangle of length 18 cm, then the breadth of the rectangle will be _____.**
   (A) 12 cm **(B)** 24 cm **(C)** 30 cm **(D)** 32 cm
8. **The length of a rectangle is doubled and its breadth is halved. Its area will be _____.**
   (A) half of the original area **(B)** the same as the original area
   (C) twice the original area **(D)** four times the original area
9. **Each side of a rectangle is increased by 20%. Its area will increase by _____.**
   (A) 10% **(B)** 20% **(C)** 40% **(D)** 44%

10. **The number of square cards of side 10 cm that can be stuck on a cardboard of dimensions 100 cm by 80 cm is _____.**

(A) 40 (B) 80 (C) 100 (D) 180

11. **If the perimeter of a rectangle is p cm and the area is A cm², then _____.**

(A) $p > A$

(B) $p = A$

(C) $p < A$

(D) for some rectangles $p > A$, for some rectangles $p = A$ and for some rectangles $p < A$

12. **For two rectangles with perimeter p_1 and p_2 and area A_1 and A_2, consider the statements**

(*i*) If $p_1 = p_2$, then $A_1 = A_2$ **(*ii*) If $A_1 = A_2$, then $p_1 = p_2$**

Now state which of the following is correct :

(A) both (*i*) and (*ii*) are true (B) (*i*) is true but (*ii*) is false

(C) (*i*) is false and (*ii*) is true (D) both (*i*) and (*ii*) are false

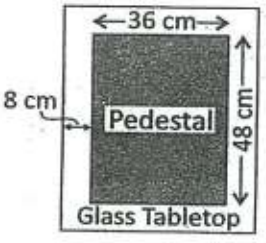
13. **If parallelogram with area P, a rectangle with area R and a triangle with area T are all constructed on the same base and all have the same altitude, then the false statement is _____.**

(A) $P = 2T$ (B) $T = \frac{1}{2}R$ (C) $P = R$ (D) $P + T = 2R$

14. **Two sides of a right triangle are of length 1 cm each. The area of the triangle in cm² is _____.**

(A) $\frac{1}{2}$ (B) 1 (C) 2 (D) 4

15. **Use the adjoining diagram to answer the questions that follows.**



A glass tabletop is supported by a rectangular pedestal. If the tabletop is 8 cm wider than the pedestal on each side, what is the perimeter of the glass tabletop ?

(A) 116 cm (B) 176 cm

(C) 184 cm (D) 232 cm

16. **A new museum has two circular display rooms. The radius of the large circular room is 6 metres. The radius of the smaller circular room is 3 metres. What is the area of the smaller room in relation to the area of the large room ?**

(A) $\frac{1}{6}$ of the large room's area (B) $\frac{1}{4}$ of the large room's area

(C) $\frac{1}{3}$ of the large room's area (D) $\frac{1}{2}$ of the large room's area

17. **The ratio of the area of a square to that of the square drawn on its diagonal is _____.**

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

18. **The length of a rectangle is 1 cm more than its width and its perimeter is 14 cm, then the area of the rectangle is _____.**

(A) 10 cm^2 (B) 12 cm^2 (C) 14 cm^2 (D) 16 cm^2

19. **If each of the dimensions of a rectangle is increased by 100%, then the area is increased by _____.**

(A) 100% (B) 200% (C) 300% (D) 400%

20. **The length of a given rectangle is increased by 20% and the breadth is decreased by 20%, then the area _____.**

(A) remains the same (B) increases by 5% (C) decreases by 5% (D) decreases by 4%

21. **One side of a parallelogram is 8 cm. If the corresponding altitude is 6 cm, then its area is given by _____.**

(A) 24 cm^2 (B) 36 cm^2 (C) 40 cm^2 (D) 48 cm^2

22. **The sides of a triangle are 5 cm, 12 cm and 13 cm. Then its area is _____.**

(A) 0.003 m^2 (B) 0.0015 m^2 (C) 0.0026 m^2 (D) 0.0024 m^2

23. **If the sides of a triangle are doubled, then its area _____.**

(A) remains the same (B) becomes doubled

(C) becomes three times (D) becomes four times

24. **If the radius of the circle is increased by 100%, then the area is increased by _____.**

(A) 100% (B) 200% (C) 300% (D) 400%

25. **The radius of a circle is increased by 1 cm, then the ratio of the new circumference to the new diameter is**

(A) $(\pi + 2) : 1$ (B) $(\pi + 1) : 1$ (C) $\pi : 1$ (D) $(2\pi - 1) : 2$

26. **The side of a square is 2 cm and semi-circles are constructed on each side of the square, then the area of the whole figure is _____.**

(A) $(4 + 2\pi)$ cm^2 (B) $(4 + 4\pi)$ cm^2 (C) 4π cm^2 (D) 8π cm^2

27. **The area of a square that can be inscribed in a circle of radius r is _____.**

(A) r^2 (B) $2r^2$ (C) $4r^2$ (D) πr^2

28. **If a square and a circle have the same perimeter then**

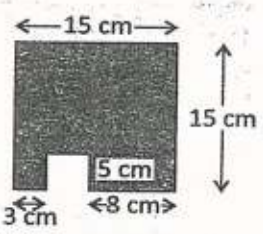
(A) the area of the circle is greater than that of square

(B) the area of the square is greater than that of circle

(C) the area of the square is $\frac{1}{\pi}$ times that of the circle.

(D) their areas are equal

29. **The area of the shaded region is _____.**

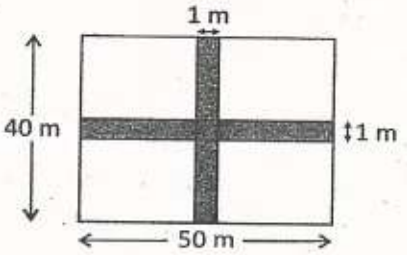


(A) 150 cm^2 (B) 140 cm^2
(C) 205 cm^2 (D) 120 cm^2

30. **The area of a rectangular field is 150 sq. units. If its perimeter is 50 units, then its dimensions are _____.**

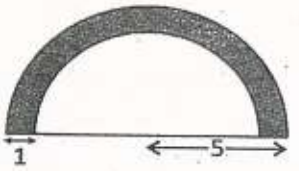
(A) 27, 5 (B) 3, 50 (C) 5, 30 (D) 10, 15

31. **The area of the shaded region in the given figure is _____.**



(A) 45 m^2 (B) 89 m^2
(C) 90 m^2 (D) 2000 m^2

32. **The area of the shaded portion in the figure is _____.**



(A) 4.5π sq. units (B) 5.5π sq. units
(C) 6.5π sq. units (D) 7.5π sq. units

33. **If the difference between the circumference and radius of a circle is 37 cm, then its diameter is _____.**

(A) 14 cm (B) 28 cm (C) 42 cm (D) 56 cm

34. **The height of a parallelogram of area 350 cm^2 and base 25 cm is _____.**

(A) 12 cm (B) 13 cm (C) 14 cm (D) 15 cm

35. **The base of a right angled triangle is 8 m and its hypotenuse is 10 m. Then its area is _____.**

(A) 24 m^2 (B) 30 m^2 (C) 40 m^2 (D) 48 m^2

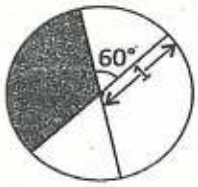
36. **The diameter of a wheel is 98 cm. The number of revolutions it will have to cover a distance of 1540 m is _____.**

(A) 500 (B) 600 (C) 700 (D) 800

37. **If the area of a circle is A, radius is *r* and circumference is C, then _____.**

(A) $rC = 2A$ (B) $\frac{C}{A} = \frac{r}{2}$ (C) $AC = \frac{r^2}{4}$ (D) $\frac{A}{r} = C$

38. The area of the shaded region in the figure is _____.



(A) $\frac{\pi}{3}$ sq. units (B) $\frac{\pi}{2}$ sq. units

(C) $\frac{\pi}{4}$ sq. units (D) π^2 sq. units

39. The area of a segment of a circle of radius 21 cm if the arc of the segment has a measure of 60° is _____. (Take $\sqrt{3}$ = 1.73)

(A) 45.27 cm^2 (B) 40.27cm^2 (C) 40.8 cm^2 (D) none of these

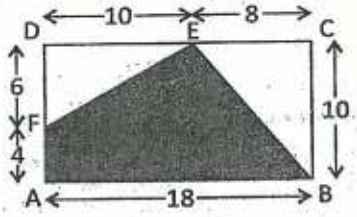
40. The area of the largest triangle that can be inscribed in a semicircle whose radius is *r* cm is _____.

(A) $2r$ cm^2 (B) r^2 cm^2 (C) $2r^2$ cm^2 (D) $\frac{r}{2}$ cm^2

41. Area of the shaded region in the figure is _____.

(A) 100 sq. units (B) 110 sq. units

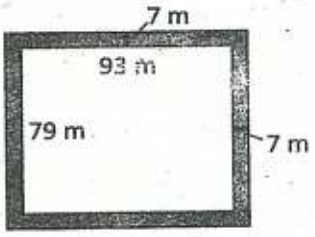
(C) 120 sq. units (D) 125 sq. units



42. A 7 m wide path is constructed outside along four sides of a field of dimensions 93 m by 79 m. The area of the path is _____.

(A) 7900 m^2 (B) 7998 m^2

(C) 98 m^2 (D) 2604 m^2



43. The number of marble slabs of size 20 cm × 30 cm required to pave the floor of a square room of side 3 metres is _____.

(A) 100 (B) 150 (C) 225 (D) 25

44. A man walking at the speed of 4 kmph crosses a square field diagonally in 3 minutes. The area of the filed is _____.

(A) 18000 m^2 (B) 20000 m^2 (C) 19000 m^2 (D) 25000 m^2

45. The parallel sides of a trapezium are in the ratio of 3 : 5 and the perpendicular distance between them is 12 cm. If the area of the trapezium is 384 cm^2, then the smaller of the parallel sides is _____.

(A) 16 cm (B) 24 cm (C) 32 cm (D) 40 cm

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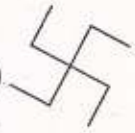
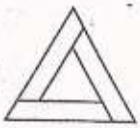
14. Symmetry and Visualising Solid Shapes

Tick the correct option from the four options given below

1. **Which figure below has at least one line of symmetry ?**

(A)  (B)  (C)  (D) 

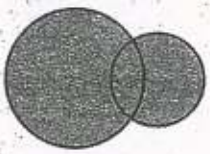
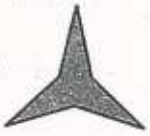
2. **Which figure below has no line of symmetry ?**

(A)  (B)  (C)  (D) 

3. **Which of the following figure has exactly one line of symmetry ?**

(A)  (B)  (C)  (D) 

4. **Which of the following shape does not have multiple lines of symmetry ?**

(A)  (B)  (C)  (D) 

5. **An equilateral triangle has _____.**

(A) no line of symmetry **(B)** one line of symmetry

(C) two lines of symmetry **(D)** three lines of symmetry

6. **The quadrilateral which has both line and rotational symmetry of order more than 2 is _____.**

(A) kite **(B)** square **(C)** rectangle **(D)** rhombus

7. **A parallelogram has _____.**

   (A) no line of symmetry **(B)** one line of symmetry

   (C) two lines of symmetry **(D)** three lines of symmetry

8. **Which plane figure has no line of symmetry ?**

   (A) A scalene triangle **(B)** An isosceles triangle

   (C) An isosceles trapezium **(D)** A kite

9. **State which of the following statement is true ?**

   (A) A parallelogram has two lines of symmetry

   (B) A regular triangle has rotational symmetry of order 3

   (C) An angle with equal arm has one point of symmetry

   (D) A semi-circle has an infinite number of lines of symmetry

10. **Which of the following figures represents the correct axes of symmetry for the given figure ?**

(A)  **(B)**  **(C)**  **(D)** None of these

11. **Given the line(s) of symmetry, which of the following figure represents the correct position of hole(s) for the given figure.**

(A)  **(B)**  **(C)**  **(D)** 

12. **In which of the following figure the lines of symmetry are not represented correctly ?**

(A)  **(B)**  **(C)**  **(D)** 

13. **Which of the following letter of the English alphabet does not have reflectional symmetry about a vertical mirror ?**

    (A) H **(B)** M **(C)** T **(D)** E

14. **Which of the following letter of the English alphabet does not have reflection symmetry about a horizontal mirror ?**

    (A) B **(B)** C **(C)** D **(D)** Y

15. **Which of the following letter of the English alphabet does not have reflection symmetry about both horizontal and vertical mirrors ?**

    (A) R **(B)** H **(C)** X **(D)** O

16. **Which of the following letter have neither a point symmetry nor a rotational symmetry of order 2 ?**

(A) N (B) C (C) H (D) S

17. **Which of the following alphabet has no line(s) of symmetry ?**

(A) K (B) D (C) O (D) Q

18. **The mirror image of R is _____.**

(A) Я (B) R (C) ꓤ (D) ꓤ

19. **A square and a rectangle have _____.**

(A) only one line of symmetry each
(B) two lines of symmetry each
(C) four lines of symmetry each
(D) an unequal number of lines of symmetry

20. **A rhombus has _____.**

(A) one line of symmetry
(B) two lines of symmetry
(C) four lines of symmetry
(D) no line of symmetry

21. **A parallelogram has _____.**

(A) no line of symmetry
(B) one line of symmetry
(C) the same number of lines of symmetry as the rhombus
(D) four lines of symmetry

22. **The capital letter 'S' in the English alphabet has _____.**

(A) no line of symmetry
(B) one line of symmetry
(C) two lines of symmetry
(D) infinite number of lines of symmetry

23. **Which of the following statement is true ?**

(A) A triangle can never have exactly two lines of symmetry
(B) A quadrilateral can never have exactly three lines of symmetry
(C) A regular polygon of *n* sides have *n* lines of symmetry
(D) All of these

24. **Which of the following figure have rotational symmetry of order more than 1 ?**

(A)  (B)  (C)  (D) All of these

25. **The order of rotational symmetry for the figure**

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

26. The order of rotational symmetry for the figure

(A) 3 (B) 4

(C) 5 (D) 6

27. The quadrilateral which have both line and rotational symmetry of order more than 2 is _____.

(A) Kite (B) Isosceles trapezium

(C) Square (D) Rhombus

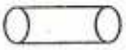
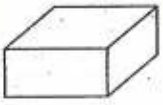
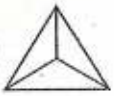
28. Which of the following figure shows a pair of rectangle ?

(A)  (B)  (C)  (D) 

29. Which of the following figure has less than 4 sides ?

(A)  (B)  (C)  (D) 

30. Which of the figure has four faces ?

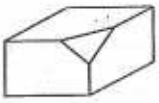
(A)  (B)  (C)  (D) 

31. How many edges does the given solid have ?

(A) 8 (B) 12

(C) 16 (D) 20

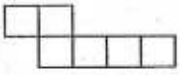
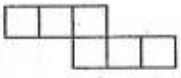
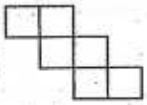
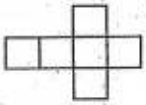
32. How many vertices does the given shape have ?



(A) 7 (B) 15

(C) 10 (D) 12

33. Which of the following net cannot be used to make cube ?

(A)  (B)  (C)  (D) 

34. Dice are cubes with dots on each face. Opposite faces of a die always have a total of seven dots on them. Which of the following net can be used to make the given dice (X) ?

(X)

(A)

	1			
3	2	4	5	
			6	

(B)

	2			
1	3	4	5	
			6	

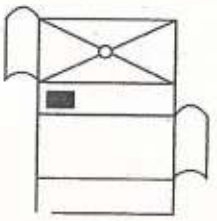
(C)

	3			
1	2	4	5	
			6	

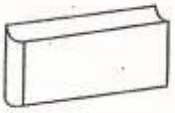
(D)

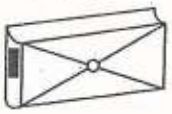
	3			
2	1	4	5	
			6	

35. **Which of the following finished patterns can be obtained from the piece of adjoining cardboard (Z) ?**

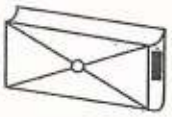


(Z)

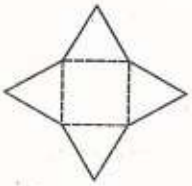
(A) 

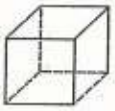
(B) 

(C) 

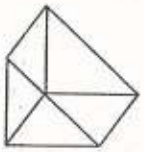
(D) 

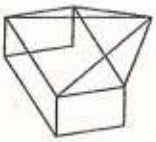
36. **Which figure could be made if the piece of card board shown below is folded along the dotted lines ?**



(A) 

(B) 

(C) 

(D) 

37. Match the nets with appropriate solids.

(*a*) 

(*b*) 

(*c*) 

(*d*) 

(*i*) 

(*ii*) 

(*iii*) 

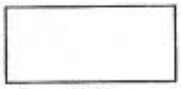
(*iv*) 

(A) (*a*) → (*i*), (*b*) → (*ii*), (*c*) → (*iii*), (*d*) → (*iv*) **(B)** (*a*) → (*iii*), (*b*) → (*i*), (*c*) → (*iv*), (*d*) → (*i*)

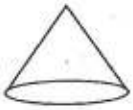
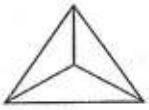
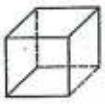
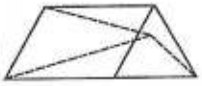
(C) (*a*) → (*ii*), (*b*) → (*iii*), (*c*) → (*iv*), (*d*) → (*i*) **(D)** (*a*) → (*i*), (*b*) → (*iii*), (*c*) → (*ii*), (*d*) → (*iv*)

38.  when turned to a different position cannot be the figure after it is turned ?

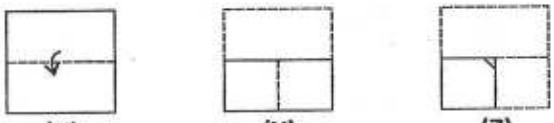
(A)  (B)  (C)  (D) 

39. Which solid represents these views  ?

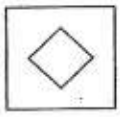
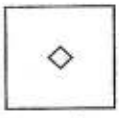
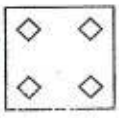
Side Front

(A)  (B)  (C)  (D) 

40. A paper is folded as shown in the figures X, Y and Z. The way which the folded paper is cut is shown in Z. From the given alternatives A, B, C and D, choose the one showing the unfolded design of Z.



(X) (Y) (Z)

(A)  (B)  (C)  (D) 

41. After rotating a figure by 120° about its centre, it attains the original form. At what other angle will this happen for the figure ?

(A) 150° (B) 180° (C) 240° (D) 270°

42. Identify the top view of the shape  .

(A)  (B)  (C)  (D) None of these

43. Identify the side view of the solid  .

(A)  (B)  (C)  (D) None of these

44. **A cube whose adjacent faces are coloured is cut into 64 identical small cubes. How many of these small cubes are not coloured at all ?**

(A) 60 **(B)** 48 **(C)** 36 **(D)** 24

45. **In a dice *a*, *b*, *c* and *d* are written on the adjacent faces, in a clockwise order and *e* and *f* at the top and bottom. When *c* is at the top, what will be at the bottom ?**

(A) *a* **(B)** *b* **(C)** *c* **(D)** Insufficient data

46. **A dice is thrown three times and its three different positions are given below. What is the number on the face opposite the face showing three ?**

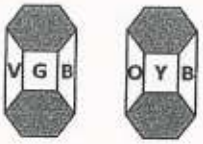
(A) 1 (B) 4 (C) 5 (D) 6

47. **How many small cubes are required to complete the big cube ?**

(A) 20 **(B)** 19

(C) 18 **(D)** 17

48. **The lateral sides of a block in the shape of a six-sided prism is painted in Violet, Blue, Green, Yellow, Orange and Red. Two of its positions are shown in the adjoining figure.**

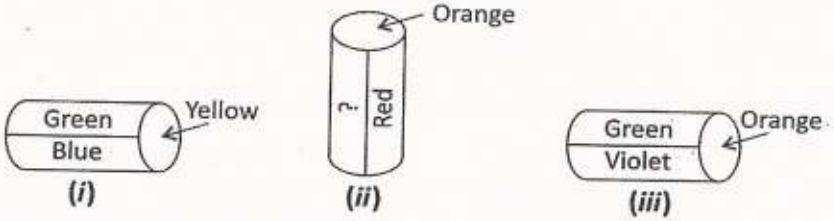


When the block is laid as in the adjoining figure, then what are the colours adjacent to the Red side ?

(A) Yellow and Orange **(B)** Yellow and Blue

(C) Violet and Yellow **(D)** Violet and Orange

49. **A cylinder is painted in 6 colours — Green, Blue, Yellow, Violet, Red and Orange. Three positions are shown below :**



What is the colour in the empty space ?

(A) Blue **(B)** Green **(C)** Violet **(D)** Yellow

50. **The water image of P is _____.**

(A) P **(B)** b **(C)** d **(D)** q

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15. Everyday Mathematics

Tick the correct option from the four options given below

1. **The ratio of oil paintings to water colours in an art show is 4 to 3. There are 24 water colours in the art show. How many oil paintings are in the art show ?**

   (A) 18 **(B)** 32 **(C)** 72 **(D)** 96

2. **The expression below can be used to calculate Deepak's total cost if he buys 2 kg of macaroni salad and 3 kg of carrot at a shop. The price of each salad is ₹ 5.29 per kg.**

   2(5.29) + 3(5.29)

   What is another way to calculate Deepak's total cost ?

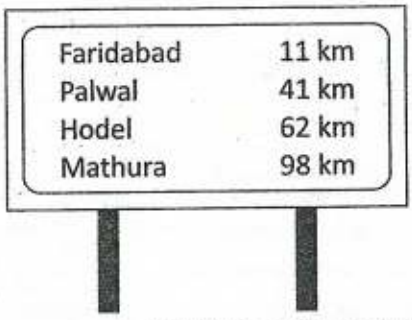
   (A) 5 + 5.29 **(B)** 5.29(2 + 3) **(C)** 5(5.29 + 5.29) **(D)** (2 + 5.29)(3 + 5.29)

3. **A rock climber starts at an elevation of 4425 feet. After 2.5 hours his elevation is 3300 feet. What is the average change in elevation, in feet per hour, of the rock climber ?**

   (A) – 1770 feet per hour **(B)** – 1320 feet per hour

   (C) – 450 feet per hour **(D)** – 45 feet per hour

4. **Satish is driving at a speed of 50 km/h. At 2:00 he sees the following sign.**



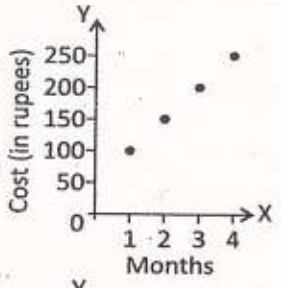
   Satish continues at the same speed. At 2:30 how far Hodel will be ?

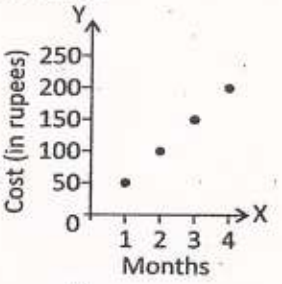
   (A) 12 km **(B)** 25 km **(C)** 26 km **(D)** 37 km

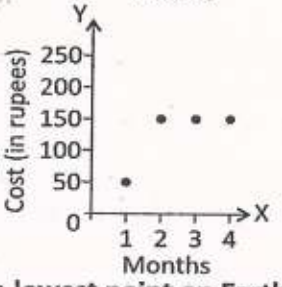
5. **A sporting goods store is offering a 10% discount on in-line skates that normally cost ₹ 110.99. How much will the in-line skates cost with the discount, not including tax ?**

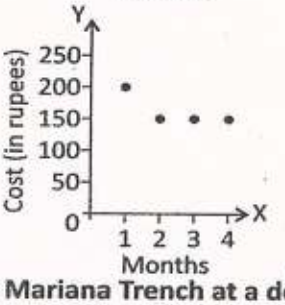
   (A) ₹ 99.89 **(B)** ₹ 99.99 **(C)** ₹ 100.99 **(D)** ₹ 109.88

6. **A DVD rental club charges an initial start up fee of ₹ 50 plus a monthly fee of ₹ 150 to rent 3 DVDs per month. Club and renting 3DVDs each month ?**

(A)


(B)


(C)


(D)


7. **The lowest point on Earth is the bottom of the Mariana Trench at a depth of 35840 feet below sea level. The highest point on Earth is the summit of Mt. Everest at a height of 29028 feet above sea level. Which of the following is the best estimate of the distance between the lowest and highest points on Earth ?**

(A) 6000 feet **(B)** 7000 feet **(C)** 64000 feet **(D)** 65000 feet

8. **Amrita needs to calculate 14% of 50. She does so by computing it in the following way :**

$$50 \times \frac{14}{100}$$

Which of the following methods could Amrita also use to determine correctly the percentage ?

(A) $\frac{14}{(100-50)}$ **(B)** $50 \div 14$ **(C)** $\frac{(14 \div 50)}{100}$ **(D)** 50×0.14

9. **Which of the following mathematical expressions is equivalent to $\frac{bh}{2}$?**

(A) $\frac{b}{2} \times \frac{h}{2}$ **(B)** $2(b \times h)$ **(C)** $\frac{b}{2} + \frac{h}{2}$ **(D)** $\frac{1}{2}(b \times h)$

10. **A recipe for punch says to mix 3 parts ginger ale with 5 parts of fruit juice. Which mixture satisfies this 3 : 5 ratio ?**

(A) 4 cups of ginger ale, 6 cups of fruit juice

(B) 6 litres of ginger ale, 8 litres of fruit juice

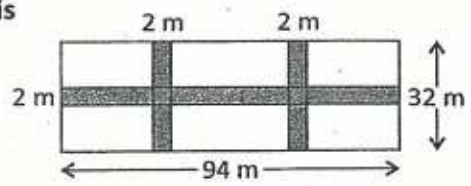
(C) 6 quarts of ginger ale, 10 quarts of fruit juice

(D) 8 glass of ginger ale, 15 glass of fruit juice

11. If $5\sqrt{5} \times 5^3 \div 5^{-\frac{3}{2}} = 5^{a+2}$, then the value of a is equal to _____.

(A) 4 (B) 5 (C) 6 (D) 8

12. The area of the roads in the adjoining figure is _____.



(A) 316 m^2 (B) 312 m^2

(C) 308 m^2 (D) 324 m^2

13. In a 100 m race, A covers the distance in 36 seconds and B in 45 seconds. In this race A beats B by _____.

(A) 20 m (B) 25 m (C) 22.5 m (D) 9 m

14. Vikas bought paper sheets for ₹ 7200 and spent ₹ 200 on transport. Paying ₹ 600, he had 330 boxes made, which he sold at ₹ 28 each. His profit percentage is _____.

(A) 15.5 (B) 40 (C) 60 (D) none of these

15. A cricket team won 40% of the total number of matches it played during a year. If it lost 50% of the matches played and 20 matches were drawn, the total number of matches played by the team during the year was _____.

(A) 200 (B) 100 (C) 50 (D) 40

16. The current birth rate per thousand is 32, whereas corresponding death rate is 11 per thousand. The net growth rate in terms of population increase in per cent is given by _____.

(A) 0.021% (B) 0.0021% (C) 21% (D) 2.1%

17. Water tax is increased by 20% but its consumption is decreased by 20%. Then, the increase or decrease in the expenditure of the money is _____.

(A) No change (B) 5% decrease (C) 4% increase (D) 4% decrease

18. If m and n are whole numbers such that $m^n = 121$, then the value of $(m-1)^{n+1}$ is _____.

(A) 1 (B) 10 (C) 121 (D) 1000

19. The average age of 12 students is 20 years. If the age of one more student is included, the average decreases by 1. What is the age of the new student ?

(A) 5 years (B) 7 years (C) 9 years (D) 11 years

20. If one-seventh of a number exceeds its eleventh part by 100, then the number is _____.

(A) 770 (B) 1100 (C) 1825 (D) 1925

21. The mean temperature of Monday to Wednesday was 37°C and of Tuesday to Thursday was 34°C. If the temperature on Thursday was $\frac{4}{5}$ th that of Monday, the temperature on Thursday was _____.

(A) 36.5°C (B) 36°C (C) 35.5°C (D) 34°C

22. The value of $\cfrac{1}{3+\cfrac{2}{2+\cfrac{1}{2}}}$ is _____.

(A) $\frac{5}{19}$ (B) $\frac{19}{5}$ (C) $\frac{4}{5}$ (D) $\frac{5}{4}$

23. If 12276 ÷ 1.55 = 7920, the value of 122.76 ÷ 15.5 is _____.

(A) 7.092 (B) 7.92 (C) 79.02 (D) 79.2

24. Choose any three non-zero different numbers each less than 10. Make all possible 2-digit numbers from these three numbers, find out the sum of these. Divide this sum by the sum of the original numbers. What is your result ?

(A) 11 (B) 22 (C) 33 (D) 44

25. A diagonal of a rectangle is inclined at an angle of 25° to one side of the rectangle. The obtuse angle between the diagonals is _____.

(A) 155° (B) 130° (C) 125° (D) 140°

26. There are some benches in a classroom. If 4 students sit on each bench, then 3 benches are left unoccupied. However, if 3 students sit on each bench, 3 students are left standing. How many students are there in the class ?

(A) 36 (B) 48 (C) 56 (D) 64

27. There are deer and peacocks in a zoo. By counting heads they are 80. The number of their legs is 200. How many peacocks are there ?

(A) 20 (B) 30 (C) 50 (D) 60

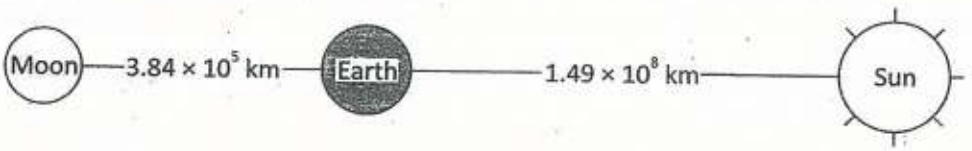
28. If two typists can type two pages in 4 minutes, how many typists will it take to type 10 pages in 20 minutes ?

(A) 2 (B) 4 (C) 8 (D) 16

29. If P is a point on a line called XY (X is the left most point and Y is the right most point), which of these must be true ?

(A) XP = PY (B) XP = XY – PY (C) XY = XP – PY (D) PY = XP + PY

30. The Earth is about 1.49×10^8 km from the Sun and about 3.84×10^5 km away from the Moon. The distance from the Earth to the Sun is about _____ times the distance from the Earth to the Moon.



(A) 300 (B) 320 (C) 388 (D) 400

International Olympiad Foundation

16. Analytical and Logical Reasoning

Tick the correct option from the four options given below

1. Replace the question mark (?) in the given series :

   $4, 6, 9, 13\frac{1}{2}, ?$

   with a correct alternative so that it will continue the same pattern.

   (A) $17\frac{1}{2}$ (B) 19 (C) $20\frac{1}{4}$ (D) $22\frac{3}{4}$

2. Identify the wrong number in the series :

   69, 55, 26, 13, 5

   (A) 5 (B) 13 (C) 26 (D) 55

3. Find the next term in the alpha-numeric series :

   ZIA, X2D, V6G, T21J, R88M, P445P, ?

   (A) N2676S (B) N2676T (C) T2670N (D) T2676N

4. In the series *ab* __ __ *baa* __ __ *ab* __, some of the letters are missing which are given in that order as one of the alternatives choose the correct one.

   (A) *aaaaa* (B) *aabaa* (C) *aabab* (D) *baabb*

5. *Part* is related to *Whole* in the same way as *Arc* is related to _____.

   (A) Trapezium (B) Circle (C) Triangle (D) Rectangle

6. Select the pair in which the numbers are similarly related as in the given pair : (5 : 35)

   (A) (7 : 77) (B) (9 : 45) (C) (11 : 55) (D) (3 : 24)

7. Select the pair in which the letter groups are similarly related as in given pair : (BC : FG).

   (A) (PQ : ST) (B) (HI : LM) (C) (AD : PQ) (D) (JK : LM)

8. In a certain code, MUTE is written as LUTE and GATE is written as FATE, then how will CLUE be written in that code ?

   (A) BLUE (B) GLUE (C) FLUE (D) SLUE

9. If E = 5, PEN = 35, then PAGE = ?

(A) 27 (B) 28 (C) 29 (D) 36

10. In a certain code language, '617' means *'sweet and hot'*, '735' means *'coffee is sweet'* and '263' means *'tea is hot'*. Which of the following would mean *'coffee is hot'* ?

(A) 731 (B) 536 (C) 367 (D) 753

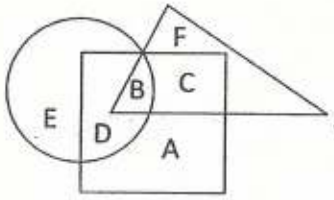
11. If X is the brother of the son of Y's son, how is X related to Y ?

(A) Son (B) Brother (C) Uncle (D) Grandson

12. A rat runs 20 m towards East and turns to right, runs 10 m and turns to right, runs 9 m and again turns to left, runs 5 m and then turns to left, runs 12 m and finally turns to left and runs 6 m. Now, which direction is the rat facing ?

(A) East (B) West (C) North (D) South

13. Three classes of population are represented by three figures. The triangle represents the school teachers, the square represents the married persons and the circle represents the persons living in joint families.



The married persons living in joint families but not working as school teachers are represented by

(A) C (B) F (C) D (D) A

14. In the series :

6 4 1 2 2 8 7 4 2 1 5 3 8 6 2 1 7 1 4 1 3 2 8 6

how many pairs of successive numbers have a difference of 2 each ?

(A) Four (B) Five (C) Six (D) Seven

15. In a row of 21 girls, when Monika was shifted by four places towards right, she became 12th from the left end. What was her earlier position from the right end of the row ?

(A) 10th (B) 11th (C) 12th (D) 14th

16. If the first day of the year (other than the leap year) was Friday, then which was the last day of that year ?

(A) Monday (B) Sunday (C) Saturday (D) Friday

17. If '+' means '÷', '÷' means '–', '–' means '×', '×' means '+', then

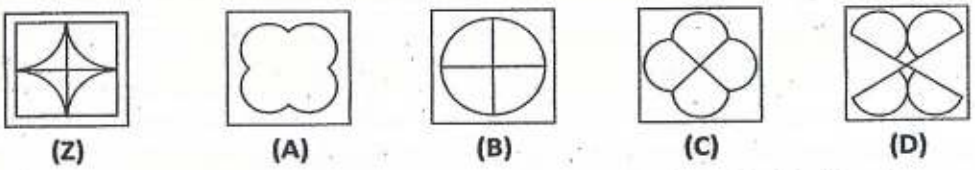
$12 + 6 \div 3 - 2 \times 8 = ?$

(A) – 2 (B) 2 (C) 4 (D) 8

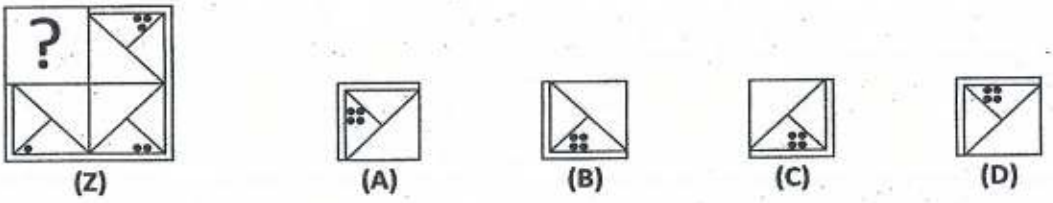
18. If A > B, B > C and C > D, then which of the following conclusions is definitely wrong ?

(A) A > D (B) A > C (C) D > A (D) B > D

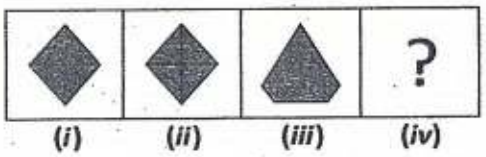
19. Choose the figure from alternatives, which represents the rearrangement of the parts of the figure Z.

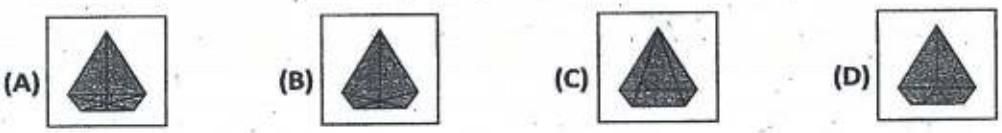


20. Select a figure from the alternatives, which when placed in the blank space of figure Z would complete the pattern.

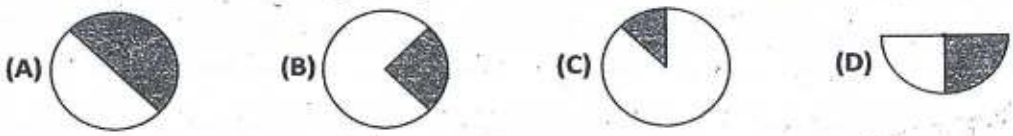


21. Figures (*i*) and (*ii*) are related in a particular manner. Establish the same relationship between figures (*iii*) and (*iv*) by choosing a figure from four alternatives.

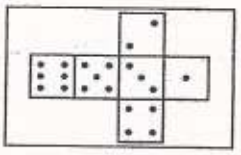




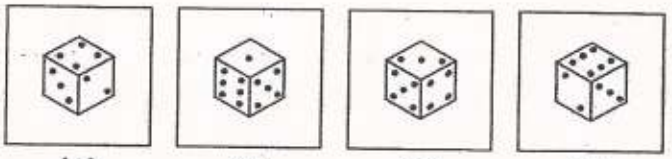
22. In a certain office, $\frac{1}{2}$ of the employees are clerks. $\frac{1}{2}$ of the employees who do not work as clerk are working as assistants. Select the appropriate figure in which shaded region is best representing people working as assistants.



23. Which is the correct drawing of the cut out Z.

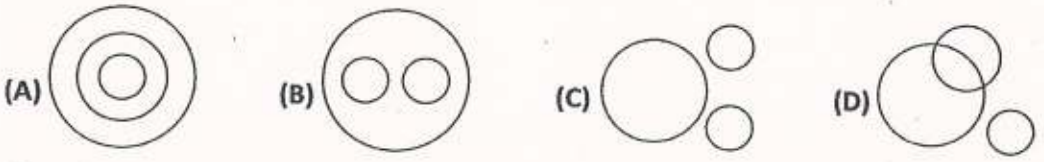


(Z)



(A) (B) (C) (D)

24. Which figure will best represent the relationship amongst vegetables, potato and cabbage ?



(A) (B) (C) (D)

25. x is a digit such that $x59$ is subtracted from $95x$, then the resulting number again consists of the digits x, 5 and 9 only in some order. The value of x is _____.

(A) 4 (B) 6 (C) 7 (D) 8

26. There are 1089 students in a school. One-ninth of the students wear only glove and half of the others do not wear gloves. How many gloves are being used by the students ?

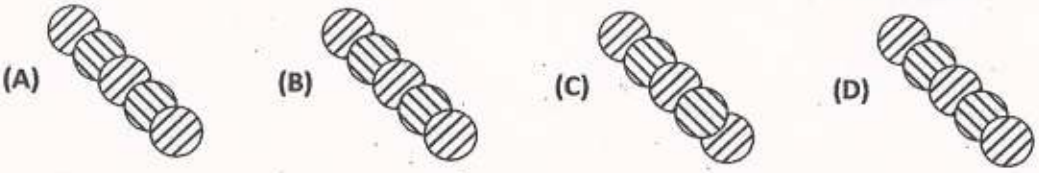
(A) 121 (B) 484 (C) 968 (D) 1089

27. What is the number of squares in the given figure ?

(A) 12 (B) 13

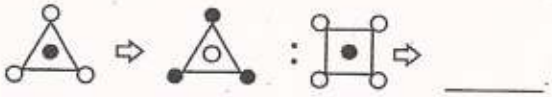
(C) 14 (D) 15

28. Which is odd one out ?



(A) (B) (C) (D)

29. Which figure out of A, B, C or D bears the same relation with the third figure as the second bears with the first on the left ?



_____

(A) (B) (C) (D)

30. Four prime numbers are in ascending order of their magnitudes. The product of the first three is 385 and that of last three is 1001. The largest given prime number is _____.

(A) 11 (B) 13 (C) 17 (D) 19

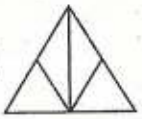
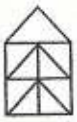
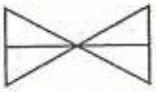
31. In the sequence of numbers 9, 12, 11, 14, 13, X, 15, the value of X is _____.

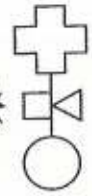
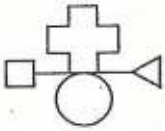
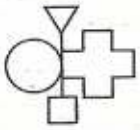
(A) 10 (B) 12 (C) 16 (D) 17

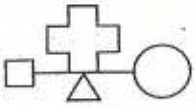
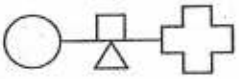
32. In a 100 m race, A covers the distance in 36 seconds and B in 45 seconds. In this race A beats B by _____.

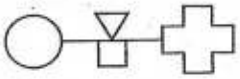
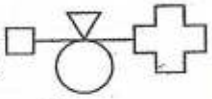
(A) 20 m (B) 25 m (C) 22.5 m (D) 9 m

33. Which of these contains the most triangles ?

(A)  (B)  (C)  (D) 

34.  is to  as  is to _____

(A)  (B) 

(C)  (D) 

35. If the given clock was turned 90 degrees anti-clockwise, which of the option below would appear ?

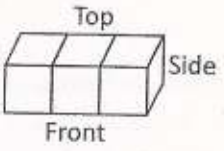
(A)  (B)  (C)  (D) 

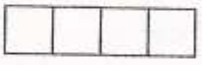
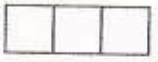
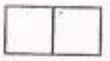
International Olympiad Foundation

Diagnostic Test

In each of the following questions, four options are given but only one is correct. Select the correct option and mark your choice in the anser-sheet printed at the end of the test.

1. The figure given alongside is made of 3 small cubes. Which represents the side view of the figure ?



(A)  (B)  (C)  (D) 

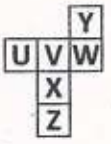
2. Pointing towards a person, a man said to a woman "His mother is the only daughter of your father." How is the woman related to that person ?

(A) Mother (B) Daughter (C) Sister (D) Wife

3. *Gravity* is related to *Pull* in the same way as Magnetism is related to _____.

(A) Repulsion (B) Separation (C) Attraction (D) Push

4. A sheet of paper containing six joined squares labelled as shown in the figure is folded along the edges of the squares to form a cube. The label of the face opposite the face labelled X is _____.



(A) Y (B) Z (C) V (D) U

5. A boy started from his home. After cycling for 5 km towards east, he turned to his right and cycled for 8 km. Then again he turned to his right and cycled for 10 km. In which direction was he from his house ?

(A) West (B) South-west (C) North (D) North-west

6. What is the smallest number of ducks that could swim in this formation – two ducks in front of a duck, two ducks behind a duck and a duck between two ducks ?

(A) 3 (B) 5 (C) 7 (D) 9

7. A man has ₹ 480 in the denominations of one-rupee notes, five-rupee notes and ten-rupee notes. The number of notes of each denomination is equal. What is the total number of notes that he has ?

(A) 45 (B) 60 (C) 75 (D) 90

8. Seven poles A, B, C, D, E, F and G are put in such a way that the distance between the next two decreases by 1 metre. The distance between the first two poles, A and B is 10 metres. What is the distance between the first pole A and the last pole G ?

(A) 40 m (B) 45 m (C) 49 m (D) 50 m

9. If ÷ means +, – means ÷, × means – and + means ×, then $\frac{(36 \times 4) - 8 \times 4}{4 + 8 \times 2 + 16 \div 1} = ?$

(A) 0 (B) 8 (C) 12 (D) 16

10. In an examination, a student scores 4 marks for every correct answer and loses 1 mark for every wrong answer. If he attempts in all 60 questions and secures 130 marks, the number of questions he attempts correctly, is _____.

(A) 35 (B) 38 (C) 40 (D) 42

11. Reena is twice as old as Sunita. Three years ago, she was three times as old as Sunita. How old is Reena now ?

(A) 6 years (B) 7 years (C) 8 years (D) 12 years

12. In a Δ ABC, $\angle A = 90°$ and D is the mid-point of AC. The value of $BC^2 - BD^2$ is equal to _____.

(A) AD^2 (B) $2AD^2$ (C) $3AD^2$ (D) $4AD^2$

13. Any cyclic parallelogram having unequal adjacent sides is necessarily a _____.

(A) square (B) rectangle (C) rhombus (D) trapezium

14. The value of $9x^2 + 49y^2 - 42xy$ when $x = 15$ and $y = 3$ is _____.

(A) 636 (B) 576 (C) 386 (D) 456

15. In the product $\begin{array}{r} P2 \\ \times\ 7P \\ \hline 6396 \end{array}$, P is a digit of value _____.

(A) 3 (B) 5 (C) 6 (D) 8

16. Which shows 833000 written in scientific notation ?

(A) 8.33×10^3 (B) 8.33×10^4 (C) 8.33×10^5 (D) 8.33×10^6

17.

18. The number of prime factors of $(6)^{10} \times (7)^{17} \times (55)^{27}$ is _____.

(A) 54 (B) 64 (C) 81 (D) 91

19. $0.04 \times ? = 0.000016$. Then ? mark should be replaced by _____.

(A) 4 (B) 0.04 (C) 0.0004 (D) none of these

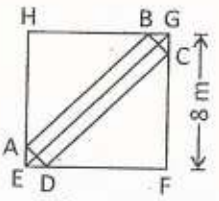
20. If a and b are positive integers such that $a^b = 125$, then $(a-b)^{a+b-4}$ is equal to _____.

(A) 16 (B) 25 (C) 28 (D) 30

21. An electric contractor purchases a certain amount of wire. 10% of which is stolen. After using 85% of the remainder, he had 54 m of the wire left. How much wire did he purchase ?

(A) 300 m (B) 350 m (C) 375 m (D) 400 m

22. A rectangular plank $\sqrt{2}$ metres wide is placed on square lawn parallel to its diagonal as shown in the adjoining figure. What is the area of the plank ?



(A) 14 sq. m (B) 12 sq. m

(C) $7\sqrt{2}$ sq. m (D) $14\sqrt{2}$ sq. m

23. In which of the following cases a triangle ABC, with base BC given, can be constructed ?

(A) $\angle$B and $\angle$C acute angles (B) $\angle$B and $\angle$C right angles

(C) $\angle$B and $\angle$C obtuse angles (D) $\angle$B obtuse and $\angle$C right angles

24. Gaurav left a 15% tip on a bill of ₹ 74. What is the total about he paid for the bill and tip ?

(A) ₹ 74.15 (B) ₹ 75.50 (C) ₹ 85.10 (D) ₹ 89.00

25. Which of the following expressions have a value of 27 ?

(A) $-|12-53+14|$ (B) $|12|+|-53|+|14|$

(C) $|12-53+14|$ (D) $|-12|-|53|-|-14|$

What is the probability that Arun will get 6 on his spin ?

(A) $\frac{1}{8}$ (B) $\frac{1}{6}$

(C) $\frac{6}{8}$ (D) $\frac{7}{8}$

26. If $p = \frac{3}{5}$, $q = \frac{7}{9}$ and $r = \frac{5}{7}$, then

(A) $p < q < r$ (B) $q < r < p$ (C) $p < r < q$ (D) $r < q < p$

27. A dealer marks his goods 20% above cost price. He then allows some discount on it and makes a profit of 8%. The rate of discount is _____.

(A) 4% (B) 6% (C) 10% (D) 12%

28. **Three numbers are in the ratio of 3 : 4 : 6 and their product is 1944. The largest of these numbers is _____.**
(A) 6 **(B)** 12 **(C)** 18 **(D)** none of these

29. **If $2^{2x-1} = \frac{1}{8^{x-3}}$, then the value of x is _____.**
(A) 3 **(B)** 2 **(C)** 0 **(D)** -2

30. **A runs $1\frac{2}{3}$ times as fast as B. If A gives B a start of 80 m, how far must the winning post be so that A and B might reach it the same time ?**
(A) 200 m **(B)** 300 m **(C)** 270 m **(D)** 160 m

Darken your choice with HB pencil

1. Ⓐ Ⓑ Ⓒ Ⓓ	2. Ⓐ Ⓑ Ⓒ Ⓓ	3. Ⓐ Ⓑ Ⓒ Ⓓ	4. Ⓐ Ⓑ Ⓒ Ⓓ
5. Ⓐ Ⓑ Ⓒ Ⓓ	6. Ⓐ Ⓑ Ⓒ Ⓓ	7. Ⓐ Ⓑ Ⓒ Ⓓ	8. Ⓐ Ⓑ Ⓒ Ⓓ
9. Ⓐ Ⓑ Ⓒ Ⓓ	10. Ⓐ Ⓑ Ⓒ Ⓓ	11. Ⓐ Ⓑ Ⓒ Ⓓ	12. Ⓐ Ⓑ Ⓒ Ⓓ
13. Ⓐ Ⓑ Ⓒ Ⓓ	14. Ⓐ Ⓑ Ⓒ Ⓓ	15. Ⓐ Ⓑ Ⓒ Ⓓ	16. Ⓐ Ⓑ Ⓒ Ⓓ
17. Ⓐ Ⓑ Ⓒ Ⓓ	18. Ⓐ Ⓑ Ⓒ Ⓓ	19. Ⓐ Ⓑ Ⓒ Ⓓ	20. Ⓐ Ⓑ Ⓒ Ⓓ
21. Ⓐ Ⓑ Ⓒ Ⓓ	22. Ⓐ Ⓑ Ⓒ Ⓓ	23. Ⓐ Ⓑ Ⓒ Ⓓ	24. Ⓐ Ⓑ Ⓒ Ⓓ
25. Ⓐ Ⓑ Ⓒ Ⓓ	26. Ⓐ Ⓑ Ⓒ Ⓓ	27. Ⓐ Ⓑ Ⓒ Ⓓ	28. Ⓐ Ⓑ Ⓒ Ⓓ
29. Ⓐ Ⓑ Ⓒ Ⓓ	30. Ⓐ Ⓑ Ⓒ Ⓓ		

Answers

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1. Integers

1. (B)	2. (A)	3. (A)	4. (C)	5. (C)	6. (A)	7. (A)	8. (C)	9. (A)	10. (A)
11. (A)	12. (C)	13. (A)	14. (C)	15. (D)	16. (B)	17. (D)	18. (D)	19. (B)	20. (A)
21. (C)	22. (D)	23. (C)	24. (B)	25. (C)	26. (B)	27. (D)	28. (D)	29. (B)	30. (A)
31. (C)	32. (A)	33. (B)	34. (C)	35. (B)					

2. Fractions and Decimals

1. (D)	2. (D)	3. (D)	4. (C)	5. (A)	6. (B)	7. (B)	8. (A)	9. (B)	10. (C)
11. (D)	12. (B)	13. (A)	14. (B)	15. (D)	16. (A)	17. (C)	18. (A)	19. (B)	20. (D)
21. (A)	22. (C)	23. (C)	24. (B)	25. (D)	26. (A)	27. (D)	28. (A)	29. (B)	30. (B)
31. (B)	32. (C)	33. (A)	34. (D)	35. (C)	36. (B)	37. (C)	38. (C)	39. (C)	40. (B)
41. (B)	42. (D)	43. (B)	44. (B)	45. (B)	46. (C)	47. (D)	48. (A)	49. (C)	50. (B)

3. Data Handling

1. (D)	2. (C)	3. (B)	4. (D)	5. (C)	6. (B)	7. (A)	8. (D)	9. (B)	10. (D)
11. (B)	12. (D)	13. (C)	14. (C)	15. (B)	16. (C)	17. (B)	18. (A)	19. (A)	20. (B)
21. (C)	22. (A)	23. (A)	24. (B)	25. (D)	26. (A)	27. (C)	28. (C)	29. (B)	30. (B)
31. (C)	32. (B)	33. (C)	34. (D)	35. (B)	36. (D)	37. (D)	38. (B)	39. (A)	40. (A)
41. (C)	42. (D)	43. (D)	44. (C)	45. (B)	46. (B)	47. (B)	48. (B)	49. (B)	50. (C)

4. Algebraic Expressions

1. (A)	2. (B)	3. (C)	4. (D)	5. (D)	6. (C)	7. (D)	8. (C)	9. (B)	10. (A)
11. (B)	12. (A)	13. (C)	14. (B)	15. (A)	16. (A)	17. (B)	18. (C)	19. (D)	20. (A)
21. (B)	22. (A)	23. (B)	24. (D)	25. (D)	26. (C)	27. (D)	28. (A)	29. (A)	30. (D)
31. (C)	32. (A)	33. (D)	34. (B)	35. (A)	36. (C)	37. (A)	38. (B)	39. (B)	40. (D)
41. (D)	42. (D)	43. (C)							

5. Linear Equations

1. (B)	2. (A)	3. (D)	4. (C)	5. (C)	6. (B)	7. (C)	8. (D)	9. (C)	10. (B)
11. (C)	12. (A)	13. (C)	14. (C)	15. (A)	16. (C)	17. (C)	18. (B)	19. (A)	20. (C)
21. (B)	22. (D)	23. (C)	24. (D)	25. (C)	26. (A)	27. (D)	28. (A)	29. (D)	30. (A)
31. (D)	32. (B)	33. (A)	34. (C)	35. (C)	36. (C)	37. (B)	38. (A)	39. (A)	40. (B)
41. (A)	42. (C)	43. (D)	44. (D)	45. (A)	46. (D)	47. (A)	48. (B)	49. (A)	50. (C)

6. Lines and Angles

1. (B)	2. (C)	3. (A)	4. (D)	5. (A)	6. (B)	7. (B)	8. (B)	9. (A)	10. (A)
11. (C)	12. (A)	13. (B)	14. (C)	15. (D)	16. (D)	17. (D)	18. (B)	19. (C)	20. (A)
21. (B)	22. (A)	23. (C)	24. (A)	25. (C)	26. (D)	27. (D)	28. (D)	29. (B)	30. (C)
31. (C)	32. (B)	33. (A)	34. (C)	35. (A)	36. (B)	37. (A)			

7. The Triangle and its Properties

1. (C)	2. (B)	3. (C)	4. (B)	5. (D)	6. (A)	7. (D)	8. (D)	9. (C)	10. (B)
11. (C)	12. (A)	13. (B)	14. (C)	15. (C)	16. (B)	17. (D)	18. (B)	19. (A)	20. (B)
21. (A)	22. (C)	23. (A)	24. (D)	25. (A)	26. (B)	27. (B)	28. (B)	29. (D)	30. (B)
31. (D)	32. (C)	33. (D)	34. (B)	35. (C)	36. (B)	37. (C)	38. (C)	39. (B)	40. (A)
41. (C)	42. (C)	43. (D)	44. (A)	45. (B)	46. (C)	47. (B)	48. (C)	49. (B)	50. (C)

8. Congruence of Triangles

1. (A)	2. (C)	3. (B)	4. (C)	5. (A)	6. (D)	7. (B)	8. (D)	9. (C)	10. (B)
11. (C)	12. (A)	13. (A)	14. (A)	15. (D)	16. (D)	17. (D)	18. (A)	19. (A)	20. (D)

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9. Practical Geometry

1. (B)	2. (A)	3. (C)	4. (C)	5. (C)	6. (C)	7. (A)	8. (B)	9. (B)	10. (C)
11. (B)	12. (A)	13. (D)	14. (C)	15. (B)	16. (A)	17. (A)	18. (B)	19. (A)	20. (D)

10. Comparing Quantities

1. (C)	2. (C)	3. (B)	4. (C)	5. (B)	6. (D)	7. (C)	8. (A)	9. (B)	10. (A)
11. (B)	12. (A)	13. (B)	14. (D)	15. (C)	16. (B)	17. (D)	18. (A)	19. (C)	20. (A)
21. (B)	22. (B)	23. (C)	24. (B)	25. (B)	26. (A)	27. (C)	28. (C)	29. (A)	30. (C)
31. (C)	32. (C)	33. (A)	34. (B)	35. (C)	36. (B)	37. (B)	38. (A)	39. (A)	40. (A)
41. (D)	42. (B)	43. (A)	44. (C)	45. (D)					

11. Rational Numbers

1. (A)	2. (A)	3. (B)	4. (D)	5. (D)	6. (D)	7. (D)	8. (B)	9. (A)	10. (C)
11. (B)	12. (C)	13. (D)	14. (D)	15. (C)	16. (B)	17. (C)	18. (D)	19. (A)	20. (D)
21. (D)	22. (B)	23. (B)	24. (A)	25. (A)	26. (A)	27. (B)	28. (D)	29. (B)	30. (C)
31. (A)	32. (D)	33. (C)	34. (A)	35. (A)	36. (A)	37. (B)	38. (B)	39. (A)	40. (C)
41. (C)	42. (D)	43. (D)	44. (D)	45. (B)					

12. Exponents and Powers

1. (D)	2. (A)	3. (A)	4. (C)	5. (C)	6. (D)	7. (B)	8. (D)	9. (A)	10. (C)
11. (D)	12. (B)	13. (D)	14. (C)	15. (C)	16. (A)	17. (C)	18. (B)	19. (A)	20. (C)
21. (C)	22. (B)	23. (C)	24. (D)	25. (A)	26. (B)	27. (B)	28. (D)	29. (B)	30. (C)
31. (C)	32. (C)	33. (D)	34. (D)	35. (C)	36. (B)	37. (B)	38. (D)	39. (B)	40. (B)
41. (D)	42. (A)	43. (D)	44. (D)	45. (B)	46. (A)	47. (C)	48. (B)	49. (C)	50. (D)

13. Area and Perimeter

1. (C)	2. (A)	3. (D)	4. (C)	5. (A)	6. (D)	7. (D)	8. (B)	9. (D)	10. (B)
11. (D)	12. (D)	13. (D)	14. (A)	15. (D)	16. (B)	17. (B)	18. (B)	19. (C)	20. (D)
21. (D)	22. (A)	23. (D)	24. (C)	25. (C)	26. (A)	27. (B)	28. (A)	29. (C)	30. (D)
31. (B)	32. (A)	33. (A)	34. (C)	35. (A)	36. (A)	37. (A)	38. (A)	39. (B)	40. (B)
41. (B)	42. (D)	43. (B)	44. (B)	45. (B)					

14. Symmetry and Visualising Solids Shapes

1. (D)	2. (A)	3. (C)	4. (A)	5. (D)	6. (B)	7. (A)	8. (A)	9. (B)	10. (B)
11. (C)	12. (B)	13. (D)	14. (D)	15. (A)	16. (B)	17. (D)	18. (A)	19. (D)	20. (B)
21. (A)	22. (A)	23. (D)	24. (D)	25. (A)	26. (D)	27. (C)	28. (D)	29. (B)	30. (C)
31. (C)	32. (C)	33. (A)	34. (A)	35. (A)	36. (B)	37. (C)	38. (D)	39. (D)	40. (C)
41. (C)	42. (C)	43. (B)	44. (C)	45. (A)	46. (D)	47. (B)	48. (D)	49. (C)	50. (B)

15. Everyday Mathematics

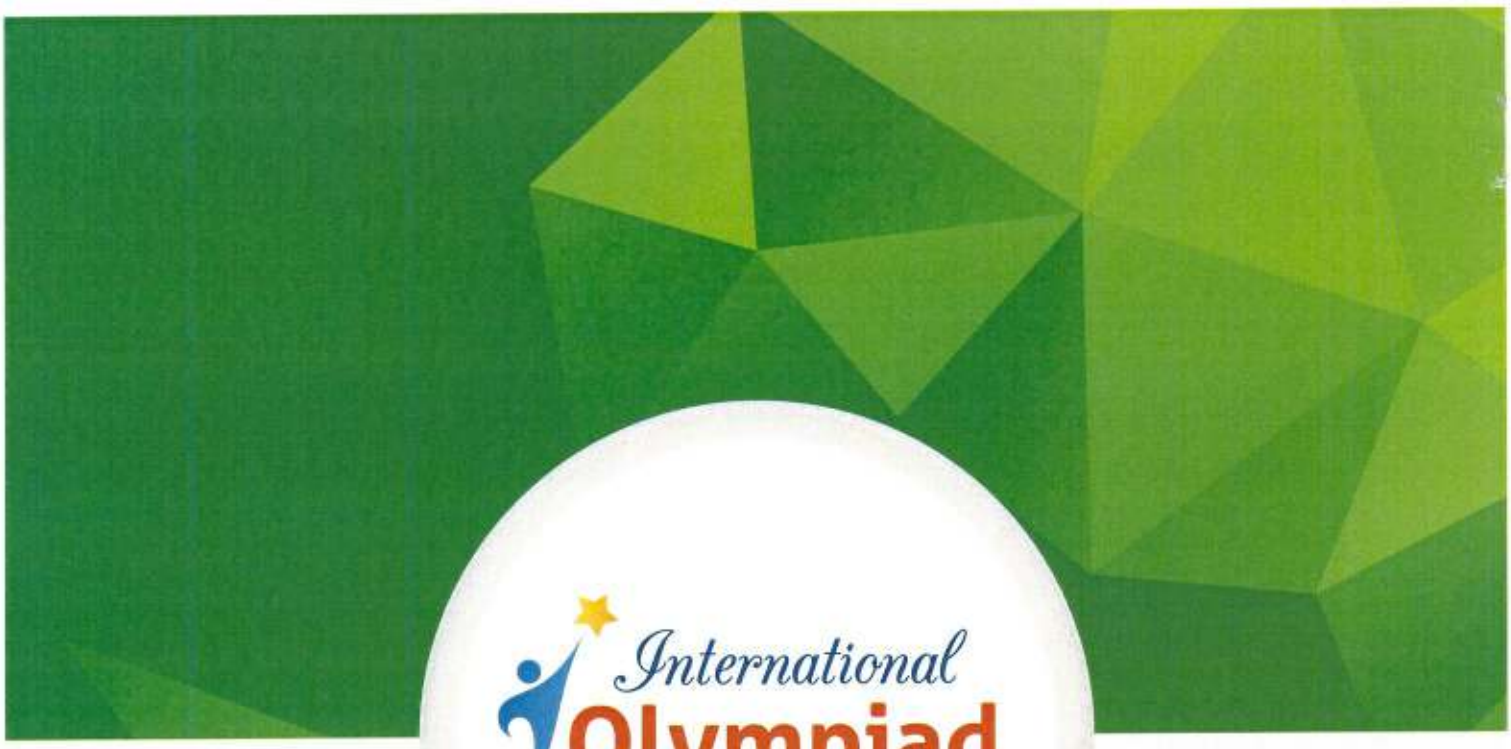
1. (B)	2. (B)	3. (C)	4. (D)	5. (A)	6. (C)	7. (D)	8. (D)	9. (D)	10. (C)
11. (A)	12. (C)	13. (A)	14. (A)	15. (A)	16. (D)	17. (D)	18. (D)	19. (B)	20. (D)
21. (B)	22. (A)	23. (B)	24. (B)	25. (B)	26. (B)	27. (D)	28. (A)	29. (B)	30. (C)

16. Analytical and Logical Reasoning

1. (C)	2. (A)	3. (A)	4. (B)	5. (B)	6. (A)	7. (B)	8. (A)	9. (C)	10. (B)
11. (D)	12. (C)	13. (C)	14. (C)	15. (D)	16. (B)	17. (C)	18. (C)	19. (B)	20. (D)
21. (C)	22. (D)	23. (C)	24. (B)	25. (A)	26. (D)	27. (D)	28. (C)	29. (C)	30. (B)
31. (C)	32. (A)	33. (B)	34. (C)	35. (A)					

Diagnostic Test

1. (A)	2. (D)	3. (B)	4. (A)	5. (C)	6. (A)	7. (D)	8. (B)	9. (A)	10. (B)
11. (D)	12. (C)	13. (B)	14. (B)	15. (D)	16. (C)	17. (D)	18. (C)	19. (A)	20. (D)
21. (A)	22. (A)	23. (C)	24. (C)	25. (A)	26. (C)	27. (C)	28. (C)	29. (B)	30. (A)



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