GRADE 7

SET - 2

MATHEMATICS OLYMPIAD

Official Guide

International Olympiad Foundation

Content

International Olympiad Foundation

1. Integers

Multiple Choice Questions

1. Every negative integer is _____ zero.

   (A) greater than
   (B) less than
   (C) greater than or equal to
   (D) less than or equal to

2. If the number of negative integers in a product is even, then the product is

   (A) positive
   (B) negative
   (C) positive or negative
   (D) can't say

3. Use the appropriate sign to make given expression true.

   $[+159 + 81 - 899]$ _____ $[(-831) + 81 + 91]$

   (A) >
   (B) <
   (C) =
   (D) None of these

4. Which of the following statements is correct?

   (A) All natural numbers are whole numbers, all whole numbers are integers.
   (B) All whole numbers are integers, all integers are natural numbers.
   (C) All integers are whole numbers, all natural numbers are integers.
   (D) All integers are whole numbers, all integers are natural numbers.

5. For how many integers 'p' between 30 and 40 is it true that $\frac{5}{p}, \frac{8}{p}$ and $\frac{13}{p}$ are all in the lowest terms?

   (A) 7
   (B) 5
   (C) 4
   (D) 3

6. Which of the following expressions are equal to –90?

(*i*) -6×15 (*ii*) $-80 - 12 - (-2)$

(*iii*) $-41 \times 2 - [(-2) \times (-4)]$ (*iv*) $100 + (-11 \times 2)$

(A) (i) only (B) (i) and (ii)

(C) (i), (ii) and (iii) (D) (i), (ii), (iii) and (iv)

7. Which of the following on simplification is/are not negative?

(A) $-8 - (-11) + 7$ (B) $7 + (-11) - 5$

(C) $-4 - 2 + (-8)$ (D) $-10 - (-22) + 4$

8. If $*$ is an operation such that for integers a and b we have $a * b = a \times b + (a \times a + b \times b)$, then the value of $3 \times (-5)$ is

(A) –19 (B) 19

(C) –31 (D) +31

9. Taking today as zero on the number line, if the day before yesterday is 17 January, then the date 3 days after tomorrow is

(A) 21 January (B) 22 January

(C) 24 January (D) 23 January

10. A monkey sits on a branch that is 25 feet above the ground. It swings up 10 feet, climbs up 6 feet more and then jumps down 13 feet. How far off the monkey is from ground?

(A) 16 feet (B) 22 feet

(C) 28 feet (D) 20 feet

11. The absolute value of $[(-42) \div 3] \div [(-18) \div (-9)]$ is

(A) 7 (B) –7

(C) $\frac{7}{81}$ (D) none of these

12. The value of $(-1)^{101}$ is

(A) –1 (B) 1

(C) 0 (D) both (A) and (B)

13. The set of integers is not closed under

(A) addition (B) multiplication

(C) subtraction (D) division

14. Sheer multiplied two numbers and got (–16) as the product. She then subtracted the second number from the first and got the answer as 10. The two numbers are

(A) 2, –8 (B) –2, 8

(C) 4, –4 (D) 4, –6

15. The sum of two negative integers is always less than the given integers.
(A) False (B) True
(C) Can't say (D) May be true or false

16. In a quiz, positive marks were given for correct answers and negative marks for incorrect answers. If Shalu's scores in six successive rounds were 30, –15, –11, –8, –8 and –20, what was her total score at the end?
(A) –12 (B) 12
(C) –8 (D) 8

17. The value of $(-100) \div [(-5) \times (-2) \times (-1)]$ is
(A) –40 (B) 10
(C) –10 (D) none of these

18. Which of the following are not true?
(A) Any integer divided by 0 gives 0.
(B) The product of 12 negative integers is a negative integer.
(C) The multiplicative identity for integers is 1.
(D) (–1) multiplied by itself for 100 times will give 1.

19. If $P = 14 - 25\ \{15 - (33 - 18)\}$ and $Q = [7\{15 + (-27) \div 3\}]$, then the value of $\frac{P+Q}{P-Q}$ is
(A) –5 (B) 5
(C) –2 (D) 2

20. A crow is sitting on a branch of a tree which is situated on the bank of a river and branch is $29\frac{2}{5}$ m above the water level of the river. If crow sees, the image of itself in the river, then the distance between crow and its image is (assume that the surface of water acts like a plane mirror)
(A) 58.8 m (B) 29.4 m
(C) 63.8 m (D) 53.8 m

21. The value of $(-37) \times (-7) + (-37) \times (-3) =$ _____.
(A) 148 (B) –148
(C) –370 (D) 370

22. Match the column I with column II.

Column I	**Column II**
(*a*) $-17 \times (-12) + (-17) \times 4$	(*i*) $a \div (-a)$
(*b*) $(-1)^{18}$	(*ii*) $-a$
(*c*) –1	(*iii*) Additive inverse of a
(*d*) 136	(*iv*) 1

(A) a — (*iii*), b — (*iv*), c — (*i*), d — (*ii*)
(B) a — (*iii*), b — (*i*), c — (*iv*), d — (*ii*)
(C) a — (*iii*), b — (*ii*), c — (*iv*), d — (*i*)
(D) None of these

23. During a fair, Suhani gains ₹ 2 on each pen and losses ₹ 1 on each pencil. She sells 50 pens and some pencils, losing ₹ 15 in all. How many pencils does she sell?

(A) 115 (B) 85

(C) 100 (D) None of these

24. If P and Q are the additive inverse of integers 5 and 6 respectively. Then the values of $|P| + |Q| + |-P| + |-Q|$ is

(A) –22 (B) 0

(C) 22 (D) none of these

25. Sahil tries to use brackets for a mathematical expression, "eighty-one divided by the product of nine and difference between thirty-six and fourteen". The correct expression is

(A) $81 \div 9 \times (36 - 14)$ (B) $81 \div (9 \times 36 - 14)$

(C) $\{81 \div 9\} \times (36 - 14)$ (D) $81 \div \{9 \times (36 - 14)\}$

26. On the number line, value '3' is shown by the point _____.

(A) X (B) Z

(C) Y (D) P

27. -42×105 is same as

(A) $-42 \times 100 + 5$ (B) $-42 \times (100 + 5)$

(C) $(-42) \times 100 + (-42) \times 5$ (D) $-42 \times 5 + 100$

28. How much less than (– 2) is (– 8)?

(A) 6 (B) –6

(C) 10 (D) –10

29. A pair of integers whose product is (–12) and there lies seven integers between them excluding the integers are _____ and _____.

(A) –4 and 3 (B) –3 and 4

(C) –6 and 2 (D) none of these

30. Evaluate $(-6 + 34) \div (-14) + 2$.

(A) 4 (B) 0

(C) –2 (D) –1

31. If $A = 9 - 25\ \{56 - (47 - 13 \div 26 \times 4 \text{ of } 2)\}$ and $B = [13 \times \{15 + 3 \times (-5)\}]$, then value of $A + B - B^2$ is

(A) 260 (B) 153

(C) 316 (D) –316

32. Mehak started a game of monopoly with ₹ 70. She had to pay ₹ 25 as tax and she received ₹ 10 as rent of one of her sites. Again, she won ₹ 20 by way of lottery and was then fined ₹ 50 for overspeeding. At the end of the game, how much money was left with her?

(A) ₹ 20 (B) ₹ 25

(C) ₹ 30 (D) None of these

33. When additive inverse of $\{-16 + 12 - 52 \div 4 \text{ of } 3\}$ is added to the product of -7, 4 and -9, then the result is

(A) 295 (B) 206

(C) -248 (D) none of these

34. If $x = (-10) + (-10) +$ _____ (15 times) and $y = (-2) \times (-2) \times (-2) \times (-2) \times (-2)$, then $x - y$ is

(A) -182 (B) 182

(C) 118 (D) -118

35. A multistorey building has 25 floors above the ground level, each of height 5 m. It also has 3 floors in the basement, each of height 5 m. A lift in the building moves at a rate of 1 m/s. If a man starts from 50 m above the ground, how long will it take him to reach at 2nd floor of basement?

(A) 55 seconds (B) 55 seconds

(C) 60 seconds (D) None of these

Darken your Choice with HB Pencil

1.	Ⓐ Ⓑ Ⓒ Ⓓ	7.	Ⓐ Ⓑ Ⓒ Ⓓ	13.	Ⓐ Ⓑ Ⓒ Ⓓ	19.	Ⓐ Ⓑ Ⓒ Ⓓ	25.	Ⓐ Ⓑ Ⓒ Ⓓ	31.	Ⓐ Ⓑ Ⓒ Ⓓ
2.	Ⓐ Ⓑ Ⓒ Ⓓ	8.	Ⓐ Ⓑ Ⓒ Ⓓ	14.	Ⓐ Ⓑ Ⓒ Ⓓ	20.	Ⓐ Ⓑ Ⓒ Ⓓ	26.	Ⓐ Ⓑ Ⓒ Ⓓ	32.	Ⓐ Ⓑ Ⓒ Ⓓ
3.	Ⓐ Ⓑ Ⓒ Ⓓ	9.	Ⓐ Ⓑ Ⓒ Ⓓ	15.	Ⓐ Ⓑ Ⓒ Ⓓ	21.	Ⓐ Ⓑ Ⓒ Ⓓ	27.	Ⓐ Ⓑ Ⓒ Ⓓ	33.	Ⓐ Ⓑ Ⓒ Ⓓ
4.	Ⓐ Ⓑ Ⓒ Ⓓ	10.	Ⓐ Ⓑ Ⓒ Ⓓ	16.	Ⓐ Ⓑ Ⓒ Ⓓ	22.	Ⓐ Ⓑ Ⓒ Ⓓ	28.	Ⓐ Ⓑ Ⓒ Ⓓ	34.	Ⓐ Ⓑ Ⓒ Ⓓ
5.	Ⓐ Ⓑ Ⓒ Ⓓ	11.	Ⓐ Ⓑ Ⓒ Ⓓ	17.	Ⓐ Ⓑ Ⓒ Ⓓ	23.	Ⓐ Ⓑ Ⓒ Ⓓ	29.	Ⓐ Ⓑ Ⓒ Ⓓ	35.	Ⓐ Ⓑ Ⓒ Ⓓ
6.	Ⓐ Ⓑ Ⓒ Ⓓ	12.	Ⓐ Ⓑ Ⓒ Ⓓ	18.	Ⓐ Ⓑ Ⓒ Ⓓ	24.	Ⓐ Ⓑ Ⓒ Ⓓ	30.	Ⓐ Ⓑ Ⓒ Ⓓ		

2. Fractions and Decimals

Multiple Choice Questions

1. $\frac{17}{\square}$ is a fraction that lies between $\frac{1}{9}$ and $\frac{1}{8}$. What is the missing whole number in the box?

   (A) 144 (B) 72

   (C) 84 (D) 96

2. If $213 \times 16 = 3408$, then 1.6×2.13 equals

   (A) 0.3408 (B) 34.08

   (C) 3.408 (D) 340.8

3. Which of these numbers is the greatest?

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

   (C) $\frac{7}{3}$ (D) All are equal

4. The value of $4\frac{3}{5} \times \frac{15}{22} \times 20\frac{1}{6} \times 1\frac{1}{3}$ is

   (A) $84\frac{1}{3}$ (B) 84

   (C) $84\frac{2}{3}$ (D) $82\frac{2}{3}$

5. Which of the following is correct?

   (A) $0.658 < 0.732 < 0.512 < 0.813$ (B) $0.512 < 0.658 < 0.732 < 0.813$

   (C) $0.813 < 0.732 < 0.658 < 0.512$ (D) $0.514 < 0.732 < 0.658 < 0.813$

6. Four students are asked to write equivalent version of the same fraction. Whose fraction is not equivalent to others?

(A) Shivam $5\frac{3}{5}$ (B) Tushar $\frac{28}{5}$

(C) Neha $5\frac{6}{10}$ (D) Yamini $5\frac{9}{20}$

7. What should be added to 3.07 to get 3.5?

(A) 0.43 (B) 0.57

(C) 4.3 (D) 2.72

8. In a school a 16 m long rope is used for rope climbing. To make it easier for the children to climb, the teacher has tied knots at every $\frac{8}{3}$ m. The total number of knots in the rope is

(A) 14 (B) 16

(C) 18 (D) 20

9. If 5 is added to both the numerator and denominator of the fraction $\frac{5}{9}$, will the value of the fraction be changed and will this value increase or decrease?

(A) Yes value changes (B) No change in the value

(C) Value will decrease (D) Value will increase

10. The value of unknown x in the given pattern is

$0.07 \rightarrow 0.7 \rightarrow 7 \rightarrow x \rightarrow 700$

(A) 0.007 (B) 70

(C) 7000 (D) none of these

11. The value of $\frac{\frac{1}{2} \div \frac{1}{2} \text{ of } \frac{1}{2}}{\frac{1}{2} + \frac{1}{2} \text{ of } \frac{1}{2}}$ is

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

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

12. Which one of the following is true?

(A) $\frac{1}{2} < \frac{9}{13} < \frac{3}{4} < \frac{12}{17}$ (B) $\frac{3}{4} < \frac{9}{13} < \frac{1}{2} < \frac{12}{17}$

(C) $\frac{1}{2} < \frac{3}{4} < \frac{9}{13} < \frac{12}{17}$ (D) $\frac{1}{2} < \frac{9}{13} < \frac{12}{17} < \frac{3}{4}$

13. What number is equal to $\left(\frac{0.8}{0.08} + \frac{0.08}{0.8}\right)$?

(A) 10.01 (B) 10.1

(C) 1.10 (D) 1.01

14. Which fraction is added to $\frac{2}{5}$ of $\left(1\frac{7}{3}-1\frac{2}{3}\right)\div 3\frac{4}{5}$ to make it a complete whole number?

(A) $\frac{47}{57}$ (B) $\frac{67}{57}$

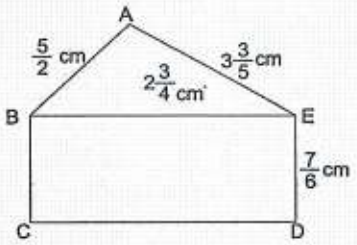
(C) $\frac{52}{57}$ (D) $\frac{-52}{57}$

15. In a cinema hall ₹ 6496 were collected by selling some tickets. If the price of each ticket was ₹ $50\frac{3}{4}$. The total number of tickets sold were

(A) 3,92,672 (B) 3,29,672

(C) 128 (D) 182

16. The perimeter of the given figure is



(A) $10\frac{11}{30}$ cm (B) $11\frac{11}{60}$ cm

(C) $13\frac{14}{15}$ cm (D) $10\frac{11}{60}$ cm

17. In an examination, a student was asked to find $\left(\frac{1}{15}\right)$ of a certain number. By mistake he found $\left(\frac{1}{5}\right)$ of that number. If his answer was 40 more than the correct answer, then the number is

(A) 600 (B) 450

(C) 150 (D) 300

18. A book case is 2.38 m tall and the height of each shelf is 34 cm. How many shelves are there?

(A) 17 (B) 70

(C) 7 (D) 27

19. The value of $\left[5\frac{1}{2}+\left(-3\frac{2}{3}\right)\right]+\left[5\frac{1}{2}+\left(-3\frac{2}{3}\right)\right]+$ ... to 36 times is _____.

(A) 66 (B) – 66

(C) $33\frac{11}{66}$ (D) $-33\frac{11}{66}$

20. The value of $\frac{1}{4}+\left[\frac{1}{2}\times\frac{1}{2}\div\left\{\frac{1}{2}\times\frac{1}{2}\div\frac{1}{2}+\left(\frac{1}{2}\div\frac{1}{2}\right)\right\}\right]$ is

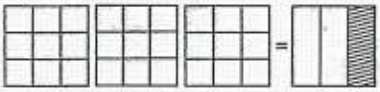
(A) $\frac{5}{6}$ (B) $\frac{1}{3}$

(C) $\frac{1}{9}$ (D) $\frac{5}{12}$

21. A light year is the distance travelled by light in one year and speed of light is 3×10^8 m/s. One light year when expressed into kilometre equals.

(A) 9.46×10^{12} km
(B) 9.46×10^{18} km
(C) 9.46×10^{15} km
(D) 9.46×10^{13} km

22. Match the following.

Column I	Column II
(a) $2\frac{1}{4} \times \frac{3}{14} \div 1\frac{2}{7}$	(*i*) 
(b) $3 \times \frac{2}{9}$	(*ii*) additive inverse of $\left(\frac{-5}{3}\right)$
(c) $2\frac{1}{7} \times 2\frac{4}{9} \times \frac{7}{22}$	(*iii*) $\frac{13}{6}$
(d) $1\frac{1}{8} \div 2\frac{1}{4} \times 4\frac{1}{3}$	(*iv*) reciprocal of $\frac{8}{3}$

(A) a—(*ii*), b—(*i*), c—(*iv*), d—(*iii*)
(B) a—(*ii*), b—(*i*), c—(*iii*), d—(*iv*)
(C) a—(*iv*), b—(*i*), c—(*ii*), d—(*iii*)
(D) a—(*iii*), b—(*i*), c—(*iv*), d—(*ii*)

23. If we add a fraction to itself and multiply the sum with additive inverse of that fraction, then we get four times the fraction $\left(-11\frac{14}{25}\right)$. Which one of the following options represents the original fraction?

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

24. By which decimal number should 0.0001 be divided to get 0.01?

(A) 0.01
(B) 100
(C) 10
(D) 0.01

25. $\frac{1}{9}$ of $\frac{1}{6}$ of $\frac{1}{3}$ of 56052 = _____

(A) 356
(B) 336
(C) 376
(D) 346

26. Which of the following statements are true?

(A) The product of two improper fractions is less than both the fractions.
(B) $\frac{2}{3}$ of 9 is same as $\frac{2}{3} \div 9$.
(C) 1 is the only number which is its own reciprocal.
(D) To multiply a decimal number by 1000, we move the decimal point to the right by three places.

27. A teacher distributed ₹ 1840 equally among NCC cadets for refreshment. If each cadet received ₹ 28.75, then how many cadets were there?

(A) 58 (B) 64

(C) 52 (D) 66

28. The value of $\frac{64 - 0.008}{16 + 0.8 + 0.04}$ is

(A) 0.6 (B) 2

(C) 3.8 (D) 4.2

29. If $\frac{x}{y} = \frac{4}{5}$, then value of $\frac{8}{9} + \frac{y - x}{y + x}$ is

(A) 1 (B) 2

(C) $\frac{2}{3}$ (D) $\frac{3}{2}$

30. A party of 20 people went to a hotel. They ordered a meal of ₹ 36.60 each, but 5 of them had forgotten to bring money. In order to settle the bill, how much more did the other 15 persons have to pay?

(A) ₹ 48.80 (B) ₹ 42.60

(C) ₹ 12.20 (D) ₹ 28.20

31. A multiplying number machine changes one fraction into another fraction by using a rule. It changes $\frac{1}{2}$ into $\frac{1}{10}$, $\frac{1}{7}$ into $\frac{1}{35}$ and $\frac{2}{3}$ into $\frac{2}{15}$. Into what fraction will the machine change $\frac{5}{3}$?

(A) $\frac{1}{15}$ (B) $\frac{3}{10}$

(C) $\frac{1}{3}$ (D) None of these

32. In a college, $\frac{1}{5}$ of the students like basketball, $\frac{1}{8}$ of the remaining students like football and $\frac{1}{5}$ of the further remained like cricket. What is the total number of students if 210 students do not like any game?

(A) 385 (B) 375

(C) 425 (D) 475

33. The value of $\left(6\frac{3}{4}+5\frac{1}{6}\right)\div\left(\frac{11}{12}\times 3\frac{3}{4}\times\frac{1}{3}\right)$ is

(A) $10\frac{2}{5}$

(B) $9\frac{53}{55}$

(C) $9\frac{8}{55}$

(D) none of these

Darken your Choice with HB Pencil

1.	Ⓐ Ⓑ Ⓒ Ⓓ	7.	Ⓐ Ⓑ Ⓒ Ⓓ	13.	Ⓐ Ⓑ Ⓒ Ⓓ	19.	Ⓐ Ⓑ Ⓒ Ⓓ	25.	Ⓐ Ⓑ Ⓒ Ⓓ	31.	Ⓐ Ⓑ Ⓒ Ⓓ
2.	Ⓐ Ⓑ Ⓒ Ⓓ	8.	Ⓐ Ⓑ Ⓒ Ⓓ	14.	Ⓐ Ⓑ Ⓒ Ⓓ	20.	Ⓐ Ⓑ Ⓒ Ⓓ	26.	Ⓐ Ⓑ Ⓒ Ⓓ	32.	Ⓐ Ⓑ Ⓒ Ⓓ
3.	Ⓐ Ⓑ Ⓒ Ⓓ	9.	Ⓐ Ⓑ Ⓒ Ⓓ	15.	Ⓐ Ⓑ Ⓒ Ⓓ	21.	Ⓐ Ⓑ Ⓒ Ⓓ	27.	Ⓐ Ⓑ Ⓒ Ⓓ	33.	Ⓐ Ⓑ Ⓒ Ⓓ
4.	Ⓐ Ⓑ Ⓒ Ⓓ	10.	Ⓐ Ⓑ Ⓒ Ⓓ	16.	Ⓐ Ⓑ Ⓒ Ⓓ	22.	Ⓐ Ⓑ Ⓒ Ⓓ	28.	Ⓐ Ⓑ Ⓒ Ⓓ		
5.	Ⓐ Ⓑ Ⓒ Ⓓ	11.	Ⓐ Ⓑ Ⓒ Ⓓ	17.	Ⓐ Ⓑ Ⓒ Ⓓ	23.	Ⓐ Ⓑ Ⓒ Ⓓ	29.	Ⓐ Ⓑ Ⓒ Ⓓ		
6.	Ⓐ Ⓑ Ⓒ Ⓓ	12.	Ⓐ Ⓑ Ⓒ Ⓓ	18.	Ⓐ Ⓑ Ⓒ Ⓓ	24.	Ⓐ Ⓑ Ⓒ Ⓓ	30.	Ⓐ Ⓑ Ⓒ Ⓓ		

International Olympiad Foundation

3. Date Handling

Multiple Choice Questions

1. p: The mode is always one of the number in a data and q: The mean is one of the numbers in a data. Then, which of the following options hold?
   (A) Both p and q are true
   (B) p is true and q is false
   (C) Both p and q are false
   (D) p is false and q is true
2. The mean of three numbers is 40. All the three numbers are differnet natural numbers. If the lowest is 19. What could be the highest possible number of the remaining two numbers?
   (A) 81
   (B) 40
   (C) 101
   (D) 71
3. Which of the following statements are not true?
   (A) Median of the data may or may not be from the given data.
   (B) Mode of the data is always from the given data.
   (C) Mean of the observations can be lesser than each of the observations.
   (D) Mean can never be a fraction.
4. The mean of the data is 15 and the sum of the observations is 195. The number of observations is
   (A) 13
   (B) 19
   (C) 16
   (D) 17
5. Mode of the given data is the _____.
   (A) least frequent value
   (B) middle most value
   (C) most frequent value
   (D) extreme most value
6. Which of the following has the same mean, median and mode?
   (A) 6, 2, 5, 4, 3, 4, 1
   (B) 4, 2, 2, 1, 3 2, 3
   (C) 2, 3, 7, 3, 8, 3, 2
   (D) 4, 3, 4, 3, 4, 6, 4

7. If the average of first 9 prime numbers is multiplied by 9, then the number obtained will be

(A) 9 (B) 100

(C) 18 (D) 65

8. The table below, gives the weights (in kg) of 50 boys of class 7, their mean weight is

Weights (in kg)	48	49	50	51	52
No. of boys	6	8	9	14	13

(A) 52 kg (B) 48 kg

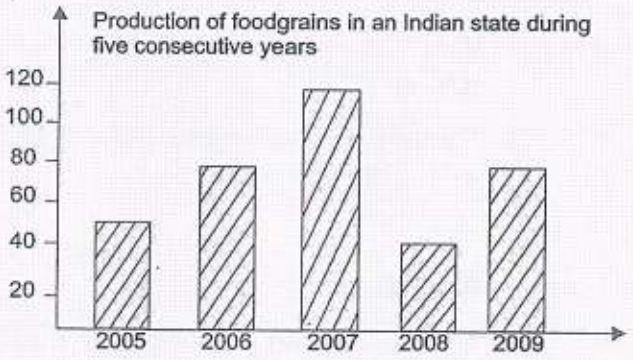
(C) 50.4 kg (D) 49 kg

9. The mode of the unimodular data 7, 8, 9, 8, 9, 10, 9, 10, 11, 10, 11, 12 and x is 10. The value of x is

(A) 10 (B) 9

(C) 8 (D) 11

Read the bar graph carefully and answer the questions from 10 to 14.



10. What information is given by the bar graph?

(A) The given graph shows the annual production of foodgrains in an Indian state during the period from 2005 to 2006.

(B) The given graph shows the annual production of foodgrains in an Indian state during the period from 2005 to 2007.

(C) The given graph shows the annual production of foodgrains in an Indian state during the period from 2005 to 2008.

(D) The given graph shows the annual production of foodgrains in an Indian state during the period from 2005 to 2009.

11. In which year the production was maximum?

(A) 2005 (B) 2006

(C) 2007 (D) 2008

12. After which year there was a sudden fall in the production?

(A) 2008 (B) 2007

(C) 2006 (D) 2005

13. The ratio between maximum and minimum production is

(A) 5 : 7 (B) 5 : 4

(C) 5 : 3 (D) 5 : 2

14. A card is drawn from a pack of 100 cards numbered 1 to 100. The probability of drawing a square number is

(A) $\frac{1}{10}$ (B) $\frac{9}{10}$

(C) $\frac{1}{5}$ (D) $\frac{2}{5}$

15. The average height of 8 boys is 163 cm. When a new boy joins the group, the average becomes 162 cm. The height of the new boy is

(A) 158 cm (B) 160 cm

(C) 154 cm (D) 148 cm

16. The cards bearing letters of the word "PROPORTION" are placed in a bag. A card is taken out from the bag without looking into the bag at random. How many outcomes are possible when a letter is taken out of a bag?

(A) 6 (B) 8

(C) 9 (D) 10

17. The median of observations 11, 12, 14, 18, $x+2$, 20, 22, 25 and 61, arranged in ascending order is 21. The value of x is

(A) 18 (B) 19

(C) 20 (D) none of these

18. The mean age of 25 students in a class is 12. If the teacher's age is included, the mean age increases by 1. The teacher's age is _____.

(A) 24 years (B) 30 years

(C) 34 years (D) 38 years

19. The probability that Ram will draw a vowel card from five cards bearing the letters *a, e i, o* and *u* is

(A) 1 (B) 0

(C) 0.5 (D) 0.75

20. Which of the following statements are true?

(A) Rolling the number 7 on a standard die is an impossible event.

(B) If your chances of being stuck in a traffic jam are $\frac{1}{10000}$, it is a likely event.

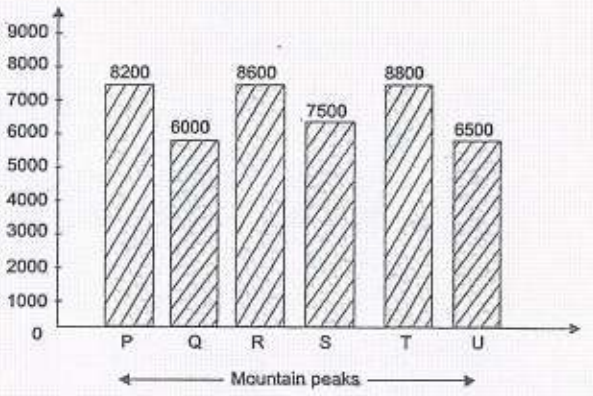
(C) The probability of a certain event is 1.

(D) The probability of drawing a red card from a pack of 52 playing cards is $\frac{1}{3}$.

21. If there are 29 terms in the data arranged in descending order, then the median is the _____ term.

(A) 14th term
(B) 15th term
(C) 16th term
(D) $\frac{1}{2}$ of (15th term)

Given below is a bar graph showing the height of six mountain peaks. Read it carefully and answer questions from 22 to 26.



22. Which is the highest peak?

(A) P
(B) Q
(C) R
(D) T

23. Write ratio of heights of the highest peak and the lowest peak.

(A) 22 : 15
(B) 15 : 22
(C) 20 : 13
(D) 13 : 22

24. Which peak holds the second position in terms of its height?

(A) Q
(B) P
(C) R
(D) T

25. When the heights of the given peaks are written in ascending order, then what is the average height of the two middle peaks?

(A) 7950 m
(B) 7560 m
(C) 7650 m
(D) 7850 m

26. Which measures of central tendency get affected if the extreme observations on both the ends of a data arranged in ascending order are removed?

(A) Mean and Mode
(B) Mean and Median
(C) Mode and Median
(D) none of these

27. A coin is tossed 100 times and tail is obtained 41 times. The probability of getting a head is

(A) $\frac{29}{100}$
(B) $\frac{41}{100}$
(C) $\frac{59}{100}$
(D) none of these

28. The mean of first six multiples of 5 is

(A) 3.5
(B) 18.5
(C) 17.5
(D) 30

29. The mean of p, q and r is same as the mean of q, $2r$ and s. Then, which of the following is correct?

(A) $p+s=r$ (B) $q=r=s$

(C) $q=r$ (D) $p=r+s$

30. The mean of three numbers *a, b and c* is 8, and the mean of five numbers *a, b, c, d* and *e* is 15. Find the mean of *d* and *e*?

(A) 25.5 (B) 20.5

(C) 18 (D) 20

31. A bag contains 8 red buttons and 6 green buttons. Mr. Sharma takes out 2 red buttons and does not keep them back. Now the chance of drawing a red button or a green button is 50%.

(A) False (B) True

(C) Can't say (D) May be true may be false

32. The mean of 5 observation is 15. If mean of the first three observations is 14 and that of the last three is 17, then find the third observation.

(A) 17 (B) 14

(C) 15 (D) 18

33. The traffic police recorded the speed (in km/h) of 8 cars as 47, 53, 49, 60, 39, 42, 48 and 52. Later on, an error in the recording instrument was found. Find the correct mean speed of the cars if the instrument recorded 6 km/h more in each case.

(A) 55.2 km/h (B) 56.2 km/h

(C) 42.75 km/h (D) 58.2 km/h

Darken your Choice with HB Pencil

1.	Ⓐ Ⓑ Ⓒ Ⓓ	7.	Ⓐ Ⓑ Ⓒ Ⓓ	13.	Ⓐ Ⓑ Ⓒ Ⓓ	19.	Ⓐ Ⓑ Ⓒ Ⓓ	25.	Ⓐ Ⓑ Ⓒ Ⓓ	31.	Ⓐ Ⓑ Ⓒ Ⓓ
2.	Ⓐ Ⓑ Ⓒ Ⓓ	8.	Ⓐ Ⓑ Ⓒ Ⓓ	14.	Ⓐ Ⓑ Ⓒ Ⓓ	20.	Ⓐ Ⓑ Ⓒ Ⓓ	26.	Ⓐ Ⓑ Ⓒ Ⓓ	32.	Ⓐ Ⓑ Ⓒ Ⓓ
3.	Ⓐ Ⓑ Ⓒ Ⓓ	9.	Ⓐ Ⓑ Ⓒ Ⓓ	15.	Ⓐ Ⓑ Ⓒ Ⓓ	21.	Ⓐ Ⓑ Ⓒ Ⓓ	27.	Ⓐ Ⓑ Ⓒ Ⓓ	33.	Ⓐ Ⓑ Ⓒ Ⓓ
4.	Ⓐ Ⓑ Ⓒ Ⓓ	10.	Ⓐ Ⓑ Ⓒ Ⓓ	16.	Ⓐ Ⓑ Ⓒ Ⓓ	22.	Ⓐ Ⓑ Ⓒ Ⓓ	28.	Ⓐ Ⓑ Ⓒ Ⓓ		
5.	Ⓐ Ⓑ Ⓒ Ⓓ	11.	Ⓐ Ⓑ Ⓒ Ⓓ	17.	Ⓐ Ⓑ Ⓒ Ⓓ	23.	Ⓐ Ⓑ Ⓒ Ⓓ	29.	Ⓐ Ⓑ Ⓒ Ⓓ		
6.	Ⓐ Ⓑ Ⓒ Ⓓ	12.	Ⓐ Ⓑ Ⓒ Ⓓ	18.	Ⓐ Ⓑ Ⓒ Ⓓ	24.	Ⓐ Ⓑ Ⓒ Ⓓ	30.	Ⓐ Ⓑ Ⓒ Ⓓ		

4. Simple Equations

Multiple Choice Questions

1. If $\frac{x+2}{x-2} = \frac{2}{3}$, then $x =$
   (A) -10 (B) 10
   (C) $\frac{4}{3}$ (D) $\frac{-4}{3}$
2. Which of the following numbers satisfies the equation $8y - 3 - 5y = 24$?
   (A) 7 (B) -9
   (C) -7 (D) 9
3. Shifting one term from one side of an equation to another side with a change of sign is known as
   (A) commutativity (B) transposition
   (C) distributivity (D) associativity
4. The solution of $3(b+2) - (b-8) = 3(b+8)$ is
   (A) -10 (B) 10
   (C) 2 (D) -3
5. What is the value of p that makes the following expression true?
   $p - \{-4 - (2 - 8 \div 4)\} = 8$
   (A) -12 (B) -4
   (C) 4 (D) 12
6. The sum of three consecutive multiplies of 6 is 1098. The numbers are
   (A) 360, 366 and 372 (B) 362, 368 and 370
   (C) 348, 354 and 360 (D) 362, 368 and 374

7. A teacher tells the class that the highest marks obtained by a student in her class is three times the lowest marks minus seven. If the highest marks is 86, then which of the following equation will represent this situation?

(A) $7x - 3 = 86$ (B) $3x - 7 = 86$

(C) $x + (3x - 7) = 86$ (D) None of these

8. If $7.5p = 0.015$, then p equals to

(A) 20 (B) 0.2

(C) 0.02 (D) 0.002

9. If two supplementary angles differ by 44°, then one of the angle is _____.

(A) 102° (B) 65°

(C) 112° (D) 72°

10. Which of the following statements are true?

(A) The equation representing the statement "15 less than the three times a number gives 3" is $15 - 3x = 3$.

(B) Without changing the equality, we may add same quantity.

(C) $x - 11 = -11$ has a solution in natural numbers.

(D) If x is the root of the equation $4x = 12$, then the value of $3x - 9 = 0$.

11. If adjacent sides of a square are represented by $18x - 20$ and $42 - 13x$, then length of the side of the square is _____.

(A) 16 (B) 2

(C) 3 (D) 18

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

(A) 2, 3 (B) 3, 2

(C) 3, 4 (D) 4, 3

13. Match each of the entries in column I with the appropriate entries in column II.

	Column I	**Column II**
(a)	$x - 2(x + 3) = 5$	(*i*) 30
(b)	$\frac{2x}{5} - \frac{x-3}{8} = \frac{1}{10}$	(*ii*) -11
(c)	$\frac{x}{2} - \frac{x}{3} = 5$	(*iii*) 20
(d)	$\frac{7x}{10} - 4 = 10$	(*iv*) -1

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

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

14. The equation having the root –5 is

(A) $5x - 15 = -10$ (B) $3(x+2) = 21$

(C) $7x - 18 = x + 12$ (D) $\frac{x}{5} + 3 = 2$

15. In a test, Shyama gets twice the marks as that of Palak. Two times Shyama's marks and three times Palak's marks make 280. The marks obtained by Shyama are _____.

(A) 40 (B) 60

(C) 80 (D) 90

16. A man travelled two-fifth of his journey by train, one-third by bus, one-fourth by car and the remaining 3 km on foot. What is the length of his journey by train?

(A) 75 km (B) 72 km

(C) 80 km (D) 85 km

17. The sum of all angles of a triangle is 180°. If the three angles are $(2x + 15)°$, 85° and $(x + 20)°$, then the value of x is

(A) 60° (B) 30°

(C) 10° (D) 20°

18. A student has to secure 35% marks to pass. He got 80 marks and failed by 60 marks. Find the maximum marks.

(A) 400 (B) 300

(C) 200 (D) 100

19. The solution of $2(3x - 7) + 4(3x + 2) = 6(5x + 9) + 3$ is a/an

(A) natural number (B) integer

(C) rational number (D) none of these

20. If $\frac{x-5}{x+1} = \frac{x+1}{x-8}$, then which one of the following values satisfies the given equation?

(A) $-2\frac{3}{5}$ (B) $12\frac{3}{5}$

(C) $-2\frac{13}{5}$ (D) $2\frac{3}{5}$

21. Three years ago Meera's age was 7 times of Jack. Three years hence Meera's age will be four times that of Jack' age. The present age of Jack is

(A) 5 years (B) 7 years

(C) 9 years (D) 10 years

22. If Benny thinks of a number, subtracts 18 from it and divides the difference by 3, it gives the result (– 4). Now, express the above situation in the form of an equation if number is x.

(A) $(x - 18) \div 3 = -4$ (B) $x - 18 \div 3 = -4$

(C) $18 - x \div 3 = -4$ (D) $(18 - x) \div 3 = -4$

23. The solution of $0.2\,(2x-1)-0.5\,(3x-1)=0.4$ is

(A) $\frac{1}{11}$ (B) $\frac{-1}{11}$

(C) $\frac{3}{11}$ (D) $\frac{-3}{11}$

24. If the cost of 7 pencils is ₹ 6 more than 5 pencils, then cost of 10 pencils is

(A) ₹ 24 (B) ₹ 21

(C) ₹ 30 (D) ₹ 27

25. The solution of $\frac{5x-1}{3}-\frac{(2x-2)}{3}=1$ is

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

(C) $2\frac{2}{3}$ (D) none of these

26. Is it possible to solve $x+3\,(x+9)=4x+3$?

(A) Yes (B) $x=3$

(C) No value of x (D) May be solved

27. If $p+7=16$, then the value of $10p-89$ is

(A) 0 (B) 1

(C) 112 (D) 56

28. Ravish owns a plot of rectangular shape. He has fenced it with a wire of length 750 m. The length of the plot exceeds the breadth by 5 m. Find the length of the plot.

(A) 175 m (B) 185 m

(C) 180 m (D) 190 m

29. If $6n+\frac{19n-32}{2}=6n-13-\left(\frac{13n-26}{2}\right)$, then value of n is

(A) 0 (B) -1

(C) 1 (D) 2

30. A number is as much greater than 31 as it is less than 81. The number is

(A) 56 (B) 66

(C) 76 (D) 46

31. $\frac{1}{2}$ is subtracted from a number and the difference is multiplied by 4. If 25 is added to the product and the sum is divided by 3, the result is equal to 10. Find the number.

(A) $\frac{3}{5}$ (B) $1\frac{3}{4}$

(C) $\frac{6}{7}$ (D) $\frac{2}{3}$

32. If $\frac{3p+2}{5} - \frac{4p-3}{7} + \frac{p-1}{35} = 4$, then the value of p is

(A) 65 (B) 63

(C) 36 (D) 56

33. If two-third, one-half and one-seventh of a number are added to itself, the result is 37, then the number is

(A) $14\frac{2}{97}$ (B) $16\frac{2}{97}$

(C) $18\frac{2}{97}$ (D) none of these

34. The amount of petrol in a tank is twice of that in another tank. If we draw out 25 litres from first and add it to the other, the amount of petrol in both the tanks will be the same. The amount of petrol in each tank now is

(A) 25 litres (B) 50 litres

(C) 75 litres (D) 85 litres

35. The total value of three prizes is ₹ 2550. If the value of second prize is $\frac{3}{4}$ of the first and the value of the 3rd prize is $\frac{1}{2}$ of the second prize. The value of first prize is

(A) ₹ 450 (B) ₹ 900

(C) ₹ 1100 (D) ₹ 1200

Darken your Choice with HB Pencil

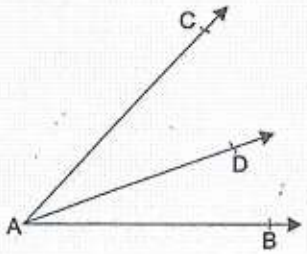
1.	Ⓐ Ⓑ Ⓒ Ⓓ	7.	Ⓐ Ⓑ Ⓒ Ⓓ	13.	Ⓐ Ⓑ Ⓒ Ⓓ	19.	Ⓐ Ⓑ Ⓒ Ⓓ	25.	Ⓐ Ⓑ Ⓒ Ⓓ	31.	Ⓐ Ⓑ Ⓒ Ⓓ
2.	Ⓐ Ⓑ Ⓒ Ⓓ	8.	Ⓐ Ⓑ Ⓒ Ⓓ	14.	Ⓐ Ⓑ Ⓒ Ⓓ	20.	Ⓐ Ⓑ Ⓒ Ⓓ	26.	Ⓐ Ⓑ Ⓒ Ⓓ	32.	Ⓐ Ⓑ Ⓒ Ⓓ
3.	Ⓐ Ⓑ Ⓒ Ⓓ	9.	Ⓐ Ⓑ Ⓒ Ⓓ	15.	Ⓐ Ⓑ Ⓒ Ⓓ	21.	Ⓐ Ⓑ Ⓒ Ⓓ	27.	Ⓐ Ⓑ Ⓒ Ⓓ	33.	Ⓐ Ⓑ Ⓒ Ⓓ
4.	Ⓐ Ⓑ Ⓒ Ⓓ	10.	Ⓐ Ⓑ Ⓒ Ⓓ	16.	Ⓐ Ⓑ Ⓒ Ⓓ	22.	Ⓐ Ⓑ Ⓒ Ⓓ	28.	Ⓐ Ⓑ Ⓒ Ⓓ	34.	Ⓐ Ⓑ Ⓒ Ⓓ
5.	Ⓐ Ⓑ Ⓒ Ⓓ	11.	Ⓐ Ⓑ Ⓒ Ⓓ	17.	Ⓐ Ⓑ Ⓒ Ⓓ	23.	Ⓐ Ⓑ Ⓒ Ⓓ	29.	Ⓐ Ⓑ Ⓒ Ⓓ	35.	Ⓐ Ⓑ Ⓒ Ⓓ
6.	Ⓐ Ⓑ Ⓒ Ⓓ	12.	Ⓐ Ⓑ Ⓒ Ⓓ	18.	Ⓐ Ⓑ Ⓒ Ⓓ	24.	Ⓐ Ⓑ Ⓒ Ⓓ	30.	Ⓐ Ⓑ Ⓒ Ⓓ		

5. Lines and Angles

Multiple Choice Questions

1. The angles $x - 10°$ and $190° - x$ are
   (A) interior angles on the same side of the transversal
   (B) making a linear pair
   (C) complementary
   (D) supplementary

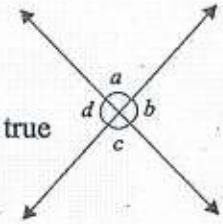
2. AD bisects $\angle CAB$, $\angle CAD = (8x + 6)°$ and $\angle DAB = (x + 20)°$. What is the value of x?



   (A) 10° (B) 2°
   (C) 4° (D) 12°

3. If p: if two lines intersect then the vertically opposite angles are equal and q: sum of all the angles around a point is 180°, then which of the following options hold?
   (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

4. In the given figure, relation between a, b, c and d is given as

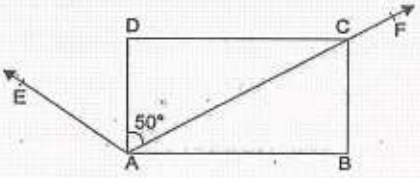


   (A) $a + b = c + d$ (B) $a + d = b + c$
   (C) $a + b + c + d = 360°$ (D) All (a), (b) and (c) are true

5. The measure of an angle which is four times its supplement is
   (A) 36° (B) 144°
   (C) 16° (D) 64°

6. Two complementary angles are in the ratio 1:5. Then, the angles are
   (A) 15°, 75° (B) 30°, 150°
   (C) 12°, 78° (D) 40°, 140°

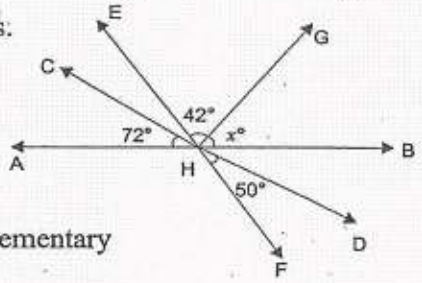
7. In the given figure, AD is the bisector of $\angle EAF$ and ABCD is a rectangle. Which one of the following is incorrect?



(A) $\angle FAE = 100°$ (B) $\angle FAB = 40°$

(C) $\angle ACD = 50°$ (D) $\angle BAD = 90°$

8. In the given figure AHB, CHD and EHF are straight lines. Then, value of x is



(A) 25° (B) 16°

(C) 27° (D) 28°

9. Vertically opposite angles are always

(A) supplementary (B) complementary

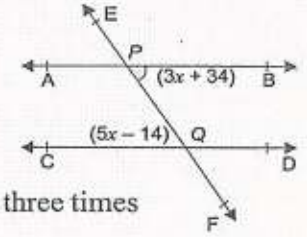
(C) adjacent (D) equal

10. $\angle A$ and $\angle B$ are complementary angles. If $\angle A = 7° + 4x$ and $\angle B = x + 23°$, which is a true statement?

(A) $\angle A$ is acute (B) $\angle A$ and $\angle B$ are 45° each

(B) $\angle A$ is obtuse (D) $\angle B > \angle A$

11. If AB is parallel to CD, then the value of $\angle BPE$ is



(A) 106° (B) 76°

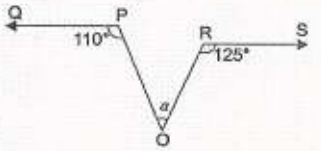
(C) 74° (D) 84°

12. The measure of an angle if seven times its complement is 10° less than three times its supplement is

(A) 20° (B) 25°

(C) 30° (D) 35°

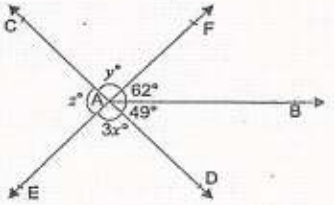
13. In the given figure PQ || RS, find the value of a.



(A) 70° (B) 55°

(C) 65° (D) None of these

14. If AB, CD and EF are straight lines, then $x + y + z =$ _____.



(A) 134° (B) 180°

(C) 193° (D) 203°

15. If a transversal cuts two parallel lines, then which of the following options is correct for the given statements?

Statement 1: Corresponding angles are equal.

Statement 2: Sum of alternate angles is 180°.

(A) Statement 1 is true and 2 is false (B) Statement 2 is true and 1 is false

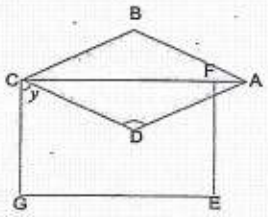
(C) Both statements are true (D) Both statements are false

16. If $a - 2b = 30°$ and $\angle a$ and $\angle b$ form a linear pair, then a and b respectively are

(A) 130° and 70° (B) 110° and 70°

(C) 130° and 50° (D) 50° and 130°

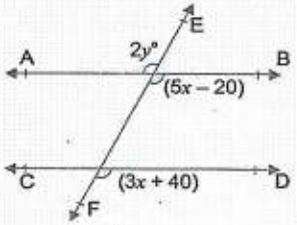
17. In the figure (not drawn to scale), ABCD is a rhombus and CGEF is a square. The value of y is



(A) 30° (B) 50°

(C) 45° (D) 60°

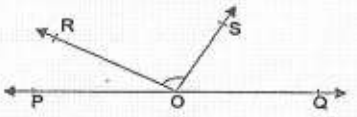
18. If AB || CD and EF is a transversal, then the value of $y - x$ is



(A) 30° (B) 35°

(C) 95° (D) 25°

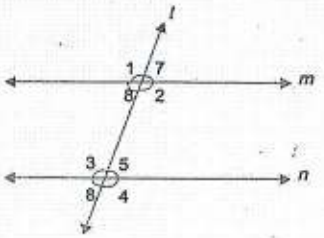
19. In the given figure, $\angle ROS$ is a right angle, and $\angle POR$ and $\angle QOS$ are in the ratio 1:5. Then, $\angle QOS$ measures



(A) 75° (B) 150°

(C) 45° (D) 60°

20. Which one of the following is not true? (From the given figure)



(A) $\angle 1 + \angle 5 = 180°$ (B) $\angle 2 + \angle 5 = 180°$

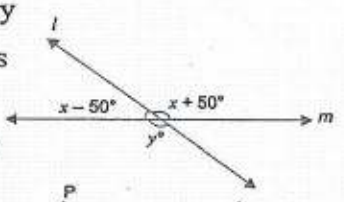
(C) $\angle 3 + \angle 8 = 180°$ (D) $\angle 2 + \angle 3 = 180°$

21. Angles of a linear pair are _____ as well as _____.

(A) adjacent (B) alternate

(C) complementary (D) supplementary

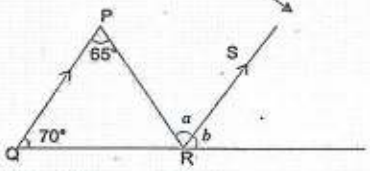
22. If l and m are intersecting lines in the given figure, then value of y is



(A) 40° (B) 140°

(C) 110° (D) none of these

23. In the given figure PQ || RS. Find the value of $b - a$.



(A) 70° (B) 65°

(C) 10° (D) 5°

24. Which of the following are not true?

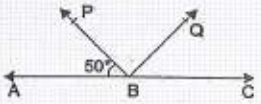
(A) Vertically opposite angles are either both acute angles or both obtuse angles.

(B) A linear pair may have two acute angles.

(C) Two adjacent angles always form a linear pair.

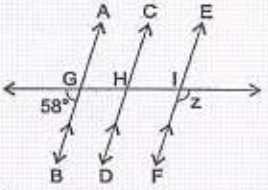
(D) An angle is more than 45°. Its complementary angle must be less than 45°.

25. In the given figure, $\angle PBA = 50°$. If BQ bisects $\angle PBC$, then $\angle QBC$ is equal to



(A) 65° (B) 75°
(C) 130° (D) 120°

26. If lines AB || EF and EF || CD, then the value of z is equal to

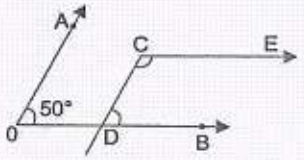


(A) 22° (B) 58°
(C) 112° (D) 122°

27. Two angles are vertically opposite to each other and are supplementary. The angles are

(A) 150°, 30° (B) 120°, 60°
(C) 90°, 90° (D) 45°, 135°

28. In the given figure, it is being given that OA || CD, OB || CE and $\angle AOB = 50°$. The value of $\angle ECD$ is



(A) 130° (B) 50°
(C) 120° (D) 70°

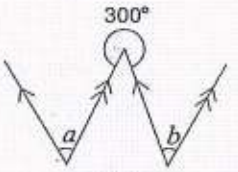
29. Two angles are making a linear pair. If one of them is one-third of the other, then angles are

(A) 45°, 135° (B) 60°, 120°
(C) 64°, 116° (D) 72°, 108°

30. If two parallel lines are extended then the number of intersection points where these lines intersect is/are _____.

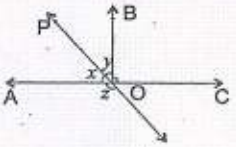
(A) 1 (B) 0
(C) 2 (D) infinite many points

31. Similar markings show parallel lines. The value of $a - b$ is



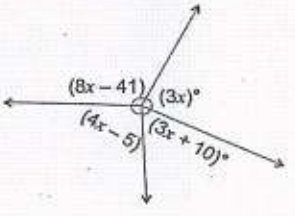
(A) 60° (B) 0°
(C) 120° (D) 90°

32. In the given figure, AC and PQ intersect each other at O. If $\angle BOC = 90°$ and $x : y = 2 : 3$, then z is equal to



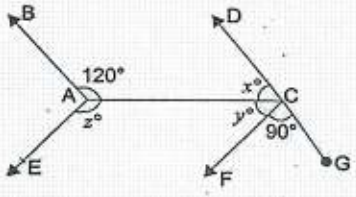
(A) 36° (B) 54°
(C) 72° (D) 144°

33. In the given figure, the value of $(3x)$ is



(A) 60° (B) 63°
(C) 66° (D) 72°

34. In the given figure, AB || CD, AE || CF, ∠FCG = 90° and ∠BAC = 120°. The values of x, y and z are



(A) $x = 60°, y = 50°, z = 150°$

(B) $x = 70°, y = 30°, z = 150°$

(C) $x = 60°, y = 30°, z = 150°$

(D) $x = 60°, y = 30°, z = 120°$

Darken your Choice with HB Pencil

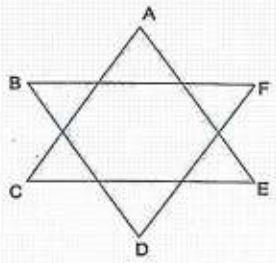
1.	Ⓐ Ⓑ Ⓒ Ⓓ	7.	Ⓐ Ⓑ Ⓒ Ⓓ	13.	Ⓐ Ⓑ Ⓒ Ⓓ	19.	Ⓐ Ⓑ Ⓒ Ⓓ	25.	Ⓐ Ⓑ Ⓒ Ⓓ	31.	Ⓐ Ⓑ Ⓒ Ⓓ
2.	Ⓐ Ⓑ Ⓒ Ⓓ	8.	Ⓐ Ⓑ Ⓒ Ⓓ	14.	Ⓐ Ⓑ Ⓒ Ⓓ	20.	Ⓐ Ⓑ Ⓒ Ⓓ	26.	Ⓐ Ⓑ Ⓒ Ⓓ	32.	Ⓐ Ⓑ Ⓒ Ⓓ
3.	Ⓐ Ⓑ Ⓒ Ⓓ	9.	Ⓐ Ⓑ Ⓒ Ⓓ	15.	Ⓐ Ⓑ Ⓒ Ⓓ	21.	Ⓐ Ⓑ Ⓒ Ⓓ	27.	Ⓐ Ⓑ Ⓒ Ⓓ	33.	Ⓐ Ⓑ Ⓒ Ⓓ
4.	Ⓐ Ⓑ Ⓒ Ⓓ	10.	Ⓐ Ⓑ Ⓒ Ⓓ	16.	Ⓐ Ⓑ Ⓒ Ⓓ	22.	Ⓐ Ⓑ Ⓒ Ⓓ	28.	Ⓐ Ⓑ Ⓒ Ⓓ	34.	Ⓐ Ⓑ Ⓒ Ⓓ
5.	Ⓐ Ⓑ Ⓒ Ⓓ	11.	Ⓐ Ⓑ Ⓒ Ⓓ	17.	Ⓐ Ⓑ Ⓒ Ⓓ	23.	Ⓐ Ⓑ Ⓒ Ⓓ	29.	Ⓐ Ⓑ Ⓒ Ⓓ		
6.	Ⓐ Ⓑ Ⓒ Ⓓ	12.	Ⓐ Ⓑ Ⓒ Ⓓ	18.	Ⓐ Ⓑ Ⓒ Ⓓ	24.	Ⓐ Ⓑ Ⓒ Ⓓ	30.	Ⓐ Ⓑ Ⓒ Ⓓ		

6. The Triangle and its Properties

Multiple Choice Questions

1. In which of the following cases the angles can possibly be form a triangle?
   (a) 68°, 49°, 63° (b) 47°, 72°, 64° (c) 77°, 45°, 65°
   (A) (a) only (B) (b) only
   (C) (c) only (D) all the above
2. Median is the line segment which joins the mid point to the opposite vertex. If the bisector of an angle of a triangle is also the median of the triangle, then the triangle in which this condition is not possible is a/an _____.
   (A) equilateral triangle (B) isosceles
   (C) right angled triangle (D) scalene
3. If $(x-40)°$, $(x-20)°$ and $\left(\frac{1}{2}x-10\right)°$ are the angles of a triangle, then value of x is
   (A) 60° (B) 80°
   (C) 100° (D) 110°
4. There are three positive numbers in each case, which of these numbers could possibly be the lengths of the sides of a triangle?
   (A) 2, 10, 15 (B) 5, 7, 9
   (C) 3, 4, 5 (D) 2, 5, 7
5. In ΔPQR,
   (A) $PQ - QR < PR$ (B) $PQ - QR > PR$
   (C) $PQ + QR < PR$ (D) $PQ + PR < QR$
6. Which of the following statements is not correct?
   (A) The sum of any two sides of a triangle is greater than the third side.
   (B) A triangle can have all its angles acute.
   (C) A right-angled triangle cannot be equilateral.
   (D) Difference of any two sides of a triangle is greater than the third side.

7. The given figure consists of two triangles. What is the value of $\angle A + \angle B + \angle C + \angle D + \angle E + \angle F$?

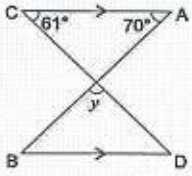


(A) 180° (B) 270°
(C) 360° (D) 450°

8. If two sides of a triangle are 6 cm and 8 cm, then what can be the length of its third side (x)?

(A) $1 < x < 18$ (B) $2 < x < 14$
(C) any value of x (D) $2 < x < 20$

9. In the given figure, AB and CD are straight lines and CA || BD. The value of y is



(A) 52° (B) 29°
(C) 59° (D) 49°

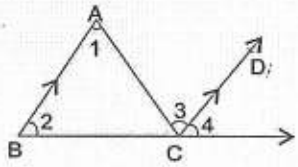
10. If D is the midpoint of the side BC in ΔABC where AB = AC, then $\angle ADC$ is

(A) 120° (B) 90°
(C) 60° (D) 45°

11. If two medians of a triangle are equal, then the triangle will be

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

12. In the given figure, if AB || CD, then



(A) $\angle 2 = \angle 3$ (B) $\angle 1 = \angle 4$
(C) $\angle 4 = \angle 1 + \angle 2$ (D) $\angle 1 + \angle 2 = \angle 3 + \angle 4$

13. In a ΔABC, if AB + BC = 12 cm, BC + CA = 14 cm, CA + AB = 16 cm, then the perimeter of the triangle is _____.

(A) 21 cm (B) 42 cm
(C) 35 cm (D) none of these

14. A 26 m ladder is placed against the wall in such a way that the foot of the ladder is 10 m away from the wall. How up on the wall is the upper end of the ladder?

(A) 20 m (B) 18 m
(C) 24 m (D) 25 m

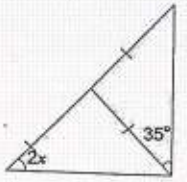
15. If two sides of an isosceles triangle are 4 cm and 8 cm, then length of the third side is _____.

(A) 4 cm (B) 8 cm
(C) 6 cm (D) 5 cm

16. If all the exterior angles of a triangle are equal, then the triangle is _____ triangle.

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

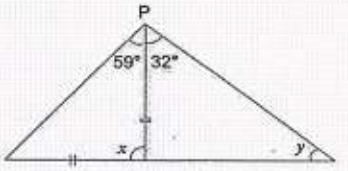
17. In the given triangle, value of x is



(A) 27.5° (B) 35.5°
(C) 70° (D) 110°

18. An exterior angle of a triangle measures 110° and its interior opposite angles are in the ratio 2 : 3. Find the angles of the triangle.
(A) 44°, 66°, 70° (B) 40°, 70°, 70°
(C) 42°, 68°, 70° (D) 55°, 55°, 70°

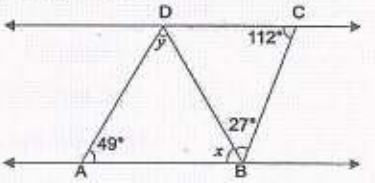
19. In the given figure, what are the values of x and y?



(A) 60°, 30° (B) 59°, 27°
(C) 62°, 30° (D) 27°, 63°

20. Which of the following options is true for the statements given below?
p : The exterior angle of a triangle is equal to the sum of two interior opposite angles of the same triangle.
q : The difference of any two sides of a triangle is less than the third side.
(A) p is true and q is false (B) p is false and q is true
(C) Both p and q are false (D) p and q both are true

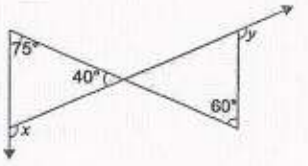
21. In the given figure if AB || CD, then values of x and y are



(A) $x = 41°, y = 90°$ (B) $x = 41°, y = 83°$
(C) $x = 83°, y = 41°$ (D) $x = 90°, y = 41°$

22. The point of intersection of the medians of a triangle is called its
(A) orthocentre (B) incentre
(C) centroid (D) none of these

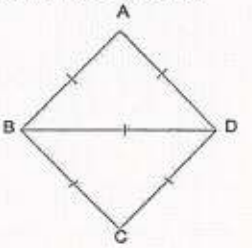
23. In the given figure, $x + y$ equals



(A) 235° (B) 215°
(C) 195° (D) 225°

24. If the exterior angles of a triangle are $(2x + 10°)$, $(3x - 5)°$ and $(2x + 40)°$, then x is equal to
(A) 25° (B) 35°
(C) 40° (D) 45°

25. $\angle ABC$ as shown in the given figure is equal to _____.



(A) 60° (B) 120°
(C) 150° (D) 90°

26. The angles of a triangle are arranged in descending order of their magnitudes. If the difference between two consecutive angles is 10°, then all the three angles are

(A) 75°, 65°, 55° (B) 65°, 55°, 45°

(C) 70°, 60°, 50° (D) none of these

27. Which of the following cannot be the sides of a right angled triangle?

(A) 6 cm, 9 cm, 10 cm (B) 3 cm, 4 cm, 5 cm

(C) 5 cm, 12 cm, 13 cm (D) None of these

28. Which of the following are not true?

(A) There can be only two acute angles in a triangle.

(B) The angles opposite to equal sides of a triangle are equal.

(C) Sum of two sides of a triangle is greater than or equal to the third side.

(D) In a triangle, sum of the squares of two sides is equal to the square of third side.

29. The base angle of an isosceles triangle is 55°. The measure of the vertical angle is _____.

(A) 55° (B) 35°

(C) 70° (D) 125°

30. Match the column I (measures of angles of a triangle with condition) to column II (values of angles).

	Column I		**Column II**
(a)	The measures of three angles of a triangle are in the ratio 5 : 3 : 1	(*i*)	30°, 50°, 100°
(b)	If $\angle A + \angle B = 150°$ and $\angle B + \angle C = 75°$ in ΔABC, then the angles are	(*ii*)	20°, 60°, 100°
(c)	If one of the exterior angles of a triangle is 80° and the interior opposite angles are in the ratio 3 : 5, then the angles are	(*iii*)	105°, 45°, 30°

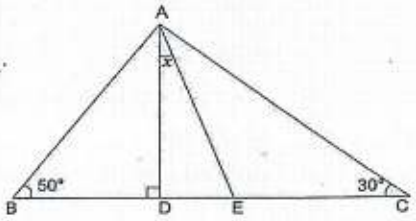
(A) (a)—(*ii*), (b)—(*i*), (c)—(*iii*) (B) (a)—(*ii*), (b)—(*iii*), (c)—(*i*)

(C) (a)—(*i*), (b)—(*ii*), (c)—(*iii*) (D) (a)—(*i*), (b)—(*ii*), (c)—(*iii*)

31. Find the value of x in the given figure, if AD ⊥ BC and AE is the bisector of $\angle BAC$.

(A) 30° (B) 20°

(C) 10° (D) 60°

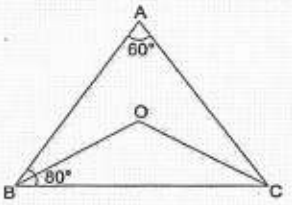


32. If in any ΔABC, $3\angle A = 4\angle B = 6\angle C$, then values of $\angle A$, $\angle B$ and $\angle C$ are

(A) $\angle A = 80°, \angle B = 60°, \angle C = 40°$ (B) $\angle A = 70°, \angle B = 60°, \angle C = 50°$

(C) $\angle A = 80°, \angle B = 40°, \angle C = 60°$ (D) $\angle A = 60°, \angle B = 80°, \angle C = 40°$

33. In a ΔABC, $\angle A = 60°$ and $\angle B = 80°$, OB and OC are the bisectors of $\angle B$ and $\angle C$ respectively. The value of $\angle BOC$ is



(A) 40° (B) 110°

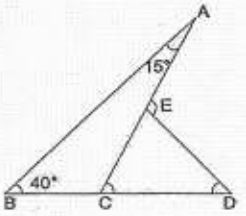
(C) 100° (D) 120°

34. Two poles of 10 m and 15 m stand upright on a plane ground. If the distance between the tops of the poles is 13 m, then distance between their feet is

(A) 13 m (B) 12 m

(C) 12.5 m (D) 11 m

35. In the given figure, $\angle AED$ is equal to



(A) 55° (B) 92°

(C) 67° (D) 107°

Darken your Choice with HB Pencil

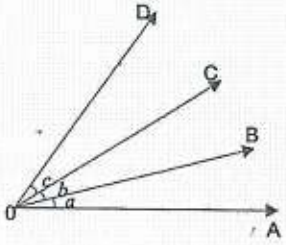
1.	Ⓐ Ⓑ Ⓒ Ⓓ	7.	Ⓐ Ⓑ Ⓒ Ⓓ	13.	Ⓐ Ⓑ Ⓒ Ⓓ	19.	Ⓐ Ⓑ Ⓒ Ⓓ	25.	Ⓐ Ⓑ Ⓒ Ⓓ	31.	Ⓐ Ⓑ Ⓒ Ⓓ
2.	Ⓐ Ⓑ Ⓒ Ⓓ	8.	Ⓐ Ⓑ Ⓒ Ⓓ	14.	Ⓐ Ⓑ Ⓒ Ⓓ	20.	Ⓐ Ⓑ Ⓒ Ⓓ	26.	Ⓐ Ⓑ Ⓒ Ⓓ	32.	Ⓐ Ⓑ Ⓒ Ⓓ
3.	Ⓐ Ⓑ Ⓒ Ⓓ	9.	Ⓐ Ⓑ Ⓒ Ⓓ	15.	Ⓐ Ⓑ Ⓒ Ⓓ	21.	Ⓐ Ⓑ Ⓒ Ⓓ	27.	Ⓐ Ⓑ Ⓒ Ⓓ	33.	Ⓐ Ⓑ Ⓒ Ⓓ
4.	Ⓐ Ⓑ Ⓒ Ⓓ	10.	Ⓐ Ⓑ Ⓒ Ⓓ	16.	Ⓐ Ⓑ Ⓒ Ⓓ	22.	Ⓐ Ⓑ Ⓒ Ⓓ	28.	Ⓐ Ⓑ Ⓒ Ⓓ	34.	Ⓐ Ⓑ Ⓒ Ⓓ
5.	Ⓐ Ⓑ Ⓒ Ⓓ	11.	Ⓐ Ⓑ Ⓒ Ⓓ	17.	Ⓐ Ⓑ Ⓒ Ⓓ	23.	Ⓐ Ⓑ Ⓒ Ⓓ	29.	Ⓐ Ⓑ Ⓒ Ⓓ	35.	Ⓐ Ⓑ Ⓒ Ⓓ
6.	Ⓐ Ⓑ Ⓒ Ⓓ	12.	Ⓐ Ⓑ Ⓒ Ⓓ	18.	Ⓐ Ⓑ Ⓒ Ⓓ	24.	Ⓐ Ⓑ Ⓒ Ⓓ	30.	Ⓐ Ⓑ Ⓒ Ⓓ		

7. Congruence of Triangles

Multiple Choice Questions

1. In ΔABC, $AD \perp BC$, $\angle B = \angle C$ and $AB = AC$. State by which property $\Delta ADB \cong \Delta ADC$?
   (A) SAS property (B) SSS property
   (C) RHS property (D) ASA property

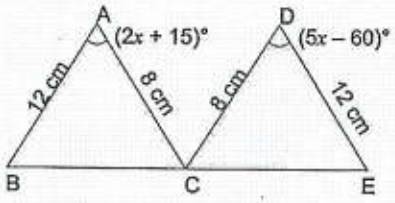
2. In the given figure, $\angle a = \angle b = \angle c$. Name the angle which is congruent to $\angle AOC$.
   (A) $\angle AOB$ (B) $\angle BOD$
   (C) $\angle COD$ (D) $\angle BOC$



3. If ΔPQR is congruent to ΔSTU, then the length of TU is
   (A) 7 cm (B) 5 cm
   (C) 6 cm (D) cannot be determined

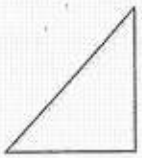
4. In ΔABC, $AB = AC$ and AD is perpendicular bisector of BC. The property by which ΔADB is not congruent to ΔADC is
   (A) SAS property (B) SSS property
   (C) RHS property (D) AAA property

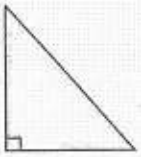
5. In the given figure, what must be the value of x to prove $\Delta ABC \cong \Delta DEC$ by SAS?
   (A) 15° (B) 25°
   (C) 75° (D) 65°

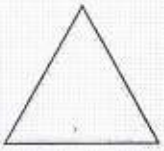


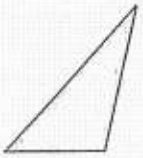
6. If for ΔABC and ΔPQR, the correspondence $QPR \leftrightarrow CAB$ gives a congruence, then which of the following is not true?
   (A) $AP = QR$ (B) $AC = QP$
   (C) $\angle A = \angle P$ (D) $\angle C = \angle Q$

7. Which of the following figures will have its altitude outside the triangle?

(A) 

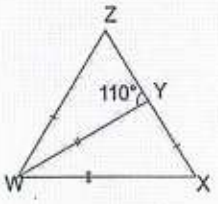
(B) 

(C) 

(D) 

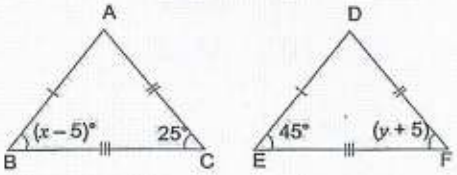
8. Which of the following statements are not correct?
   (A) Two squares having same perimeter are congruent.
   (B) Two circles having same circumference are congruent.
   (C) If three angles of two triangles are equal, then triangles are congruent.
   (D) If two legs of a right angled triangle are equal to two legs of another right angled triangle, then the right angled triangles are congruent.

9. In the given triangle, ZW = ZX and WY = XW. Then, ∠WZX is equal to



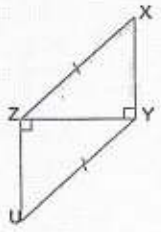
   (A) 40° (B) 70°
   (C) 100° (D) 140°

10. ΔABC ≅ ΔDEF such that AB = DE, AC = DF and BC = EF. The value of x and y are



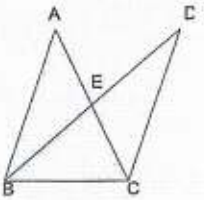
   (A) $x = 30°, y = 40°$ (B) $x = 50°, y = 20°$
   (C) $x = 40°, y = 30°$ (D) none of these

11. In the alongside figure some markings are given, from these markings ΔXYZ is congruent to ΔUZY. State the congruency criterion by which ΔXYZ ≅ ΔUZY.



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

12. In the given figure, AB = DC and AC = DB. Which third matching part would you use to prove ΔABC ≅ ΔDCB?



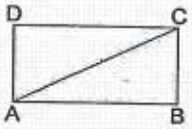
   (A) ∠B = ∠C (B) ∠A = ∠C
   (C) BC = CB (D) ∠AEC = ∠DEC

13. If one angle of a triangle is equal to the sum of other two, then the measure of that angle is

(A) 90° (B) 45°

(C) 60° (D) 120°

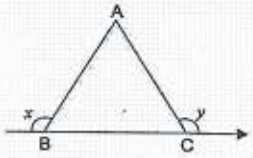
14. In the given figure, if AD = BC and AD || BC, then



(A) AB = AD (B) BC = CD

(C) AB = AC (D) AB = DC

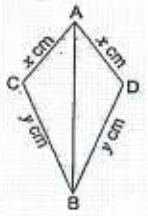
15. In the given figure, ABC is an isosceles triangle in which AB = AC. The relation between x and y is



(A) $x = y$ (B) $x + y = 90°$

(C) $x + y = 180°$ (D) $x + y = 360°$

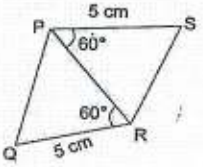
16. By which congruency property, the two triangles connected by the given figure are congruent?



(A) SAS property (B) SSS property

(C) RHS property (D) ASA property

17. From the given figure, ΔPQR is congruent to _____.



(A) ΔSRP (B) ΔRPS

(C) ΔRSP (D) ΔSPR

18. Which of the following statements are true?

(A) The congruent figures superimpose each other completely.

(B) Two coins of different denominations are congruent.

(C) Two acute angles are congruent.

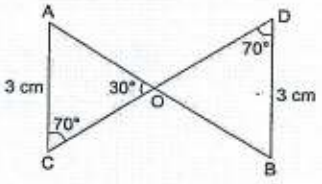
(D) Two angles of same measure are congruent.

19. In a ΔPQR, ∠Q = 44° and ∠P = 92°. The pair of equal sides is

(A) QR and PQ (B) PQ and PR

(C) QR and PR (D) none of these

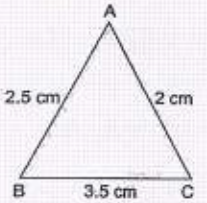
20. In the given figure, if ΔAOC ≅ ΔBOD, then value of ∠B is

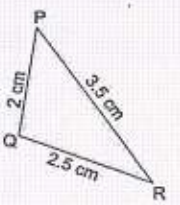


(A) 30° (B) 70°

(C) 80° (D) 50°

21. In the given figure, the lengths of the sides of two triangles are given. The correct statement is





(A) $\Delta ABC \cong \Delta PQR$ (B) $\Delta ABC \cong \Delta QPR$

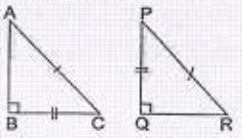
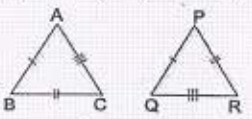
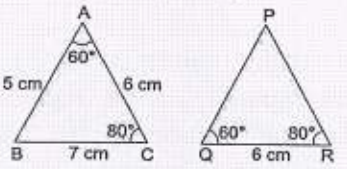
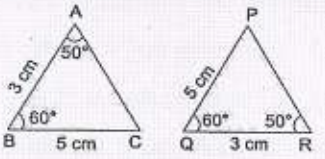
(C) $\Delta ABC \cong \Delta RPO$ (D) $\Delta ABC \cong \Delta QRP$

22. $\Delta ABC \cong \Delta PQR$, $\angle CBA = 90°$, $\angle CAB = 65°$ and $BC = 5$ cm, then $\angle RPQ$ is

(A) 65° (B) 75°

(C) 90° (D) 25°

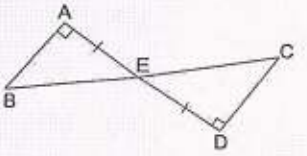
23. Which of the given pairs of triangles in column II satisfy the condition of congruency given in column I.

Column I		**Column II**
(a) ASA congruency	(*i*)	
(b) SAS congruency	(*ii*)	
(c) RHS congruency	(*iii*)	
(d) SSS congruency	(*iv*)	

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

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

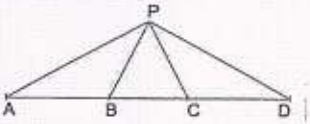
24. If $\angle A = \angle D = 90$, then $\Delta ABE \cong \Delta DCE$ by the congruence condition



(A) SAS (B) ASA

(C) SSS (D) RHS

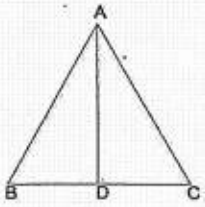
25. ABCD is a straight line with $AB = BC = CD$. P is a point not on the straight line such that $PB = PC$. Which of the following statements is true?



(A) $PA = PB$ (B) $PB = PD$

(C) $PA = PD$ (D) None of these

26. In the given figure, if AD is the bisector of $\angle A$ and $AD \perp BC$, then which of the two triangles are congruent?



(A) $\Delta ABC \cong \Delta ABD$ (B) $\Delta ABD \cong \Delta ACD$

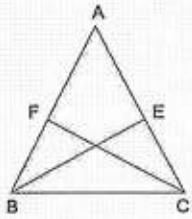
(C) $\Delta ABC \cong \Delta ACD$ (D) None of these

27. If ΔABC and ΔDBC are on the same base BC, AB = CD and AC = DB, then which of the following gives a congruence relationship?

(A) $\Delta ABC \cong \Delta DBC$ (B) $\Delta ABC \cong \Delta CBD$

(C) $\Delta ABC \cong \Delta DCB$ (D) $\Delta ABC \cong \Delta BCD$

28. In the given figure, ABC is an isosceles triangle in which AB = AC. If E and F be the midpoints of AC and AB respectively, then BE is equal to



(A) AB (B) CE

(C) CF (D) BF

29. A: If the hypotenuse and an acute angle of a right triangle is equal to the hypotenuse and corresponding acute angle of another right triangle, then those two triangles are congruent.
R: By RHS property, the two right triangles are congruent.

Which of the following statements is true for the above conditions?

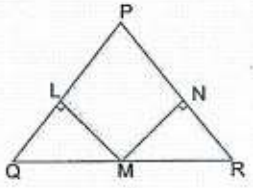
(A) A is true and R is the correct explanation of A

(B) A is false and R is the correct explanation of A

(C) Both A and R are false

(D) None of these

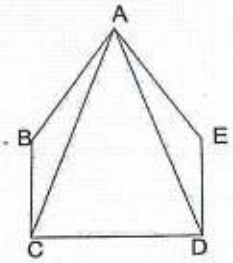
30. In the given figure, it is given that LM = MN, QM = MR, $ML \perp PQ$ and $MN \perp PR$. Is $\Delta MLQ \cong \Delta MNR$?



(A) Yes (B) No

(C) May be congruent or may not be (D) Can't say

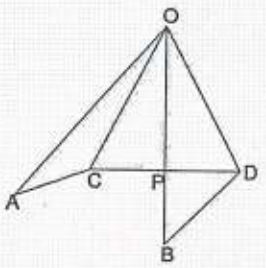
31. ABCDE is a regular pentagons, then which of the following pair of triangles is congruent?



(A) $\Delta ABC \cong \Delta AED$ (B) $\Delta ABC \cong \Delta ACD$

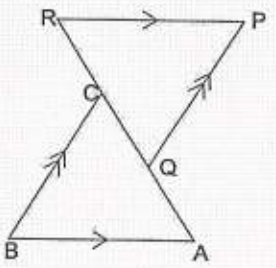
(C) $\Delta ACD \cong \Delta AED$ (D) None of these

32. If OA = OB, OC = OD and ∠AOB = ∠COD, then which of the following pairs is true?



(A) ∠OCP = ∠OPC
(B) OC = CD
(C) OA = CD
(D) AC = BD

33. In the given figure, if BA || RP, QP || BC and AQ = CR. Is ΔABC congruent to ΔPQR?



(A) Yes
(B) No
(C) Can't say
(D) Not possible

Darken your Choice with HB Pencil

1.	Ⓐ Ⓑ Ⓒ Ⓓ	7.	Ⓐ Ⓑ Ⓒ Ⓓ	13.	Ⓐ Ⓑ Ⓒ Ⓓ	19.	Ⓐ Ⓑ Ⓒ Ⓓ	25.	Ⓐ Ⓑ Ⓒ Ⓓ	31.	Ⓐ Ⓑ Ⓒ Ⓓ
2.	Ⓐ Ⓑ Ⓒ Ⓓ	8.	Ⓐ Ⓑ Ⓒ Ⓓ	14.	Ⓐ Ⓑ Ⓒ Ⓓ	20.	Ⓐ Ⓑ Ⓒ Ⓓ	26.	Ⓐ Ⓑ Ⓒ Ⓓ	32.	Ⓐ Ⓑ Ⓒ Ⓓ
3.	Ⓐ Ⓑ Ⓒ Ⓓ	9.	Ⓐ Ⓑ Ⓒ Ⓓ	15.	Ⓐ Ⓑ Ⓒ Ⓓ	21.	Ⓐ Ⓑ Ⓒ Ⓓ	27.	Ⓐ Ⓑ Ⓒ Ⓓ	33.	Ⓐ Ⓑ Ⓒ Ⓓ
4.	Ⓐ Ⓑ Ⓒ Ⓓ	10.	Ⓐ Ⓑ Ⓒ Ⓓ	16.	Ⓐ Ⓑ Ⓒ Ⓓ	22.	Ⓐ Ⓑ Ⓒ Ⓓ	28.	Ⓐ Ⓑ Ⓒ Ⓓ		
5.	Ⓐ Ⓑ Ⓒ Ⓓ	11.	Ⓐ Ⓑ Ⓒ Ⓓ	17.	Ⓐ Ⓑ Ⓒ Ⓓ	23.	Ⓐ Ⓑ Ⓒ Ⓓ	29.	Ⓐ Ⓑ Ⓒ Ⓓ		
6.	Ⓐ Ⓑ Ⓒ Ⓓ	12.	Ⓐ Ⓑ Ⓒ Ⓓ	18.	Ⓐ Ⓑ Ⓒ Ⓓ	24.	Ⓐ Ⓑ Ⓒ Ⓓ	30.	Ⓐ Ⓑ Ⓒ Ⓓ		

International Olympiad Foundation

8. Comparing Quantities

Multiple Choice Questions

1. If $4A = 5B$ and $6B = 7C$, then A : C is equal to
   (A) 35 : 24 (B) 8 : 9
   (C) 24 : 35 (D) 14 : 15
2. The ratio of 75 ml to 3 litres is
   (A) 25 : 1 (B) 40 : 1
   (C) 1 : 40 (D) 3 : 200
3. 0.025 when expressed as a percent is
   (A) 250% (B) 25%
   (C) 4% (D) 2.5%
4. A number when reduced by 4, becomes 80% of itself, then the number is
   (A) 20 (B) 30
   (C) 40 (D) 50
5. A farmer bought a buffalo for ₹ 44,000 and a cow for ₹ 18,000. He sold the buffalo at a loss of 5% but made a profit of 10% on the cow. The net result of the transaction is
   (A) loss of ₹ 200 (B) profit of ₹ 400
   (C) loss of ₹ 400 (D) profit of ₹ 200
6. If A is increased by 20%, it equals B. If B is decreased by 50%, it equals C. Then _____ of A is equal to C.
   (A) 55% (B) 60%
   (C) 65% (D) 70%
7. If 40% of a number is 256, then 25% of that number is
   (A) 160 (B) 200
   (C) 125 (D) 180

8. 400 apples were bought at ₹ 125 per hundred and were sold at a profit of ₹ 100. The selling price of apples per dozen is

(A) ₹ 20 (B) ₹ 12

(C) ₹ 18 (D) ₹ 16

9. The sum of money that will produce ₹ 1770 as simple interest in $7\frac{1}{2}$ years at 8% p.a. is

(A) ₹ 2950 (B) ₹ 3120

(C) ₹ 2800 (D) ₹ 3200

10. The CP of a chair is ₹ 3300. If it is sold at a loss of 10%, then SP is

(A) ₹ 3000 (B) ₹ 3070

(C) ₹ 2790 (D) ₹ 2970

11. Which of the following statements are true?

(A) The ratio 2 : 5 converted into percentage is 60%.

(B) If SP of an article is ₹ 540 and loss is ₹ 40, then its CP is ₹ 500.

(C) 80% of 450 m is equal to 360 m.

(D) $6\frac{1}{4}\%$ expressed as a fraction is $\frac{1}{16}$.

12. Find the least number which is to be subtracted from each of the number 4, 8, 12 and 24, so that the remainder are in proportion.

(A) 3 (B) 1

(C) 0 (D) 4

13. Due to reduction of 20% in the price of petrol, a man is able to buy 1.5 litre more petrol for ₹ 1200. The reduced rate of petrol per litre is

(A) ₹ 180 (B) ₹ 160

(C) ₹ 170 (D) ₹ 200

14. What sum will amount to ₹ 9112 at $2\frac{2}{5}\%$ rate per annum simple interest in 3 years?

(A) ₹ 8076 (B) ₹ 8736

(C) ₹ 7550 (D) ₹ 8500

15. Ranjan bought 120 oranges at ₹ 4 each. He sold 60% of the oranges at ₹ 5 each and the remaining at ₹ 3.50 each. His _____ is _____ %.

(A) loss (B) profit

(C) 10 (D) 7.5

16. The ages of A and B are in the ratio 3 : 8. Six years hence, their ages will be in the ratio 4 : 9. The present age of A is

(A) 18 years (B) 15 years

(C) 12 years (D) 21 years

17. A boy who was asked to find 3% of a sum of money, misread the question and found 8% of it and his answer was 72. What should have been the correct answer?

(A) 36 (B) 270

(C) 27 (D) 360

18. If $\frac{1}{x} : \frac{1}{y} : \frac{1}{z} = 2 : 3 : 5$, then $x : y : z$ is

(A) 2 : 3 : 5 (B) 15 : 10 : 6

(C) 5 : 3 : 2 (D) 6 : 10 : 15

19. Two numbers are in the ratio 1 : 2. If 7 be added to both, their ratio changes to 3 : 5. The greater number is

(A) 28 (B) 32

(C) 36 (D) 25

20. Shivam buys two horses for ₹ 1,50,000 each. He sells one at the gain of 25% and another at the loss of 25%. Which of the following options is correct?

(A) There is a loss of 5% on whole transaction.

(B) There is a gain of 5% on whole transaction.

(C) No profit or loss occurs on the whole transaction.

(D) There is a gain of ₹ 37,500 on whole transaction.

21. Rahul started a business with a sum of ₹ 18,500 and incurred a loss of 5% in the first year, a gain of 8% in the second year and gain of 6% in the third year. The net profit in the three years is

(A) ₹ 1620 (B) ₹ 1250

(C) ₹ 1152 (D) ₹ 1352

22. A student has to score 35% marks to pass an exam. Ashi scored 154 marks and failed by 21 marks. Find the maximum marks.

(A) 400 (B) 425

(C) 450 (D) 500

23. The CP of 25 articles is equal to the SP of 20 articles. Then gain % is

(A) 50% (B) 30%

(C) 25% (D) 20%

24. A fraction bears the same ratio to $\frac{1}{27}$ as $\frac{3}{7}$ does to $\frac{5}{9}$. The fraction is

(A) $\frac{7}{45}$ (B) $\frac{1}{35}$

(C) $\frac{45}{7}$ (D) $\frac{5}{21}$

25. $x\%$ of y is $y\%$ of

(A) $100x$ (B) $\frac{x}{100}$

(C) x (D) $\frac{y}{100}$

26. Three candidates in a school election for head boy received 350, 295 and 855 respectively. What percent of the total votes did the winning candidate receive?

(A) 60% (B) 45%

(C) 52% (D) 57%

27. A person bought 60 sheep at ₹ 120 per sheep. He sold 40 of them at ₹ 150. 10 of the sheep died. What should be the SP of the remaining sheep, if he wants a profit of ₹ 800?

(A) ₹150 (B) ₹200

(C) ₹250 (D) ₹180

28. Match the following.

	Column I		**Column II**
(a)	3 is what percent of 5?	(*i*)	4%
(b)	What percent of 27 is 54?	(*ii*)	60%
(c)	What percent of 2.5*l* is 100 ml?	(*iii*)	$8\frac{1}{3}\%$
(d)	5 is what percent of 60?	(*iv*)	200%

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

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

29. A worker makes a toy every $\frac{2}{3}$ hour. If he works for $7\frac{1}{3}$ hours, then how many toys will he make?

(A) 11 (B) 18

(C) 16 (D) 22

30. On selling a jug for ₹ 144, a man loses $\frac{1}{7}$ of his outlay. If it is sold for ₹ 189, what is the gain%?

(A) 25% (B) 12%

(C) 50% (D) 30%

31. The four numbers are such that x is 15% of y, y is 10% of z, and z is 5% of w. If the value of x is 450, then the value of w is

(A) 600 (B) 6,00,000

(C) 6,000 (D) 60,000

32. The grandfather purchased one packet of chocolates for the children in the locality. He distributed 10 chocolates per child and still was left with 25 chocolates. If there were 54 children in a locality, then find the percentage of chocolates left with him after distribution.

(A) 8.5% (B) 5.2%

(C) 4.4% (D) 1.2%

33. Divide ₹ 21,000 into two parts such that the simple interest on the first part for 3 years at 5% per annum is equal to the simple interest on the second part for 5 years at 4% per annum.

(A) ₹ 8,000 and ₹ 13,000 (B) ₹ 9,000 and ₹ 12,000

(C) ₹ 11,000 and ₹ 10,000 (D) ₹ 15,000 and ₹ 6,000

34. Ramesh purchased 125 stools at the rate of ₹ 120 per stool. The transport expenditure was ₹ 250. He paid octroi at the rate of ₹ 2 per stool and coolie charges were ₹ 250. What should be the selling price of each stool, if he wants a profit of 10%.

(A) ₹ 138.60 (B) ₹ 138

(C) ₹ 140 (D) ₹ 139.60

35. A and B borrowed ₹ 4500 and ₹ 5000 respectively at the same rate of interest for $3\frac{1}{2}$ years. If B paid ₹ 280 more interest than A, then the rate of interest per annum is

(A) 12% (B) 14%

(C) 16% (D) 18%

Darken your Choice with HB Pencil

1.	Ⓐ Ⓑ Ⓒ Ⓓ	7.	Ⓐ Ⓑ Ⓒ Ⓓ	13.	Ⓐ Ⓑ Ⓒ Ⓓ	19.	Ⓐ Ⓑ Ⓒ Ⓓ	25.	Ⓐ Ⓑ Ⓒ Ⓓ	31.	Ⓐ Ⓑ Ⓒ Ⓓ
2.	Ⓐ Ⓑ Ⓒ Ⓓ	8.	Ⓐ Ⓑ Ⓒ Ⓓ	14.	Ⓐ Ⓑ Ⓒ Ⓓ	20.	Ⓐ Ⓑ Ⓒ Ⓓ	26.	Ⓐ Ⓑ Ⓒ Ⓓ	32.	Ⓐ Ⓑ Ⓒ Ⓓ
3.	Ⓐ Ⓑ Ⓒ Ⓓ	9.	Ⓐ Ⓑ Ⓒ Ⓓ	15.	Ⓐ Ⓑ Ⓒ Ⓓ	21.	Ⓐ Ⓑ Ⓒ Ⓓ	27.	Ⓐ Ⓑ Ⓒ Ⓓ	33.	Ⓐ Ⓑ Ⓒ Ⓓ
4.	Ⓐ Ⓑ Ⓒ Ⓓ	10.	Ⓐ Ⓑ Ⓒ Ⓓ	16.	Ⓐ Ⓑ Ⓒ Ⓓ	22.	Ⓐ Ⓑ Ⓒ Ⓓ	28.	Ⓐ Ⓑ Ⓒ Ⓓ	34.	Ⓐ Ⓑ Ⓒ Ⓓ
5.	Ⓐ Ⓑ Ⓒ Ⓓ	11.	Ⓐ Ⓑ Ⓒ Ⓓ	17.	Ⓐ Ⓑ Ⓒ Ⓓ	23.	Ⓐ Ⓑ Ⓒ Ⓓ	29.	Ⓐ Ⓑ Ⓒ Ⓓ	35.	Ⓐ Ⓑ Ⓒ Ⓓ
6.	Ⓐ Ⓑ Ⓒ Ⓓ	12.	Ⓐ Ⓑ Ⓒ Ⓓ	18.	Ⓐ Ⓑ Ⓒ Ⓓ	24.	Ⓐ Ⓑ Ⓒ Ⓓ	30.	Ⓐ Ⓑ Ⓒ Ⓓ		

9. Rational Numbers

Multiple Choice Questions

1. The rational number lying between 84 and 86 is

(A) 85 (B) $\frac{169}{2}$

(C) $\frac{171}{2}$ (D) all of these

2. The average of the middle two rational numbers if $\frac{4}{7}, \frac{1}{3}, \frac{2}{5}$ and $\frac{5}{9}$ are arranged in descending order, is

(A) $\frac{43}{90}$ (B) $\frac{43}{45}$

(C) $\frac{86}{45}$ (D) $\frac{86}{90}$

3. $\left(-2\frac{1}{3}\right) \div 2\frac{11}{12}$ is equal to

(A) $\frac{4}{5}$ (B) $-\frac{4}{5}$

(C) $\frac{4}{11}$ (D) $-\frac{4}{11}$

4. Which one of the following is not an integer when expressed in its simplest form?

(A) $\frac{2254}{98}$ (B) $\frac{4883}{257}$

(C) $\frac{135}{45}$ (D) $\frac{825}{65}$

5. The multiplicative inverse of $\frac{5}{4}-\frac{7}{6}-\left(-\frac{2}{3}\right)$ is

(A) $\frac{3}{4}$ (B) $-\frac{3}{4}$

(C) $\frac{4}{3}$ (D) $-\frac{4}{3}$

6. Which of the following cannot be written as a rational number with denominator 5?

(A) $\frac{7}{10}$ (B) $\frac{35}{25}$

(C) $\frac{35}{250}$ (D) $\frac{1}{-4}$

7. Find the additive inverse of $\left(\frac{-7}{18}\right)+\left(\frac{-5}{12}\right)+\left(\frac{-9}{-16}\right)$.

(A) $\frac{-35}{144}$ (B) $\frac{35}{144}$

(C) $\frac{7}{12}$ (D) $\frac{-7}{12}$

8. Which of the following statements are wrong?

(*i*) Difference of two rational numbers is a rational number.

(*ii*) Subtraction is commutative on rational numbers.

(*iii*) Addition is not commutative on rational numbers.

(A) (*i*) and (*ii*) (B) (*i*) only

(C) (*i*) and (*iii*) (D) All of these

9. How many pieces of equal size can be cut from a rope of 60 metres each measuring $3\frac{3}{4}$ m?

(A) 8 (B) 10

(C) 13 (D) 16

10. Which is the greatest number among the following?

(A) -100 (B) -3

(C) $\frac{1}{16}$ (D) 0

11. The simplest form of $\frac{13}{11}\times\left(\frac{-14}{5}\right)+\frac{13}{11}\times\left(\frac{-7}{5}\right)+\left(\frac{-13}{11}\right)\times\frac{34}{5}$ is

(A) -13 (B) $\frac{13}{5}$

(C) $\frac{-13}{55}$ (D) $\frac{-13}{11}$

12. $\frac{-8}{-13}+\frac{-9}{26}+\frac{30}{-39}\div 1$ is equal to

(A) $1\frac{41}{48}$ (B) $\frac{-57}{78}$

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

13. A: Rational numbers are always closed under division. R: Division by zero is not defined. Which of the following statements is true?

(A) A is true and R is the correct explanation of A.

(B) A is false and R is false too.

(C) A is true and R is false.

(D) A is false and R is true.

14. If $P=\frac{-14}{5}\times\left(\frac{-10}{9}\right)\times\left(\frac{27}{7}\right)$ and $Q=(-25)\times\frac{17}{5}\times\frac{2}{24}$, then value of $\frac{P+Q}{P-Q}$ is

(A) $-1\frac{14}{15}$ (B) $\frac{14}{15}$

(C) $\frac{7}{17}$ (D) $-3\frac{14}{25}$

15. When the sum of $\left(\frac{-13}{5}\right)$ and $\frac{12}{7}$ is divided by the product of $\left(\frac{-31}{7}\right)$ and $\left(\frac{-1}{2}\right)$, then the result is

(A) $\frac{-2}{5}$ (B) $\frac{-5}{2}$

(C) $\frac{5}{2}$ (D) $\frac{-11}{5}$

16. Sneha collects the cards of three cartoon characters. If $\frac{2}{9}$ of them are Tweety, $\frac{4}{9}$ are Pokemon and the remaining are Noddy, then what fraction of the cards is of Noddy?

(A) $\frac{5}{9}$ (B) $\frac{1}{3}$

(C) $\frac{11}{18}$ (D) $\frac{4}{9}$

17. Evaluate $\left[\frac{4}{15}\div\left(\frac{-2}{3}\right)\right]\div\left(\frac{-7}{9}\right)$ and $\frac{4}{15}\div\left[\frac{-2}{3}\div\left(\frac{-7}{9}\right)\right]$. Are they equal?

(A) Yes (B) Cannot say

(C) No (D) May or may not be

18. Multiply the additive inverse of $\left[\frac{2}{3}-\left(\frac{-4}{9}\right)\right]$ with the reciprocal of $\left[\frac{3}{9}-\left(\frac{-7}{2}\right)\right]$.

(A) $\frac{-20}{369}$ (B) $\frac{-5}{91}$

(C) $\frac{-20}{351}$ (D) None of these

19. By what rational number should we multiply $\frac{-7}{11}$ to get the product $\frac{28}{33}$?

(A) $\frac{-3}{4}$ (B) $\frac{-4}{3}$

(C) $\frac{-196}{363}$ (D) $\frac{363}{-196}$

20. p: If x and y are any two rational numbers such that $x < y$, then $\frac{1}{2}(x+y)$ is a rational number lying between x and y.

q: $\frac{1}{2}\times\left(\frac{-1}{3}+\frac{1}{2}\right)$ is a rational number that lies between $\frac{-1}{3}$ and $\frac{1}{2}$.

Is statement q an example for statement p?

(A) Yes (B) No

(C) Can't say (D) Information incomplete

21. When simplified, the product $\left(2-\frac{1}{3}\right)\left(2-\frac{3}{5}\right)\left(2-\frac{5}{7}\right).....\left(2-\frac{997}{999}\right)$ is equal to

(A) $\frac{5}{999}$ (B) $\frac{1001}{999}$

(C) $\frac{1001}{3}$ (D) $\frac{100}{3}$

22. Simplify $\left(\frac{5}{13}\times\frac{6}{15}\right)\div\left(\frac{9}{12}\times\frac{4}{3}\right)-\left(\frac{3}{11}\times\frac{5}{6}\right)$.

(A) $\frac{-21}{286}$ (B) $\frac{42}{286}$

(C) $\frac{109}{286}$ (D) $\frac{21}{286}$

23. What number must be added to $\left(\frac{-7}{8}\right)$ to get $\frac{4}{9}$?

(A) $\frac{95}{72}$ (B) $\frac{17}{62}$

(C) $\frac{71}{63}$ (D) $\frac{81}{73}$

24. Arrange the rational numbers $\frac{-3}{7}, \frac{5}{-14}$ and $\frac{-7}{12}$ in increasing order.

(A) $\frac{-3}{7} < \frac{-7}{12} < \frac{-5}{14}$ (B) $\frac{-7}{12} < \frac{-3}{7} < \frac{-5}{14}$

(C) $\frac{-3}{7} < \frac{-5}{14} < \frac{-7}{12}$ (D) $\frac{-5}{14} < \frac{-3}{7} < \frac{-7}{12}$

25. $\frac{-4}{5} \div 0$ is equal to

(A) $\frac{-4}{5}$ (B) $\frac{-5}{4}$

(C) 0 (D) not defined

26. From a rope 15 m long, $4\frac{1}{3}$ m is cut off and $\frac{3}{5}$ of the remaining is cut off again. The length of the remaining part of the rope is

(A) $4\frac{4}{15}$ m (B) $3\frac{4}{15}$ m

(C) $2\frac{4}{15}$ m (D) $5\frac{4}{15}$ m

27. Which of the following statements is true?

(A) The rational number $\frac{17}{5}$ lies to the left of zero on the number line.

(B) The rational number $\frac{-7}{9}$ lies to the right of zero on the number line.

(C) The rational numbers $\frac{-5}{-7}$ and $\frac{7}{-9}$ lie on opposite sides of zero on the number line.

(D) The rational numbers $\frac{-17}{6}$ and $\frac{+8}{-15}$ lie on opposite sides of zero on the number line.

28. The product of two rational numbers is $\frac{-33}{78}$. If one of the number is $\frac{15}{22}$, then find the other rational number.

(A) $\frac{121}{195}$ (B) $\frac{121}{-195}$

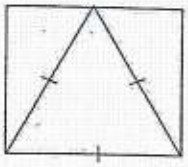
(C) $\frac{-121}{-195}$ (D) $\frac{-123}{-195}$

29. The multiplicative inverse of the rational number $\frac{117}{525}$ is

(A) $\frac{876}{225}$ (B) 1

(C) $\frac{876}{225}$ (D) $\frac{175}{39}$

30. Find the length of the square in which an equilateral triangle is formed as shown in the figure given alongside, whose perimeter is $6\frac{12}{17}$ m.



(A) $3\frac{12}{7}$ m
(B) $\frac{412}{57}$ m
(C) $2\frac{4}{17}$ m
(D) $\frac{57}{216}$ m

31. Rashi donated $\frac{1}{5}$ of her monthly income to an NGO working for the education of old women, $\frac{1}{4}$ of her salary was spent on food, $\frac{1}{3}$ on rent and $\frac{1}{15}$ on other expenses. If she was left with ₹ 9000, find her monthly income.
(A) ₹ 50,000
(B) ₹ 60,000
(C) ₹ 48,000
(D) ₹ 54,000

32. Evaluate $\left(\frac{3}{11}\times\frac{2}{9}\right)+\left(\frac{-6}{21}\div\frac{1}{-42}\right)-\left(-1\frac{1}{3}\times\frac{9}{24}\right)-\left(-\frac{2}{7}\times(-21)\right)$.
(A) $\frac{29}{66}$
(B) $\frac{43}{66}$
(C) $\frac{37}{66}$
(D) $\frac{53}{66}$

33. What should be added to $\left(\frac{-1}{2}-\frac{3}{4}\text{ of }\frac{-8}{15}\right)$, so that the sum is the product of $\left(\frac{-7}{50}\right)$ and $\left(1\frac{1}{14}\right)$?
(A) $\frac{-1}{20}$
(B) $\frac{-1}{18}$
(C) $\frac{-1}{12}$
(D) $\frac{-1}{15}$

34. If a rational number $\frac{p}{q}<1$, where p and q are positive integers, then which of the following is greater than 1?
(A) $\frac{p}{2q}$
(B) $\frac{p}{q^2}$
(C) $\frac{q}{p}$
(D) $p-q$

Darken your Choice with HB Pencil

1.	Ⓐ Ⓑ Ⓒ Ⓓ	7.	Ⓐ Ⓑ Ⓒ Ⓓ	13.	Ⓐ Ⓑ Ⓒ Ⓓ	19.	Ⓐ Ⓑ Ⓒ Ⓓ	25.	Ⓐ Ⓑ Ⓒ Ⓓ	31.	Ⓐ Ⓑ Ⓒ Ⓓ
2.	Ⓐ Ⓑ Ⓒ Ⓓ	8.	Ⓐ Ⓑ Ⓒ Ⓓ	14.	Ⓐ Ⓑ Ⓒ Ⓓ	20.	Ⓐ Ⓑ Ⓒ Ⓓ	26.	Ⓐ Ⓑ Ⓒ Ⓓ	32.	Ⓐ Ⓑ Ⓒ Ⓓ
3.	Ⓐ Ⓑ Ⓒ Ⓓ	9.	Ⓐ Ⓑ Ⓒ Ⓓ	15.	Ⓐ Ⓑ Ⓒ Ⓓ	21.	Ⓐ Ⓑ Ⓒ Ⓓ	27.	Ⓐ Ⓑ Ⓒ Ⓓ	33.	Ⓐ Ⓑ Ⓒ Ⓓ
4.	Ⓐ Ⓑ Ⓒ Ⓓ	10.	Ⓐ Ⓑ Ⓒ Ⓓ	16.	Ⓐ Ⓑ Ⓒ Ⓓ	22.	Ⓐ Ⓑ Ⓒ Ⓓ	28.	Ⓐ Ⓑ Ⓒ Ⓓ	34.	Ⓐ Ⓑ Ⓒ Ⓓ
5.	Ⓐ Ⓑ Ⓒ Ⓓ	11.	Ⓐ Ⓑ Ⓒ Ⓓ	17.	Ⓐ Ⓑ Ⓒ Ⓓ	23.	Ⓐ Ⓑ Ⓒ Ⓓ	29.	Ⓐ Ⓑ Ⓒ Ⓓ		
6.	Ⓐ Ⓑ Ⓒ Ⓓ	12.	Ⓐ Ⓑ Ⓒ Ⓓ	18.	Ⓐ Ⓑ Ⓒ Ⓓ	24.	Ⓐ Ⓑ Ⓒ Ⓓ	30.	Ⓐ Ⓑ Ⓒ Ⓓ		

10. Practical Geometry

Multiple Choice Questions

1. To draw a triangle, the sum of any two sides of a triangle
   (A) has no relation with the third side.
   (B) is always greater than the third side.
   (C) is never greater than the third side.
   (D) inadequate information.
2. The number of independent measurements required to construct a triangle is _____.
   (A) 3
   (B) 4
   (C) 2
   (D) none of these
3. Construction of a triangle is not possible if, _____ are given.
   (A) two sides and the included angle
   (B) one side and two angles
   (C) the three sides of the triangle
   (D) 3 angles of a triangle
4. Which of the following sets of lengths could be the lengths of the sides of a right angled triangle?
   (A) 1.5 m, 3.6 m, 3.9 m
   (B) 6 cm, 12 cm, 13 cm
   (C) 7 m, 24 m, 25 m
   (D) 9 m, 8 m, 10 m
5. If a triangle is constructed by taking BC = 5 cm, AC = 3 cm and AB = 5.8 cm, then triangle is
   (A) a right angled triangle
   (B) an isosceles triangle
   (C) an equilateral triangle
   (D) a scalene triangle
6. If p : An isosceles triangle is right angled and q : $\angle A = \angle C = 45°$ and $\angle B = 90°$, then which of the following statements is true?
   (A) p is true and q is the correct explanation of p
   (B) p is false
   (C) p is true and q is not the correct explanation of p
   (D) p and q both are false

7. Two sides of a triangle are 6 cm and 11 cm. What could be the length of the third side so a triangle can be constructed?

(A) 19 cm (B) 17 cm

(C) 13 cm (D) 3 cm

8. If a student constructs a ΔABC in which $AB = BC$ and $\angle B = 80°$, then what measure of $\angle C$ should he take?

(A) 100° (B) 50°

(C) 20° (D) 80°

9. In which of the sets of sides given below, triangle can be constructed?

(A) 2 cm, 3 cm, 6 cm (B) 4 cm, 5 cm, 9 cm

(C) 6 cm, 7 cm, 8 cm (D) None of these

10. In ΔABC, $AB^2 = BC^2 + AC^2$. A student is trying to construct this right angled triangle, which is right angled at

(A) A (B) B

(C) C (D) none of these

11. The number of independent measurements required to construct an equilateral triangle is

(A) 1 (B) 2

(C) 3 (D) 4

12. A triangle can be constructed by taking two of its angles as

(A) 150°, 30° (B) 133°, 57°

(C) 90°, 90° (D) 83°, 47°

13. If two sides of an isosceles triangle are 5 cm and 12 cm, then the length of the third side is

(A) 5 cm (B) 12 cm

(C) 5 cm or 12 cm (D) none of these

14. If the angles of triangle are in the ratio 1 : 2 : 6, then the triangle is _____ triangle.

(A) right angled isosceles (B) right angled

(C) acute angled (D) obtuse angled

15. Is it possible to construct an obtuse angled isosceles triangle?

(A) Yes (B) No

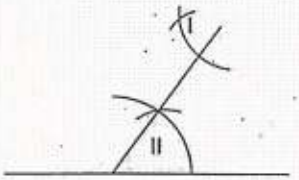
(C) Cannot say (D) May be or may not be

16. Which of following angles cannot be constructed with the help of a pair of compasses?

(A) 75° (B) 105°

(C) 80° (D) $22\frac{1}{2}$

17. In the given figure, arc I and arc II are equal in length with the same radius. The type of lines a student is trying to construct are



(A) perpendicular lines (B) parallel lines

(C) intersecting lines (D) none of these

18. To construct a triangle, two sides and a non-included angle are given. Can a triangle be constructed?

(A) Yes (B) No

(C) Cannot say (D) May be

19. The length of the hypotenuse of the right angled triangle whose two sides measure 0.08 m and 0.06 m is

(A) 1 m (B) 1 cm

(C) 0.1 m (D) none of these

20. In which of the following cases, a unique triangle can be constructed?

(A) AB = 4 cm, BC = 8 cm and CA = 2 cm

(B) BC = 5.2 cm, $\angle B = 90°$ and $\angle C = 90°$

(C) BC = 5 cm, $\angle A = 45$ and $\angle B = 60°$

(D) An isosceles triangle with the length of each equal side 5.2 cm

Darken your Choice with HB Pencil

1.	Ⓐ Ⓑ Ⓒ Ⓓ	5.	Ⓐ Ⓑ Ⓒ Ⓓ	9.	Ⓐ Ⓑ Ⓒ Ⓓ	13.	Ⓐ Ⓑ Ⓒ Ⓓ	17.	Ⓐ Ⓑ Ⓒ Ⓓ
2.	Ⓐ Ⓑ Ⓒ Ⓓ	6.	Ⓐ Ⓑ Ⓒ Ⓓ	10.	Ⓐ Ⓑ Ⓒ Ⓓ	14.	Ⓐ Ⓑ Ⓒ Ⓓ	18.	Ⓐ Ⓑ Ⓒ Ⓓ
3.	Ⓐ Ⓑ Ⓒ Ⓓ	7.	Ⓐ Ⓑ Ⓒ Ⓓ	11.	Ⓐ Ⓑ Ⓒ Ⓓ	15.	Ⓐ Ⓑ Ⓒ Ⓓ	19.	Ⓐ Ⓑ Ⓒ Ⓓ
4.	Ⓐ Ⓑ Ⓒ Ⓓ	8.	Ⓐ Ⓑ Ⓒ Ⓓ	12.	Ⓐ Ⓑ Ⓒ Ⓓ	16.	Ⓐ Ⓑ Ⓒ Ⓓ	20.	Ⓐ Ⓑ Ⓒ Ⓓ

11. Perimeter and Area

Multiple Choice Questions

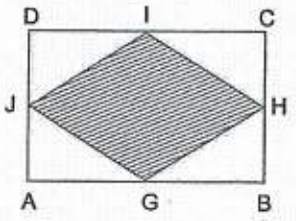
1. The base of a triangular field is three times of its altitude. If the cost of watering the field at ₹ 96 per hectare is ₹ 3600 then the measures of the base and height are _____ respectively.

   (A) 1500 m and 500 m
   (B) 900 m and 300 m
   (C) 500 m and 1500 m
   (D) 400 m and 1200 m

2. There are two squares A_1 and A_2. The ratio of their areas is 25 : 36. If the sides of square A_1 is 15 cm. What is the length of the side of A_2?

   (A) 20 cm
   (B) 24 cm
   (C) 18 cm
   (D) 28 cm

3. ABCD is a rectangle having length 36 cm and breadth 25 cm. G, H, I, J are mid points of AB, BC, CD and AD respectively. Find the area of the shaded region in the given figure.



   (A) 375 cm^2
   (B) 450 cm^2
   (C) 475 cm^2
   (D) 400 cm^2

4. 24 m^2 is the area of

   (A) a square with side 6 m
   (B) 6 squares with side 2 m each
   (C) 9 squares with side 2 m each
   (D) 2 squares with side 9 m each

5. Which of the following statements are true?

   (A) If perimeter of two parallelograms are equal, then their areas are also equal.
   (B) All parallelograms having equal areas have same perimeters.
   (C) Triangles having the same base have equal area.
   (D) None of these

6. In two triangles, the ratio of their areas is 4 : 3 and that of their heights is 3 : 4. The ratio of their bases is

(A) 16 : 9 (B) 8 : 6

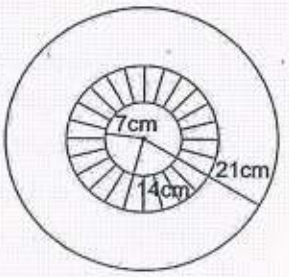
(C) 12 : 9 (D) 16 : 6

7. If the area of a triangle whose base is 22 cm equals the area of a circle with radius 7 cm, then the height of the triangle is _____.

(A) 10 cm (B) 22 cm

(C) 14 cm (D) 18 cm

8. In the given figure, a circle of diameter 42 cm is given. Inside this circle, two circles with diameters 28 cm and 14 cm are drawn. Find the area of the shaded region.



(A) 625 cm^2 (B) 462 cm^2

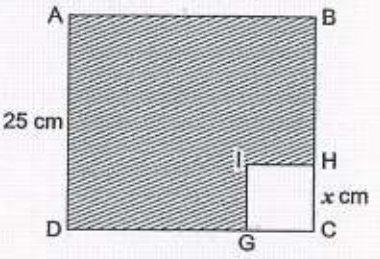
(C) 635 cm^2 (D) 605 cm^2

9. A horse is tied to one corner of a rectangular field, 60 m by 40 m, by a rope 14 m long. On how much area can the horse graze?

(A) 178 m^2 (B) 170 m^2

(C) 165 m^2 (D) 154 m^2

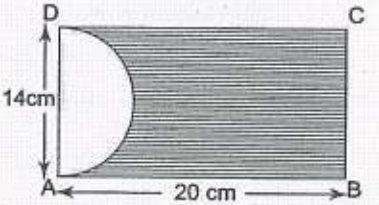
10. ABCD and CHIG are squares such that AD = 25 cm and HC = x cm. If the area of the shaded region is 481 cm^2, then the value of x is



(A) 144 cm (B) 114 cm

(C) 36 cm (D) 12 cm

11. A paper is in the form of a rectangle ABCD in which AB = 20 cm and AD = 14 cm. A semicircular portion with BC as diameter is cut off. Find the area of the remaining part.



(A) 203 cm^2 (B) 280 cm^2

(C) 254 cm^2 (D) None of these

12. A hedge boundary needs to be planted around a rectangular lawn of size 72 m × 18 m. If 3 plants can be planted in a metre of hedge, then how many plants will be planted in all?

(A) 450 (B) 488

(C) 540 (D) 588

13. If a wire in the shape of a square is rebent into a rectangle, then the _____ of both shapes remain same, but _____ may vary.

(A) sizes (B) perimeters

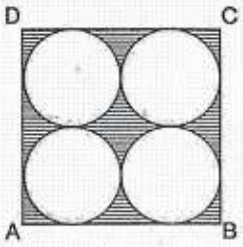
(C) areas (D) shapes

14. The diagonal of a quadrilateral is 20 m and the length of perpendiculars drawn on it from the opposite vertices are 17 m and 11 m. The area of the quadrilateral is

(A) 195 m^2 (B) 290 m^2

(C) 280 m^2 (D) 1870 m^2

15. In the given figure, ABCD is a square of side 14 cm. If $\pi = \frac{22}{7}$ then area of shaded region is



(A) 154 cm^2 (B) 157.5 cm^2

(C) 196 cm^2 (D) 42 cm^2

16. If the base of a triangle is doubled and its height is halved, then area of the resulting triangle

(A) remains same (B) decreases

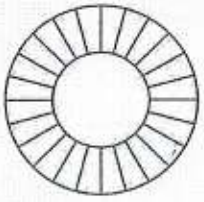
(C) doubles (D) increases

17. A playground is in the shape of a rectangle. In which two semi-circles on its smaller sides are used as sitting area. If the sides of the rectangle are 72 m and 49 m, then the area of the playground excluding sitting area is

(A) 1886.5 m^2 (B) 5414.5 m^2

(C) 1641.5 m^2 (D) 2807.5 m^2

18. A table cloth is in the form of a circle. A circular region encloses a beautiful design given in the figure. The inner circumference is 360 cm and outer circumference is 426 cm. The width of the circular design is



(A) 9.5 cm (B) 10.5 cm

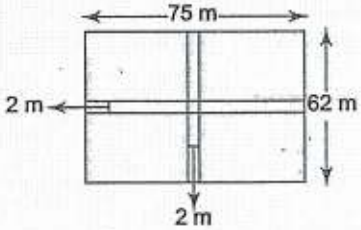
(C) 11.5 cm (D) 11 cm

19. A man runs round a circular field of radius 50 m at a speed of 12 km/hr. What time is taken by the man to complete 20 rounds of the field?

(A) 30 minutes (B) 32 minutes

(C) 34 minutes (D) $31\frac{3}{7}$ minutes

20. Find the area of the crossroads at right angles to each other through the centre of the field, where the width of each road is 2 m.



(A) 274 m^2 (B) 270 m^2

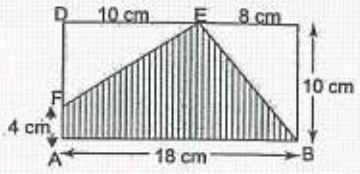
(C) 278 m^2 (D) 266 m^2

21. The perimeters of a square and a rectangle are equal. If their areas be A_1 m^2 and A_2 m^2, then which of the following is a true statement?

(A) $A_1 < A_2$ (B) $A_1 \leq A_2$

(C) $A_1 > A_2$ (D) $A_1 \geq A_2$

22. In the given figure, area of the shaded region is

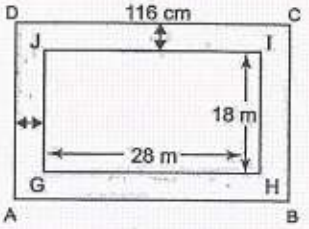


(A) 110 cm^2 (B) 98 cm^2
(C) 96 cm^2 (D) 130 cm^2

23. The cost of cultivating a square field at the rate of ₹ 360 per hectare is ₹ 3240. What is the cost of fencing around it at 75 paise per metre?

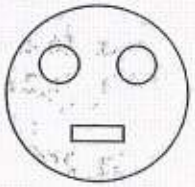
(A) ₹ 360 (B) ₹ 810
(C) ₹ 900 (D) ₹ 1800

24. How many tiles measuring 16 cm × 8 cm each will be required to have a footpath 116 cm wide around a plot of dimensions 28 m × 18 m as given in the figure?



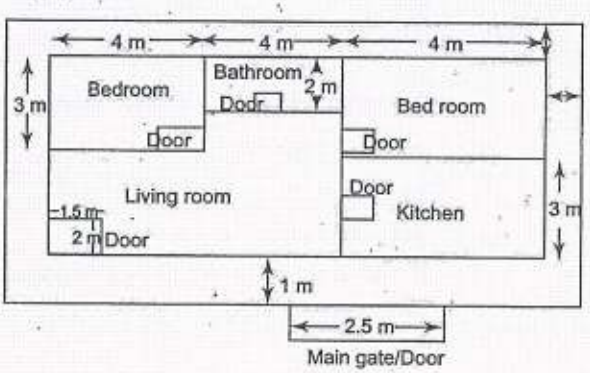
(A) 8758 (B) 4273
(C) 3799 (D) 2472

25. From a circular cardsheet of radius 14 cm, two circles of radius 3.5 cm and a rectangle of length 3 cm and breadth 1 cm are removed. What is the area of remaining cardsheet?



(A) 613 cm^2 (B) 536 cm^2
(C) 533 cm^2 (D) 619 cm^2

The plan and measurement for a house are given. The house is surrounded by a path 1m wide and heights of rooms is 3 m. Answer the questions from 26 to 30.



26. What is the cost of painting the walls of both the bedrooms at the rate of ₹ 38 per m^2 if each room has a door measuring 1.5 by 2 m?

(A) ₹ 4788
(B) ₹ 912
(C) ₹ 3192
(D) ₹ 2964

27. What is the area of living room?

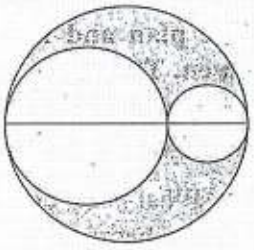
(A) 22 m^2 (B) 24.5 m^2
(C) 24 m^2 (D) 19.5 m^2

28. What is the cost of fencing the house including path at the rate of ₹ 12 per metre?

(A) ₹ 438 (B) ₹ 492
(C) ₹ 462 (D) ₹ 366

29. What is the cost of paving the path with tiles at the rate of ₹ 60 per m^2?
    (A) ₹ 3780 (B) ₹ 6000
    (C) ₹ 1050 (D) ₹ 2220
30. What is the cost of wooden flooring inside the house except the bathroom and path at the cost of ₹ 1200 per m^2?
    (A) ₹ 69,600 (B) ₹ 66,900
    (C) ₹ 1,14,000 (D) ₹ 75,600

31. If the diagonal of a rectangle is 17 cm long and its perimeter is 46 cm, then the area of the rectangle is
    (A) 100 cm^2 (B) 240 cm^2
    (C) 120 cm^2 (D) inadequate information
32. Rashi took a wire and bent it to form a circle of radius 14 cm. Then, she bent it into a rectangle with one side of 28 cm long. What is the breadth of the rectangle?
    (A) 16 cm (B) 6 cm
    (C) 16.2 cm (D) 18.2 cm
33. The area of a circle of radius 5 cm is numerically what percent of its circumference?
    (A) 25% (B) 2.5%
    (C) 40% (D) 250%
34. Two circles are drawn inside a big circle with diameters $\frac{2}{3}$ and $\frac{1}{3}$ of the diameter of the big circle. What is the area of the shaded portion, if the length of the diameter of the big circle is 18 cm?



    (A) 30π cm^2 (B) 36π cm^2
    (C) 40π cm^2 (D) 42π cm^2
35. If the side of a square is increased by 8 cm, then its area increases by 160 cm^2, then the perimeter of original square is
    (A) 8 cm (B) 16 cm
    (C) 24 cm (D) 32 cm

Darken your Choice with HB Pencil

1.	Ⓐ Ⓑ Ⓒ Ⓓ	7.	Ⓐ Ⓑ Ⓒ Ⓓ	13.	Ⓐ Ⓑ Ⓒ Ⓓ	19.	Ⓐ Ⓑ Ⓒ Ⓓ	25.	Ⓐ Ⓑ Ⓒ Ⓓ	31.	Ⓐ Ⓑ Ⓒ Ⓓ
2.	Ⓐ Ⓑ Ⓒ Ⓓ	8.	Ⓐ Ⓑ Ⓒ Ⓓ	14.	Ⓐ Ⓑ Ⓒ Ⓓ	20.	Ⓐ Ⓑ Ⓒ Ⓓ	26.	Ⓐ Ⓑ Ⓒ Ⓓ	32.	Ⓐ Ⓑ Ⓒ Ⓓ
3.	Ⓐ Ⓑ Ⓒ Ⓓ	9.	Ⓐ Ⓑ Ⓒ Ⓓ	15.	Ⓐ Ⓑ Ⓒ Ⓓ	21.	Ⓐ Ⓑ Ⓒ Ⓓ	27.	Ⓐ Ⓑ Ⓒ Ⓓ	33.	Ⓐ Ⓑ Ⓒ Ⓓ
4.	Ⓐ Ⓑ Ⓒ Ⓓ	10.	Ⓐ Ⓑ Ⓒ Ⓓ	16.	Ⓐ Ⓑ Ⓒ Ⓓ	22.	Ⓐ Ⓑ Ⓒ Ⓓ	28.	Ⓐ Ⓑ Ⓒ Ⓓ	34.	Ⓐ Ⓑ Ⓒ Ⓓ
5.	Ⓐ Ⓑ Ⓒ Ⓓ	11.	Ⓐ Ⓑ Ⓒ Ⓓ	17.	Ⓐ Ⓑ Ⓒ Ⓓ	23.	Ⓐ Ⓑ Ⓒ Ⓓ	29.	Ⓐ Ⓑ Ⓒ Ⓓ	35.	Ⓐ Ⓑ Ⓒ Ⓓ
6.	Ⓐ Ⓑ Ⓒ Ⓓ	12.	Ⓐ Ⓑ Ⓒ Ⓓ	18.	Ⓐ Ⓑ Ⓒ Ⓓ	24.	Ⓐ Ⓑ Ⓒ Ⓓ	30.	Ⓐ Ⓑ Ⓒ Ⓓ		

12. Algebraic Expressions

Multiple Choice Questions

1. The degree of the polynomial (–15) is
   (A) -1 (B) 0
   (C) 1 (D) none of these
2. How much does $(2a^2 - 5a + 4)$ exceed $(3a^3 - 5a^2 + 7a - 9)$?
   (A) $-3a^3 + 7a^2 - 12a + 13$ (B) $3a^3 - 7a^2 + 12a - 13$
   (C) $5a^3 - 10a^2 + 7a - 13$ (D) None of these
3. Which is the missing term in the following product?
   $(2a^3 - 3)(5a^3 - 2) = 10a^6 + \_\_\_\_\_ + 6$
   (A) $16\,a^3$ (B) $-16\,a^3$
   (C) $19\,a^3$ (D) $-19\,a^3$
4. The number of unlike terms in the expression $3xy^2 + 2y^2z - y^2x + y(xz + yz) - 5$ is
   (A) 3 (B) 4
   (C) 5 (D) 6
5. If p, q and r are the coefficients of x^4 in $-2x^4 + 5x^2 + 3$, $2x^4 + x - 9$ and $11x - x^4$ respectively, then $p + q + r =$ _____.
   (A) 0 (B) 1
   (C) -1 (D) 5
6. The simplest value of $2x - [3y - \{2x - (y - x)\}]$ is
   (A) $x - 4y$ (B) $2x - y$
   (C) $5x + 4y$ (D) $5x - 4y$
7. Subtracting a term from a given expression is the same as adding its additive inverse to the expression.
   (A) False (B) True
   (C) Can't say (D) May be

8. If sum of the squares of the first n natural numbers is given by $\frac{1}{6}[(n+1)n(2n-1)]$, then the sum of first 12 natural numbers is

(A) 598 (B) 588

(C) 592 (D) 594

9. If $P = 2x^2 + 3xy - 5y^2$, $Q = -5x^2 + 2xy + 3y^2$ and $R = -3x^2 + 5xy - 2y^2$, then the value of $P + Q - R$ is

(A) $-6x^2 + 10xy - 4y^2$ (B) $-4x^2 + 6xy - 4y^2$

(C) $-6x^2 + 4xy - 6y^2$ (D) 0

10. The algebraic expression for the statement 'Thrice square of a number x subtracted from five times the sum of y and 2' is

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

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

11. Simplify: $-a - [a + \{a + b - 2a - (a - 2b)\} - b]$

(A) $-2b$ (B) $-2a$

(C) $2a$ (D) $2b$

12. If a and b are respectively the sum and product of coefficients of terms in the expression $9x^2 + 9xy - 7y^2 - 5y - 6$, then value of ab is

(A) -2 (B) 72

(C) -11 (D) 0

13. Match the following.

	Column I		**Column II**
(*a*)	$11 + 3x^2 - 2y^2$	(*i*)	Like terms
(*b*)	$3x - 9$	(*ii*)	Unlike terms
(*c*)	$22\,xyz, -16\,xyz, 13\,xyz$	(*iii*)	Trinomial
(*d*)	$3xyz^2, -3xy^2z$	(*iv*)	Polynomial with degree 1

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

(C) (a)—(*i*), (b)—(*iv*), (c)—(*iii*), (d)—(*ii*) (D) None of these

14. A wire is $(7x - 3)$ metres long. A length of $(4x - 6)$ metres is cut for use. If this left out wire is used for making an equilateral triangle. What is the length of each side of the triangle so formed?

(A) $x + 1$ (B) $x - 3$

(C) $x - 1$ (D) $\left(\frac{11x - 9}{3}\right)$

15. Find the value of $a^3 - 3a^2b + 3ab^2 - b^3$ at $a = -1$ and $b = 4$.

(A) 27 (B) -27

(C) -125 (D) 125

16. If $5 + [x - \{2y - (6x + y - 4) + 2x\} - \{x - (y - 2)\}] = Px - 1$, then value of P is

(A) 2 (B) 4

(C) 0 (D) -11

17. If the sum of $(9b^2 - 3c^2)$ and $(2b^2 + bc - 2c^2)$ is subtracted from the sum of $(2b^2 - 2bc - c^2)$ and $(c^2 + 2bc - b^2)$, then the result is _____.

(A) $10b^2 + bc - 5c^2$ (B) $10a^2 - bc - 5c^2$

(C) $-10b^2 + bc + 5c^2$ (D) $-10b^2 - bc + 5c^2$

18. If $a = 3$ and $b = -1$, then value of $(a + b)^b$ is

(A) -2 (B) $-\frac{1}{2}$

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

19. If $3x - 2 = 4$ and $0.06\,y = 0.12$, then value of $y^3 - x^3$ is

(A) 0 (B) 16

(C) -8 (D) -16

20. $8a^2$ equals

(A) $8 + a^2$ (B) $8a^2 + a^2$

(C) $a^2 \times a^2 \times a^2 \times a^2 \times a^2 \times a^2 \times a^2 \times a^2$ (D) $a^2 + a^2 + a^2 + a^2 + a^2 + a^2 + a^2 + a^2$

21. The algebraic expression for the difference of $(x + y - 3)$ from $(3x - 2y + 9)$ is subtracted from the sum of $(4x + 3y - 9)$ and $(2x - y + z)$ is

(A) $\{(4x + 3y - 9) + (2x - y + z)\} - (3x - 2y + 9) - (x + y - 3)$

(B) $\{(4x + 3y - 9) + (2x - y + z)\} - \{(3x - 2y + 9) - (x + y - 3)\}$

(C) $\{(3x - 2y + 9) - (x + y - 3)\} - (4x + 3y - 9) + (2x - y + z)\}$

(D) none of these.

22. If $5x^4 - 7x^3 - 3x + 4$ is subtracted from the sum of $(4x^4 - 3x^3 + 6x^2)$, $(4x^3 + 4x - 3)$ and $(-3x^4 - 5x^2 + 2)$, then coefficient of x in the resulting polynomial is

(A) -4 (B) 8

(C) 1 (D) 9

23. The value of $(-15\,x^2y) \times \left(\frac{-8}{3}xy^2z\right) \times \left(\frac{8}{45}xyz^2\right) \times \left(\frac{-1}{16}z\right)$ is

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

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

24. A wire of some length was bent to form a circle of radius $\frac{1}{2}(7x+21)$ metre. If a length of $(2x+6)$ metre is cut for some use and the left out wire is used for making a square, then the length of the side of the square is _____.

(A) $\frac{1}{4}(7x+21)$ m (B) $\frac{1}{8}(7x+21)$ m

(C) $(5x+15)$ m (D) $(14x+42)$ m

25. What is the sum of the values of the expression $5(2-3x)+7x-11$, when $x=2$ and $x=-2$?

(A) 0 (B) -1

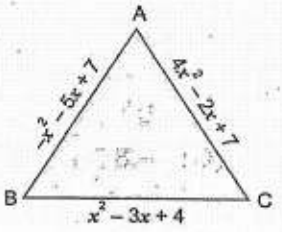
(C) 2 (D) -2

26. Which one of the following options is the correct value of the expression $\frac{ax+by+cz}{az+bx+cy}$, if $a=1, b=2, c=-1, x=-1, y=2$ and $z=3$?

(A) 0 (B) 2

(C) -2 (D) 3

27. Find the perimeter of given triangle if $x>0$.



(A) $6x^2+9$ (B) $4x^2+9$

(C) $6x^2+10x+13$ (D) None of these

28. If the value of $2x^3-2x^2+4ax-a$ equals to 64; where $x=2$, then the value of 'a' is _____.

(A) 4 (B) 6

(C) 7 (D) 8

29. Which of the following is true statement?

(A) In like terms, variables and their powers are same.

(B) $(3a-2b+3)-(4a+b)$ is a binomial.

(C) The expression $4x+3x^2+9x$ is a trinomial.

(D) $4p$ is the numerical coefficient of q^2 in $-4pq^2$.

30. Each symbol given below represents an algebraic expression.

$\triangle = 8m-7n+6p^2$, $\bigcirc = -3m-4n-p^2$, $\square = 2m+4n-3p^2$ and $\hexagon = -m-n-p^2$

Find the expression which is represented by $\square + \hexagon + \triangle + \bigcirc$.

(A) $-4m+14n-9p^2$ (B) $4m-14n-9p^2$

(C) $4m+14n-9p^2$ (D) $-4m-14n-9p^2$

31. Ram had ₹ $(4x^4 - 3x^3 + 6x^2)$ in his piggy bank, his mother gave him ₹ $(4x^3 + 4x - 3)$ and father gave him ₹ $(-3x^4 - 5x^2 + 2x)$. Out of this total money, he spent ₹ $(5x^4 - 7x^3 - 3x + 4)$ on a book. How much money is left with him, if $x = 2$?

(A) ₹ 19 (B) ₹ 18

(C) ₹ 16 (D) ₹ 15

32. Simplify $2x - 3y - [3x - 2y - \{x - 2 - (x - 2y)\}]$.

(A) $-x - y - z$ (B) $-x + y - z$

(C) $-x + y + z$ (D) $x - y + z$

33. Write the appropriate expression for given statement.

Three times the sum of $2x + y - \{5 - (x - 3y)\}$ and $7x - 4y + 3$ is subtracted from $3x - 4y + 7$.

(A) $(3x - 4y + 7) - 3\,[2x + y - \{(5 - (x - 3y)\}] - (7x - 4y + 3)$

(B) $(3x - 4y + 7) - 3\,(7x - 4y + 3) - [\{2x + y - \{5 - (x - 3y)\}]$

(C) $(3x - 4y + 7) - 3\,[(2x + y) - \{5 - (x - 3y)\} + 7x - 4y + 3]$

(D) None of these

34. What values of a and b will make the given statement true?

$(ay^2 + 3xy - 9x^2) - (-4y^2 + 8xy + bx^2) = 10y^2 - 5xy - 10x^2$

(A) $a = 5, b = 1$ (B) $a = 6, b = 1$

(C) $a = -6, b = 1$ (D) $a = 6, b = -1$

Darken your Choice with HB Pencil

1.	Ⓐ Ⓑ Ⓒ Ⓓ	7.	Ⓐ Ⓑ Ⓒ Ⓓ	13.	Ⓐ Ⓑ Ⓒ Ⓓ	19.	Ⓐ Ⓑ Ⓒ Ⓓ	25.	Ⓐ Ⓑ Ⓒ Ⓓ	31.	Ⓐ Ⓑ Ⓒ Ⓓ
2.	Ⓐ Ⓑ Ⓒ Ⓓ	8.	Ⓐ Ⓑ Ⓒ Ⓓ	14.	Ⓐ Ⓑ Ⓒ Ⓓ	20.	Ⓐ Ⓑ Ⓒ Ⓓ	26.	Ⓐ Ⓑ Ⓒ Ⓓ	32.	Ⓐ Ⓑ Ⓒ Ⓓ
3.	Ⓐ Ⓑ Ⓒ Ⓓ	9.	Ⓐ Ⓑ Ⓒ Ⓓ	15.	Ⓐ Ⓑ Ⓒ Ⓓ	21.	Ⓐ Ⓑ Ⓒ Ⓓ	27.	Ⓐ Ⓑ Ⓒ Ⓓ	33.	Ⓐ Ⓑ Ⓒ Ⓓ
4.	Ⓐ Ⓑ Ⓒ Ⓓ	10.	Ⓐ Ⓑ Ⓒ Ⓓ	16.	Ⓐ Ⓑ Ⓒ Ⓓ	22.	Ⓐ Ⓑ Ⓒ Ⓓ	28.	Ⓐ Ⓑ Ⓒ Ⓓ	34.	Ⓐ Ⓑ Ⓒ Ⓓ
5.	Ⓐ Ⓑ Ⓒ Ⓓ	11.	Ⓐ Ⓑ Ⓒ Ⓓ	17.	Ⓐ Ⓑ Ⓒ Ⓓ	23.	Ⓐ Ⓑ Ⓒ Ⓓ	29.	Ⓐ Ⓑ Ⓒ Ⓓ		
6.	Ⓐ Ⓑ Ⓒ Ⓓ	12.	Ⓐ Ⓑ Ⓒ Ⓓ	18.	Ⓐ Ⓑ Ⓒ Ⓓ	24.	Ⓐ Ⓑ Ⓒ Ⓓ	30.	Ⓐ Ⓑ Ⓒ Ⓓ		

13. Exponents and Powers

Multiple Choice Questions

1. The exponential form of $9 \times 9 \times 9 \times 9$ with base 3 is

(A) 3^6 (B) 3^8

(C) 3^9 (D) none of these

2. Which of the following is equal to 3?

(A) $2^0 + 3^0 + 11^0 + 2^1$ (B) $3 \times 3^0 \times 2^0 \times 4^0 \times 3^0$

(C) $(5^0 - 11^0) \times 3$ (D) $(3^0 - 2) + 3 \times (3^0 + 2^0) - 3$

3. Fill in the blank to make the given statement true. $\left(\frac{4}{9}\right)^{11} \times \ldots = \left(\frac{4}{9}\right)^{6}$

(A) $\left(\frac{9}{4}\right)^{6}$ (B) $\left(\frac{4}{9}\right)^{6}$

(C) $\left(\frac{9}{4}\right)^{6}$ (D) None of these

4. The standard scientific notation of 8,19,00,000 is

(A) 819×10^5 (B) 81.9×10^6

(C) 8.19×10^7 (D) 0.819×10^8

5. The value of $\left(\frac{-1}{4}\right)^{1} \times \left(\frac{-1}{4}\right)^{2} \times \left(\frac{-1}{4}\right)^{3}$ is

(A) $\left(\frac{-1}{4}\right)^{1}$ (B) $\left(\frac{-1}{4}\right)^{5}$

(C) 4 (D) $\frac{-1}{256}$

6. If $6^{2n+1} - 36 = 6^3$, then value of n is

(A) 2 (B) 0

(C) 1 (D) -1

7. Rani was writing $2^5 \times 9^2$ but in hurry she wrote 2592. What is the numerical difference between the two?

(A) 2 (B) 1

(C) 0 (D) -1

8. The exponential notation of $10^2 \times 7^0 + 2^3 \times 3^1 - 5^0 \times 3^0 + 7^1 \times 3^1$ is

(A) $5^3 \times 2^1$ (B) $2^4 \times 3^2$

(C) $2^3 \times 3^4$ (D) $2^8 \times 3$

9. The value of the expression $\frac{(-1)^{101} \times (8)^5}{4^7}$ is equal to

(A) $\frac{1}{16}$ (B) $-\frac{1}{16}$

(C) 2 (D) -2

10. Which of the following values are equal?

(*i*) $(-1)^{10}$ (*ii*) 0^{10} (*iii*) 10^0 (*iv*) 10^1

(A) (*i*) and (*ii*) (B) (*i*) and (*iii*)

(C) (*i*) and (*iv*) (D) (*ii*) and (*iv*)

11. Which of the following are true?

(A) 4^9 is greater than 16^3 (B) $2^4 \div 3^4 = (2 \div 3)^4$

(C) $2^4 \times 3^4 = (2 \times 3)^4$ (D) $(-3)^4 = -12$

12. If $4^x = 900$, then 4^{x-2} is equal to _____.

(A) $\frac{900}{4}$ (B) $\frac{900}{8}$

(C) $\frac{225}{16}$ (D) $\frac{225}{4}$

13. The value of $(1 + 3 + 5 + 7 + 9 + 11 + 13 + 15)^{-\frac{1}{2}}$ is

(A) 64 (B) $\frac{1}{8}$

(C) 8 (D) -8

14. The number 4.325×10^5 in the usual form is written as

(A) 432500000 (B) 432.5×10^4

(C) 43250000 (D) 432500

15. Evaluate $\left[\left(\sqrt{\frac{2}{3}}\right)^2-\left(\frac{8}{27}\right)^{\frac{1}{3}}\right]^{51}$.

(A) 0 (B) 1

(C) 2 (D) -1

16. By what number should $(-5)^{-1}$ be multiplied so that the product is $(8)^{-1}$?

(A) $\frac{-8}{5}$ (B) -40

(C) $\frac{-5}{8}$ (D) None of these

17. If $4^x = 256$, then find the value of 6^{2x-9}.

(A) 6 (B) -6

(C) $\frac{-1}{6}$ (D) $\frac{1}{6}$

18. Write the given expressions in descending order.

(*i*) $\frac{4^6}{4^4}$ (*ii*) $\frac{(-2)^7}{(-2)^{12}}$ (*iii*) $\left(\frac{-3}{4}\right)^4 \div \left(\frac{-3}{4}\right)^2$ (*iv*) $46 \div 48$

(A) (i), (iv), (iii) and (ii) (B) (i), (iii), (iv) and (ii)

(C) (i), (iv), (ii) and (iii) (D) (i), (iii), (ii) and (iv)

19. If $pqr = 0$, then find the value of $(p^q)^{pr} - (q^r)^{pq} - (r^p)^{qr}$ is

(A) -1 (B) 1

(C) 0 (D) 2

20. The value of $\frac{(121)^{\frac{1}{2}} + (221)^{\frac{1}{2}}}{2^3 \cdot 2^0 + 2}$ is

(A) $\frac{8}{5}$ (B) 2

(C) -2 (D) $\frac{16}{5}$

21. If $\left(\frac{1}{5}\right)^{3y} = 0.008$, then $(0.25)^y$ will be _____.

(A) 1 (B) 0.25

(C) 0.0625 (D) 0.125

22. Find the value of $\left(\frac{25}{15}\right)^2 \times \left(\frac{45}{25}\right)^2 \times \left(\frac{63}{100}\right)^0$.

(A) 9 (B) 10

(C) -9 (D) -10

23. If $\left(\frac{p}{q}\right) = \left(\frac{2}{3}\right)^8 \div \left\{\left(\frac{2}{3}\right)^2\right\}^3$, then the value of $\left(\frac{p}{q}\right)^{-2}$ is

(A) $\frac{4}{9}$ (B) $\frac{16}{81}$

(C) $\frac{81}{16}$ (D) $\frac{9}{4}$

24. Express $\left(\frac{3}{4}\right)^2 \times \left(\frac{16}{3}\right)^2 \times 4^3$ as a power of 4.

(A) 4^3 (B) 4^5

(C) 4^{-5} (D) 4^{-3}

25. Which of following when simplified is not equal to 27?

(A) $[9^{10} \div 9^8] \div 3$ (B) $(3^8 \div 3^6) \times (3^0 + 2^0 + 1^0)$

(C) $9^0 \times 3^3$ (D) $3^{12} \div 3^8 \times 3^0$

26. Match the following.

	Column I		**Column II**
(*a*)	6^4	(i)	2^9
(*b*)	8^1	(ii)	4^4
(*c*)	512	(*iii*)	2^6
(*d*)	256	(*iv*)	3^4

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

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

27. Simplify $\frac{3^3 \times 64 \times 81}{18 \times 4^2 \times 3^5}$.

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

(C) 2 (D) 1

28. By what number $\left(\frac{-4}{5}\right)^{-5}$ must be multiplied so that the result is $\frac{16}{9}$?

(A) $\left(\frac{4}{3}\right)^5$ (B) $\left(-\frac{4}{3}\right)^7$

(C) $\left(\frac{4}{3}\right)^{-5}$ (D) $\left(\frac{4}{3}\right)^{-7}$

29. A number is given in the standard form if it is written as $k \times 10^n$, where k is

(A) $0 < k \leq 1$ (B) $0 \leq k \leq 10$

(C) $1 \leq k \leq 10$ (D) $1 \leq k \leq 10$

30. The value of $(729^3 \div 729] \div 3^3$ is

(A) 3^4 (B) 3^3

(C) 3^6 (D) 3^{-3}

31. Find the value of x such that $\left(\frac{64}{125}\right)^2\left(\frac{4}{5}\right)^4\left(\frac{16}{25}\right)^{2x+1} = \left(\frac{256}{625}\right)^{3x}$.

(A) $\frac{3}{2}$ (B) $\frac{2}{3}$

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

32. If $\frac{p}{q} = \left(\frac{-3}{4}\right)^{16} \div \left[\left(\frac{-3}{4}\right)^4\right]^4$, then the value of $\left(\frac{p}{q}\right)^2 + \left(\frac{p}{q}\right)^4$ is

(A) 0 (B) 1

(C) 2 (D) -1

33. Simplify $(5 \times 10^{12}) \div (8 \times 10^5)$ and express it in scientific notation.

(A) 625×10^6 (B) 6.25×10^6

(C) 0.625×10^6 (D) 62.5×10^6

34. Simplify $1 \div \left[\left(\frac{2}{3}\right)^6 \times \left(\frac{1}{3}\right)^{-4} \times 3^{-1} \times 6^{-1}\right] + \left[\left(\frac{1}{3}\right)^{-3} - \left(\frac{1}{2}\right)^{-3}\right] \div \left(\frac{1}{4}\right)^{-3}$.

(A) $\frac{181}{64}$ (B) $\frac{151}{64}$

(C) $\frac{172}{21}$ (D) $\frac{147}{32}$

35. If $2^{n+2} - 2^{n+1} + 2^n = C \times 2^n$, find the value of C.

(A) 1 (B) 2

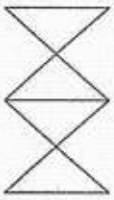
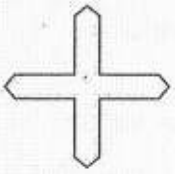
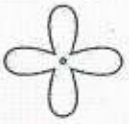
(C) 3 (D) 4

Darken your Choice with HB Pencil

1.	Ⓐ Ⓑ Ⓒ Ⓓ	7.	Ⓐ Ⓑ Ⓒ Ⓓ	13.	Ⓐ Ⓑ Ⓒ Ⓓ	19.	Ⓐ Ⓑ Ⓒ Ⓓ	25.	Ⓐ Ⓑ Ⓒ Ⓓ	31.	Ⓐ Ⓑ Ⓒ Ⓓ
2.	Ⓐ Ⓑ Ⓒ Ⓓ	8.	Ⓐ Ⓑ Ⓒ Ⓓ	14.	Ⓐ Ⓑ Ⓒ Ⓓ	20.	Ⓐ Ⓑ Ⓒ Ⓓ	26.	Ⓐ Ⓑ Ⓒ Ⓓ	32.	Ⓐ Ⓑ Ⓒ Ⓓ
3.	Ⓐ Ⓑ Ⓒ Ⓓ	9.	Ⓐ Ⓑ Ⓒ Ⓓ	15.	Ⓐ Ⓑ Ⓒ Ⓓ	21.	Ⓐ Ⓑ Ⓒ Ⓓ	27.	Ⓐ Ⓑ Ⓒ Ⓓ	33.	Ⓐ Ⓑ Ⓒ Ⓓ
4.	Ⓐ Ⓑ Ⓒ Ⓓ	10.	Ⓐ Ⓑ Ⓒ Ⓓ	16.	Ⓐ Ⓑ Ⓒ Ⓓ	22.	Ⓐ Ⓑ Ⓒ Ⓓ	28.	Ⓐ Ⓑ Ⓒ Ⓓ	34.	Ⓐ Ⓑ Ⓒ Ⓓ
5.	Ⓐ Ⓑ Ⓒ Ⓓ	11.	Ⓐ Ⓑ Ⓒ Ⓓ	17.	Ⓐ Ⓑ Ⓒ Ⓓ	23.	Ⓐ Ⓑ Ⓒ Ⓓ	29.	Ⓐ Ⓑ Ⓒ Ⓓ	35.	Ⓐ Ⓑ Ⓒ Ⓓ
6.	Ⓐ Ⓑ Ⓒ Ⓓ	12.	Ⓐ Ⓑ Ⓒ Ⓓ	18.	Ⓐ Ⓑ Ⓒ Ⓓ	24.	Ⓐ Ⓑ Ⓒ Ⓓ	30.	Ⓐ Ⓑ Ⓒ Ⓓ		

14. Symmetry and Visualising Solid Shapes

Multiple Choice Questions

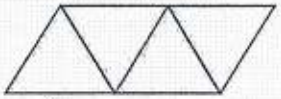
1. If a right angled triangle of height 12 cm and base 5 cm is rotated about its base, then the resulting figure is a
   (A) cone of height 5 cm and base 5 cm
   (B) cone of height 12 cm and base 12 cm
   (C) cone of height 12 cm and base 5 cm
   (D) cone of height 5 cm and base 12 cm
2. Rhombus is a figure that has _____ lines of symmetry and has a rotational symmetry of order _____ .
   (A) 2, 2
   (B) 3, 3
   (C) 4, 4
   (D) 2, 1
3. Which of the given figures does not have rotational symmetry?
   (A) 
   (B) 
   (C) 
   (D) 
4. Which of the given pairs of capital letters in English alphabet have no line of symmetry?
   (A) A and B
   (B) G and J
   (C) R and S
   (D) U and V
5. A triangle which has neither line symmetry nor rotational symmetry.
   (A) Isosceles triangle
   (B) Equilateral triangle
   (C) Right angled Isosceles triangle
   (D) Scalene triangle

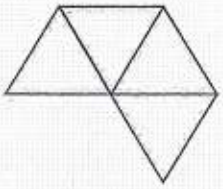
6. The order of rotational symmetry of a line segment is

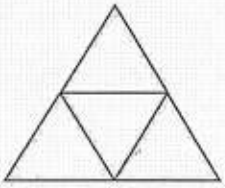
(A) 1 (B) 2

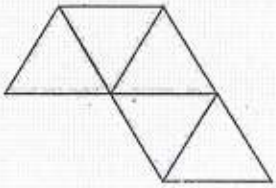
(C) 3 (D) 4

7. Which of the given nets can be folded to make a tetrahedron?

(A) 

(B) 

(C) 

(D) 

8. Which of the following statements is true?

(A) A rhombus is also a parallelogram and hence it does not have line symmetry.

(B) In a rectangle, the angle of rotational symmetry is 90°.

(C) An isosceles triangle has neither a line symmetry nor a rotational symmetry.

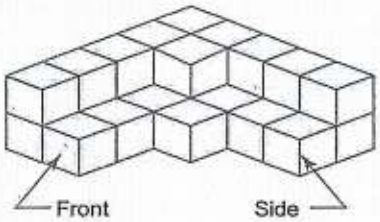
(D) In a regular pentagon, the perpendicular bisectors of the sides are the only lines of symmetry.

9. A square pyramid has

(A) 4 vertices and 4 faces (B) 4 vertices and 5 faces

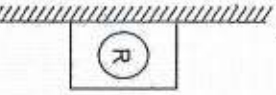
(C) 5 vertices and 5 faces (D) 5 vertices and 4 faces

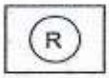
10. The number of unit cubes in the given structure is



(A) 27 (B) 21

(C) 26 (D) 17

11. Mirror image of  is _____.

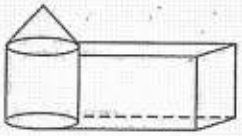
(A) 

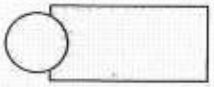
(B) 

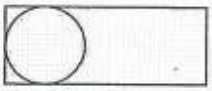
(C) 

(D) 

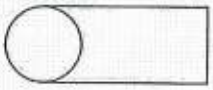
12. Which drawing best shows the top view of the solid shown?



(A) 

(B) 

(C) 

(D) 

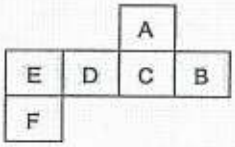
13. Study the given net of a cube carefully and find the incorrect statement.

(A) E and C are opposite faces.

(B) E and A are opposite faces.

(C) A and B are adjoint faces.

(D) B and D are opposite faces.



14. The number of lines of symmetry and the order of rotational symmetry respectively for the letter  is

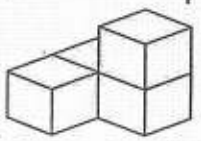
(A) 2, 2

(B) 2, 1

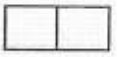
(C) 1, 2

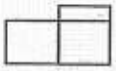
(D) 2, 4

15. The top view of the given structure is



(A) 

(B) 

(C) 

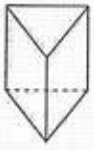
(D) 

16. Which of the following 3-dimensional figures has the top, side and front views as triangles?

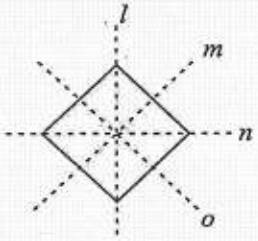
(A) 

(B) 

(C) 

(D) 

17. Which of the lines in the picture are lines of symmetry of the given figure?

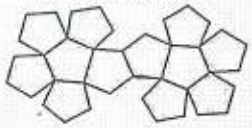


(A) *l*, *m*, *n* and *o*
(B) only *l*
(C) *m* and *o*
(D) *l* and *n*

18. A clockwise rotation of 49° is equivalent to a counter clockwise rotation of
(A) 311°
(B) 131°
(C) 221°
(D) 251°

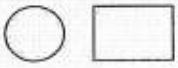
19. How many edges are there in the given figure?

Regular pentagon



(A) 52
(B) 49
(C) 47
(D) 51

20. Which of the following could represent cross sections of a cylinder?

(A) 
(B) 
(C) 
(D) 

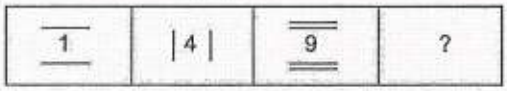
Darken your Choice with HB Pencil

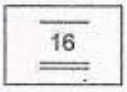
1.	Ⓐ Ⓑ Ⓒ Ⓓ	5.	Ⓐ Ⓑ Ⓒ Ⓓ	9.	Ⓐ Ⓑ Ⓒ Ⓓ	13.	Ⓐ Ⓑ Ⓒ Ⓓ	17.	Ⓐ Ⓑ Ⓒ Ⓓ
2.	Ⓐ Ⓑ Ⓒ Ⓓ	6.	Ⓐ Ⓑ Ⓒ Ⓓ	10.	Ⓐ Ⓑ Ⓒ Ⓓ	14.	Ⓐ Ⓑ Ⓒ Ⓓ	18.	Ⓐ Ⓑ Ⓒ Ⓓ
3.	Ⓐ Ⓑ Ⓒ Ⓓ	7.	Ⓐ Ⓑ Ⓒ Ⓓ	11.	Ⓐ Ⓑ Ⓒ Ⓓ	15.	Ⓐ Ⓑ Ⓒ Ⓓ	19.	Ⓐ Ⓑ Ⓒ Ⓓ
4.	Ⓐ Ⓑ Ⓒ Ⓓ	8.	Ⓐ Ⓑ Ⓒ Ⓓ	12.	Ⓐ Ⓑ Ⓒ Ⓓ	16.	Ⓐ Ⓑ Ⓒ Ⓓ	20.	Ⓐ Ⓑ Ⓒ Ⓓ

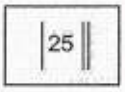
15. Logical Reasoning

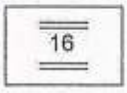
Multiple Choice Questions

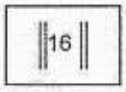
1. If eye is called hand, hand is called mouth, mouth is called ear, ear is called nose and nose is called tongue, then with which of the following would a person hear?
   (A) Eye (B) Mouth
   (C) Nose (D) Ear
2. Which is the missing figure?



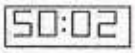
   (A) 

   (B) 

   (C) 

   (D) 

3. Select the correct mirror image of

.
   (A) 

   (B) 

   (C) 

   (D) None of these
4. If the first and second letters in the word DEPRESSION were interchanged, also the third and fourth letters, the fifth and sixth letters and so on, then which of the following would be the eighth letter from the left?
   (A) R (B) O
   (C) S (D) I
5. If A is the mother of B; B is the sister of D; D is the father of M, then how A is related to M?
   (A) Mother (B) Grand Mother
   (C) Aunt (D) Need more information

6. The water image of GARICA is

(A) ⅁∀ꓤIC∀ (B) A⊃IꓤA⅁

(C) ⅁A ꓤI⊃∀ (D) ∀CIꓤ∀⅁

7. If 'L' means '÷', 'P means '+', 'Q' means '–' and 'M' means '×', then tick the correct equation.

(A) 11M34L17Q8L3 = – 24 (B) 6M18Q26L13P7 = – 10

(C) 9P9L9Q9M9 = – 71 (D) 32P8L16Q4M1 = – 6

8. In a row having children facing towards South, A is fifteenth from the right end and B is third to the right of A, C who is fifth from the left end of the row is seventh to the left of B. What is A's position from the left end of the row?

(A) 12^{th} (B) 11^{th}

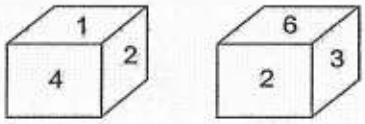
(C) 10^{th} (D) 9^{th}

9. Which is the odd one out?

(A) 729 (B) 633

(C) 522 (D) 862

10. Two positions of the dice are given in the figure. What will be the number at the bottom, if 5 is at the top?



(A) 1 (B) 4

(C) 2 (D) 6

11. Reaching the meeting point on Monday 20 minutes before 11 : 30 hours, I found myself half an hour earlier than the manager who was 25 minutes late. What was the scheduled time of the meeting?

(A) 11 : 10 hours (B) 11 : 20 hours

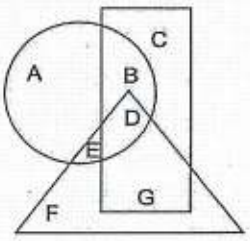
(C) 11 : 15 hours (D) 11 : 40 hours

12. How many such pairs of letters are there in the word CORPORATE each of which has as many letters in the same sequence between them as in the English alphabet?

(A) 2 (B) 1

(C) 3 (D) More than 3

13. Which of the following statements is correct regarding to the given diagram?



(A) B and D are common to the circle and triangle.

(B) B is in common to all the three figures.

(C) D and G are in common to the rectangle and triangle.

(D) C and D are in the triangle.

14. If 'ki top joe' means 'who are you', 'lin ki fin' means 'they are honest', 'fin ti joe' means 'who is honest', then what do you mean by 'lin'?

(A) They (B) Honest

(C) Who (D) Are

15. How many times in a day, the two hands of a clock form 90° ?

(A) 4 (B) 12

(C) 22 (D) 44

16. (*i*) A + B means A 'is the father of' B.

(*ii*) A – B means A 'is the wife of' B.

(*iii*) A × B means A 'is the brother of' B.

If A – C + B, which of the following statements is true?

(A) A is the mother of B (B) B is the brother of A

(C) A is the sister of B (D) None of these

17. A student got twice as many sums wrong as he got right. If he attempted 48 sums in all, how many did he solve correctly?

(A) 12 (B) 16

(C) 24 (D) 18

18. A walks 10 metres in front and 10 metres to the right. Then every time turning to his left, he walks 5, 15 and 15 metres respectively. How far is he now from his starting point?

(A) 50 metres (B) 35 metres

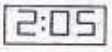
(C) 20 metres (D) 5 metres

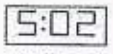
19. If you are eleventh in a queue starting from either end, how many persons are in the queue?

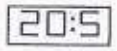
(A) 11 (B) 20

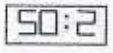
(C) 21 (D) 22

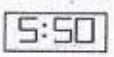
20. Select the correct mirror image of the give figure.



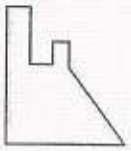
(A) 

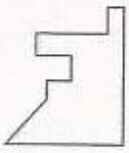
(B) 

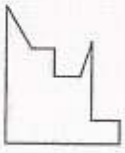
(C) 

(D) 

21. Select a figure from the options which exactly fits in the given figure to form a complete square.



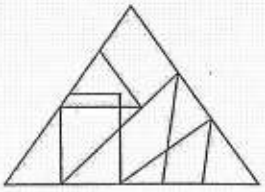
(A) 

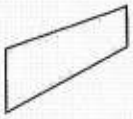
(B) 

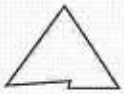
(C) 

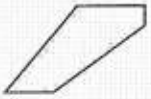
(D) 

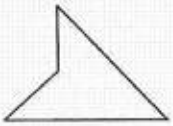
22. Select the figure from the options which is not exactly embedded as one of the part in the given figure.



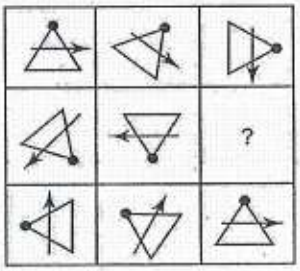
(A) 

(B) 

(C) 

(D) 

23. Find the missing figure in the given image.



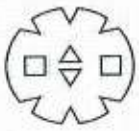
(A) 

(B) 

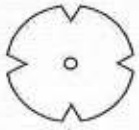
(C) 

(D) 

24. A piece of paper is folded in such a manner as shown and punched. Select the unfolded form of the piece of paper.

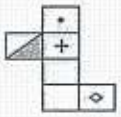
(A) 

(B) 

(C) 

(D) 

25. The sheet shown is folded to form a box. Choose the option, the boxes that are similar to the box that will be formed.



(A) 1 only
(B) 2 and 3 both
(C) 3 only
(D) 1 and 4 both

26. Arrange the following words in the alphabetical order as arranged in a dictionary and choose the word that comes last.

(A) Prominent
(B) Prohibition
(C) Programme
(D) Prolong

27. P, Q, R, S and T are sitting on a bench. P is sitting next to Q, S is sitting next to R, S is not sitting with T, who is on the left end of the bench. R is on the second position from the right. P is on the right of Q and T. On which position A is sitting?

(A) Between T and S
(B) Between Q and R
(C) Between Q and S
(D) Between S and R

28. If South-East becomes North, North becomes South-West and so on, then what will North-West become?

(A) South-East
(B) North-West
(C) North
(D) South

29. If the code for 'CHAP' is 'XSZK', then what is 'WVZU' the code for?

(A) LEAP
(B) MOST
(C) DEAF
(D) COST

30. Study the given numbers carefully.

427 581 839 275 589

Which of the following numbers will be obtained, if the second digit of the greatest number is subtracted from the second digit of the least number, after adding five to each of the above numbers?

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

Darken your Choice with HB Pencil

1.	Ⓐ Ⓑ Ⓒ Ⓓ	6.	Ⓐ Ⓑ Ⓒ Ⓓ	11.	Ⓐ Ⓑ Ⓒ Ⓓ	16.	Ⓐ Ⓑ Ⓒ Ⓓ	21.	Ⓐ Ⓑ Ⓒ Ⓓ	26.	Ⓐ Ⓑ Ⓒ Ⓓ
2.	Ⓐ Ⓑ Ⓒ Ⓓ	7.	Ⓐ Ⓑ Ⓒ Ⓓ	12.	Ⓐ Ⓑ Ⓒ Ⓓ	17.	Ⓐ Ⓑ Ⓒ Ⓓ	22.	Ⓐ Ⓑ Ⓒ Ⓓ	27.	Ⓐ Ⓑ Ⓒ Ⓓ
3.	Ⓐ Ⓑ Ⓒ Ⓓ	8.	Ⓐ Ⓑ Ⓒ Ⓓ	13.	Ⓐ Ⓑ Ⓒ Ⓓ	18.	Ⓐ Ⓑ Ⓒ Ⓓ	23.	Ⓐ Ⓑ Ⓒ Ⓓ	28.	Ⓐ Ⓑ Ⓒ Ⓓ
4.	Ⓐ Ⓑ Ⓒ Ⓓ	9.	Ⓐ Ⓑ Ⓒ Ⓓ	14.	Ⓐ Ⓑ Ⓒ Ⓓ	19.	Ⓐ Ⓑ Ⓒ Ⓓ	24.	Ⓐ Ⓑ Ⓒ Ⓓ	29.	Ⓐ Ⓑ Ⓒ Ⓓ
5.	Ⓐ Ⓑ Ⓒ Ⓓ	10.	Ⓐ Ⓑ Ⓒ Ⓓ	15.	Ⓐ Ⓑ Ⓒ Ⓓ	20.	Ⓐ Ⓑ Ⓒ Ⓓ	25.	Ⓐ Ⓑ Ⓒ Ⓓ	30.	Ⓐ Ⓑ Ⓒ Ⓓ

International Olympiad Foundation

Mock Test 1

(This section contains 30 multiple choice questions. Each question has four options (A), (B), (C) and (D), out of which only ONE is correct.)

1. The rational number $\frac{0}{999}$

   (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.

2. If A and B are two positive integers and E and F are the multiplicative inverses of A and B respectively, then the value of EB + FA is

   (A) $\frac{E^2+F^2}{E+F}$ (B) $\frac{A^2+B^2}{AB}$

   (C) $\frac{A^2+B^2}{A+B}$ (D) $\frac{E^2+B^2}{FB}$

3. The sum of three numbers (fractions) is $2\frac{11}{24}$. When the largest fraction is divided by the smallest fraction, the fraction obtained is $\frac{7}{6}$ which is $\frac{1}{3}$ more than the middle one. What are the fractions?

   (A) $\frac{6}{7}, \frac{4}{5}$ and $\frac{5}{6}$ (B) $\frac{9}{4}, \frac{1}{4}$ and $\frac{5}{6}$

   (C) $\frac{1}{6}, \frac{3}{4}$ and $\frac{9}{7}$ (D) $\frac{7}{8}, \frac{5}{6}$ and $\frac{3}{4}$

4. Simplify $2.3-[1.89-\{3.6-(2.7-\overline{0.8-0.03})\}]$.

(A) 2.08 (B) 2.80

(C) 2.83 (D) 2.38

5. The value of $\dfrac{5^{\frac{1}{4}}\times(125)^{\frac{1}{4}}}{(256)^{\frac{1}{10}}(256)^{\frac{3}{20}}}$ is

(A) $\dfrac{\sqrt{5}}{2}$ (B) $\dfrac{25}{2}$

(C) $\dfrac{5}{4}$ (D) $\dfrac{25}{16}$

6. The order of rotational symmetry for the given figure is _____.

(A) 12 (B) 6

(C) 4 (D) 9

7. A student wants to construct an isosecles triangle. The measures of two sides are 7 cm and 15 cm. What could be the length of third side, such that the student can construct a triangle?

(A) 7 cm or 15 cm (B) 7 cm

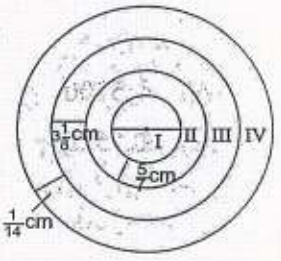
(C) 15 cm (D) 11 cm

8. If $(5x^2-6x+9)$ is multiplied by $(2x-3)$, then product is $10x^3+$ ____ x^2+36x+ _____.

(A) -27 (B) 27

(C) -37 (D) 37

9. A circular target consists of 4 circular rings of different colours. The inner diameter of disc I is $3\frac{3}{4}$ cm and widths of II, III and IV discs are $\frac{5}{7}$ cm, $3\frac{1}{8}$ cm and $\frac{1}{14}$ cm respectively. The radius for the IV disc is



(A) $7\frac{1}{8}$ cm (B) $11\frac{14}{29}$ cm

(C) $11\frac{2}{29}$ cm (D) $7\frac{37}{56}$ cm

10. The value of 'm' in the expression: $\dfrac{6m^2+13m-4}{2m+5}=\dfrac{12m^2+5m-2}{4m+10}$ is

(A) $\dfrac{-2}{7}$ (B) $\dfrac{2}{7}$

(C) $\dfrac{-3}{7}$ (D) $\dfrac{3}{7}$

11. The average of the following observations arranged in ascending order is 24, find x.

(A) 9 (B) 20

(C) 21 (D) 22

12. The sum of an angle and two-third of its complementary angle is 80°. The measure of angle is

(A) 60° (B) 48°

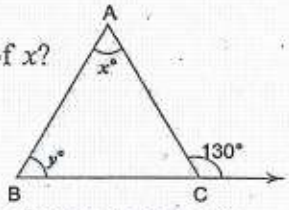
(C) 52° (D) 56°

13. A man sells two cupboards for ₹ 6000 each, neither gaining nor losing in the deal. If he sold one cupboard at a gain of 20%, then the other is sold at a loss of

(A) 16% (B) 14.3%

(C) 20% (D) 20.6%

14. In the ΔABC, $x : y = 2 : 3$ and $\angle ACD = 130°$. What is the value of x?



(A) 26° (B) 78°

(C) 50° (D) 52°

15. If two triangles have their corresponding angles equal, then they are always congruent.

(A) True (B) False

(C) Cannot be determined (D) May or may not be

16. A room is 9 m long, 8 m broad and 6.5 m high. It has one door of dimensions (2 m × 1.5 m) and four windows each of dimensions (1.5 m × 1 m). The cost of whitewashing the walls at ₹ 25 per m^2 is

(A) ₹ 5300 (B) ₹ 7100

(C) ₹ 5525 (D) ₹ 5825

17. Each side of an equilateral triangle is equal to the radius of a circle whose area is 154 cm^2. The area of the triangle is

(A) $\frac{7\sqrt{3}}{4}$ cm^2 (B) 35 cm^2

(C) 49 cm^2 (D) $\frac{49\sqrt{3}}{4}$ cm^2

18. Find the time when ₹ 1250 amounts to ₹ 1950 at 16% per annum.

(A) 3 years (B) $3\frac{1}{2}$ years

(C) 4 years (D) $4\frac{1}{2}$ years

19. Write the given expression in the scientific notation.

$[2.03 \times 10^{-3} + 3.657 \times 10^{-4} - 1.068 \times 10^{-3}]$

(A) 1.277×10^{-3} (B) 1.204×10^{-4}

(C) 1.3277×10^{-3} (D) 1.277×10^{-4}

20. In a parallelogram ABCD, diagonal AC measures 34 m and the perpendicular distance of AC from either of the vertices B and D is 12 m. Area of parallelogram is

(A) 204 m^2 (B) 402 m^2

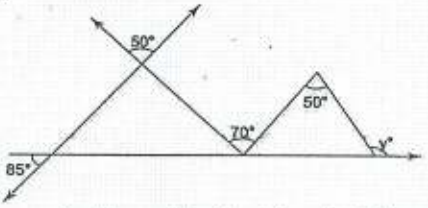
(C) 408 m^2 (D) 612 m^2

21. The value of 'm' in $49 \times (-7)^m = -343$ is

(A) 1 (B) 0

(C) -1 (D) -2

22. In the given figure, value of y is



(A) 120° (B) 118°

(C) 117° (D) 115°

23. A sum of money is shared among Richa, Gauri and Meera in the ratio 3 : 2 : 5. What percentage of money does Richa get?

(A) 20% (B) 30%

(C) 50% (D) 35%

24. The perimeter of a square is 52 cm. The area of rectangle is 7 cm^2 less than the area of the square. If length of the rectangle is 18 cm, then its perimeter is

(A) 24 cm (B) 48 cm

(C) 50 cm (D) 54 cm

25. If there are 29 items in a set of data arranged in an order, then the median is the 15th term.

(A) True (B) False

(C) Can't say (D) Cannot be determined

26. In a certain language, 'RAMESH' is coded as 'ZQUTVP' and 'MEMBER' is coded as 'UTUWTZ'. Then, code for 'WTUTVP' is

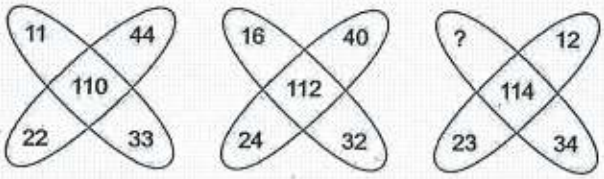
(A) BEEMSH (B) BMEESH

(C) BEMESH (D) MEBESH

27. A boy is facing towards west. He turns 135° anti-clockwise and then 90° clockwise. Which direction is he facing now?

(A) North-West
(B) North-East
(C) South-East
(D) South-West

28. Find the missing number.



(A) 46
(B) 45
(C) 37
(D) 35

29. P, Q, R and S are playing carrom game. P, R and S, Q are partners. S is to the right of R, who is facing west. Then, what direction is Q facing?

(A) North
(B) South
(C) East
(D) West

30. In certain language ENTRY is coded as 12345 and STEADY is coded as 931785, then the code for TENANT is

(A) 352123
(B) 351232
(C) 956169
(D) 312723

Darken your Choice with HB Pencil

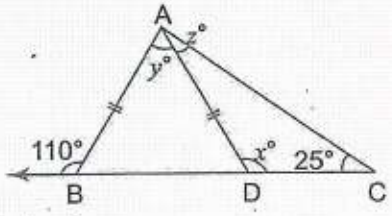
1.	Ⓐ Ⓑ Ⓒ Ⓓ	8.	Ⓐ Ⓑ Ⓒ Ⓓ	15.	Ⓐ Ⓑ Ⓒ Ⓓ	22.	Ⓐ Ⓑ Ⓒ Ⓓ	29.	Ⓐ Ⓑ Ⓒ Ⓓ
2.	Ⓐ Ⓑ Ⓒ Ⓓ	9.	Ⓐ Ⓑ Ⓒ Ⓓ	16.	Ⓐ Ⓑ Ⓒ Ⓓ	23.	Ⓐ Ⓑ Ⓒ Ⓓ	30.	Ⓐ Ⓑ Ⓒ Ⓓ
3.	Ⓐ Ⓑ Ⓒ Ⓓ	10.	Ⓐ Ⓑ Ⓒ Ⓓ	17.	Ⓐ Ⓑ Ⓒ Ⓓ	24.	Ⓐ Ⓑ Ⓒ Ⓓ		
4.	Ⓐ Ⓑ Ⓒ Ⓓ	11.	Ⓐ Ⓑ Ⓒ Ⓓ	18.	Ⓐ Ⓑ Ⓒ Ⓓ	25.	Ⓐ Ⓑ Ⓒ Ⓓ		
5.	Ⓐ Ⓑ Ⓒ Ⓓ	12.	Ⓐ Ⓑ Ⓒ Ⓓ	19.	Ⓐ Ⓑ Ⓒ Ⓓ	26.	Ⓐ Ⓑ Ⓒ Ⓓ		
6.	Ⓐ Ⓑ Ⓒ Ⓓ	13.	Ⓐ Ⓑ Ⓒ Ⓓ	20.	Ⓐ Ⓑ Ⓒ Ⓓ	27.	Ⓐ Ⓑ Ⓒ Ⓓ		
7.	Ⓐ Ⓑ Ⓒ Ⓓ	14.	Ⓐ Ⓑ Ⓒ Ⓓ	21.	Ⓐ Ⓑ Ⓒ Ⓓ	28.	Ⓐ Ⓑ Ⓒ Ⓓ		

International Olympiad Foundation

Mock Test 2

(This section contains 30 multiple choice questions. Each question has four options (A), (B), (C) and (D), out of which only ONE is correct.)

1. In the given figure, the value of $z°$ is



(A) 40° (B) 110°

(C) 45° (D) 50°

2. Three friends divide ₹ 624 among themselves in the ratio $\frac{1}{2}:\frac{1}{3}:\frac{1}{4}$. The share of the third friend is

(A) ₹ 288 (B) ₹ 192

(C) ₹ 148 (D) ₹ 144

3. Which problem situation matches the equation $15x = 120$?

(A) Shyama collected 120 foreign postage stamps last year. She gave 15% of them to her friends. What is x, the number of stamps Shyama did not give away?

(B) Rahul charges ₹ 15 per hour for labour to repair lawn mowers. What is x, the number of hours Rahul worked if he charged ₹ 120 for labours?

(C) Reena drove a total of 120 miles this week. She drove 15 miles more this week than she drove last week. What is x, the number of miles Reena drove last week?

(D) None of these.

4. If $P = 45 - (5 + \{60 - (39 - 8)\}]$ and $Q = -12 + [25 - 2\{16 - 9\}]$, then $|P| + |Q|$ is equal to

(A) 10 (B) −10

(C) 20 (D) 12

5. Ram bought $3\frac{1}{5}$ kg potatoes and $2\frac{1}{10}$ kg kg tomatoes for a party but his maid asked him to do some help for her children, then he gave $1\frac{1}{2}$ kg potatoes and $\frac{1}{4}$ kg tomatoes to her. The weight of remaining vegetables with Ram is

(A) $3\frac{11}{20}$ kg (B) $3\frac{1}{20}$ kg

(C) $3\frac{4}{5}$ kg (D) $3\frac{3}{5}$ kg

6. Simplify: $4.5 - \frac{1}{2}$ of $(7.6 - 3.5) + 2.3 \times 4.05$.

(A) 11.065 (B) 11.165

(C) 11.765 (D) 11.265

7. $\frac{1}{2}$ is subtracted from a number and the difference is multiplied by 4. If 25 is added to the product and the sum is divided by 3, the result is equal to 10. Find the number.

(A) $\frac{3}{5}$ (B) $\frac{7}{4}$

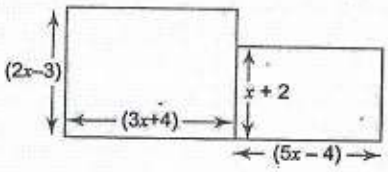
(C) $\frac{6}{7}$ (D) $\frac{3}{4}$

8. If $(25)^{n-1} + 100 = 5^{2n-1}$, then the value of n is

(A) -2 (B) 0

(C) 1 (D) 2

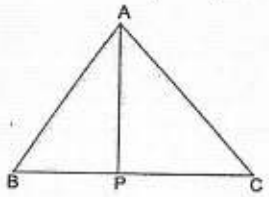
9. In the given figure, what is the combined area of two rectangles?



(A) $11x^2 + 5x - 20$ (B) $11x^2 - 5x - 20$

(C) $11x^2 - 5x + 20$ (D) $11x^2 + 10x - 5$

10. In the given figure, P is the point on side BC. Which one of the following is correct?



(A) $AB + BC + CA < 2AP$ (B) $AB + BC + CA < AP$

(C) $AB + BC + CA > 2AP$ (D) $AB + BC + CA > AP$

11. From a pack of 52 cards, two red Ace cards have been lost. What is the probability of drawing 2 red kings?

(A) $\frac{1}{13}$ (B) $\frac{2}{25}$

(C) $\frac{2}{51}$ (D) $\frac{1}{25}$

12. Mayank earned scores of 97, 73 and 88 respectively in his first three examinations. If he scored 80 in the fourth examination, then his average score will be

(A) increased by 1 (B) decrease by 1.5

(C) decreased by 1 (D) increased by 1.5

13. P and Q can do a job in 25 days and 30 days respectively. They work together for 5 days and then P leaves. Q will finish the rest of work in how many days?

(A) 19 days (B) 25 days

(C) 35 days (D) 30 days

14. If a transversal cuts two parallel lines, then which of the following options is correct for the given statements?

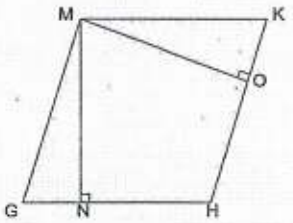
p : Corresponding angles are equal.

q : Sum of alternate angles is 180°.

(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

15. Altitudes MN and OM of parallelogram MGHK are 8 cm and 4 cm respectively. One side GH is 6 cm long. The perimeter of MGHK is



(A) 36 cm (B) 34 cm

(C) 32 cm (D) 30 cm

16. The perimeter of the floor of a rectangular room is 17 m and its length is 5 m. Find the cost of flooring the room with square tiles of side 25 cm at the rate of ₹ 850 per hundred tiles.

(A) ₹ 2240 (B) ₹ 2280

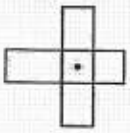
(C) ₹ 2340 (D) ₹ 2380

17. A solid having 4 plane faces, 4 vertices and 6 edges is called a

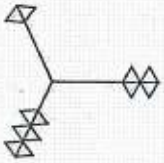
(A) triangular prism (B) rectangular prism

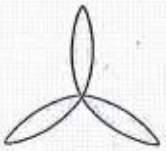
(C) triangular pyramid (D) rectangular pyramid

18. A figure which does not have both reflection and rotational symmetry is

(A) 

(B) 

(C) 

(D) 

19. In ΔABC, $AD \perp BC$, $\angle B = \angle C$ and $AB = AC$. State by which property $\Delta ADC \cong \Delta ADB$?

(A) SAS property (B) SSS property

(C) RHS property (D) ASA property

20. The lengths of two sides of a triangle are 12 cm and 15 cm. Between what two measures should the length of the third side fall?

(A) 2 cm and 27 cm (B) 3 cm and 27 cm

(C) 3 cm and 26 cm (D) 2 cm and 26 cm

21. If 35% of a number added to 39 is the number itself, then the number is

(A) 60 (B) 65

(C) 75 (D) 105

22. If a sum of ₹ 2000 is lent out at 2% per annum for 10 years under simple interest, then the amount is

(A) ₹ 400 (B) ₹ 1400

(C) ₹ 2400 (D) ₹ 2600

23. Using brackets, write a mathematical expression for "Two multiplied by one less than the difference of nineteen and six".

(A) $2 \times (19 - 6) - 1$ (B) $\{(2 \times 19) - 6\} - 1$

(C) $2 \times 1 - \{(19 - 6)\}$ (D) $2 \times \{(19 - 6) - 1\}$

24. Simplify $-3 - \{(8a - 6a^2 + 9) + (-10a - 8 + 8a^2)\}$.

(A) $2a^2 - 2a - 2$ (B) $2a^2 - 2a + 4$

(C) $-2a^2 + 2a - 4$ (D) $-2a^2 + 2a - 2$

25. The value of $\left(\frac{1024}{243}\right)^{-\frac{3}{5}}$ is

(A) $\frac{27}{64}$ (B) $\frac{64}{27}$

(C) $\frac{16}{27}$ (D) $\frac{27}{16}$

26. My mother's age is thrice the age of my sister. My father is thirty years elder to me. I was five years old when my sister born. If my sister is 16 years old, then the difference in the age of my parents is

(A) 3 years (B) 5 years

(C) 6 years (D) 7 years

27. Pointing out a photograph, a man tells his friend, "She is the daughter of the only son of my father's wife." How is the girl in the photograph related to the man?

(A) Cousin (B) Sister

(C) Niece (D) Daughter

28. The sum of the incomes of A and B is more than of C and D together. The sum of the income of A and C is the same as that of B and D taken together. Moreover, A earns half as much as the sum of the income of B and D. Whose income is the highest?

(A) A (B) B

(C) C (D) D

29. If the seventh day of the month is three days earlier than Friday, then what day will it be on the nineteenth day of the month?

(A) Sunday (B) Monday

(C) Wednesday (D) Friday

30. Rihana cuts a cake into two halves and further cuts one-half into smaller pieces of equal size. Each of the small pieces is 20 grams in weight. If she has seven pieces of the cake in all with her, how heavy was the original cake?

(A) 280 grams (B) 240 grams

(C) 140 grams (D) 120 grams

Darken your Choice with HB Pencil

1.	Ⓐ Ⓑ Ⓒ Ⓓ	8.	Ⓐ Ⓑ Ⓒ Ⓓ	15.	Ⓐ Ⓑ Ⓒ Ⓓ	22.	Ⓐ Ⓑ Ⓒ Ⓓ	29.	Ⓐ Ⓑ Ⓒ Ⓓ
2.	Ⓐ Ⓑ Ⓒ Ⓓ	9.	Ⓐ Ⓑ Ⓒ Ⓓ	16.	Ⓐ Ⓑ Ⓒ Ⓓ	23.	Ⓐ Ⓑ Ⓒ Ⓓ	30.	Ⓐ Ⓑ Ⓒ Ⓓ
3.	Ⓐ Ⓑ Ⓒ Ⓓ	10.	Ⓐ Ⓑ Ⓒ Ⓓ	17.	Ⓐ Ⓑ Ⓒ Ⓓ	24.	Ⓐ Ⓑ Ⓒ Ⓓ		
4.	Ⓐ Ⓑ Ⓒ Ⓓ	11.	Ⓐ Ⓑ Ⓒ Ⓓ	18.	Ⓐ Ⓑ Ⓒ Ⓓ	25.	Ⓐ Ⓑ Ⓒ Ⓓ		
5.	Ⓐ Ⓑ Ⓒ Ⓓ	12.	Ⓐ Ⓑ Ⓒ Ⓓ	19.	Ⓐ Ⓑ Ⓒ Ⓓ	26.	Ⓐ Ⓑ Ⓒ Ⓓ		
6.	Ⓐ Ⓑ Ⓒ Ⓓ	13.	Ⓐ Ⓑ Ⓒ Ⓓ	20.	Ⓐ Ⓑ Ⓒ Ⓓ	27.	Ⓐ Ⓑ Ⓒ Ⓓ		
7.	Ⓐ Ⓑ Ⓒ Ⓓ	14.	Ⓐ Ⓑ Ⓒ Ⓓ	21.	Ⓐ Ⓑ Ⓒ Ⓓ	28.	Ⓐ Ⓑ Ⓒ Ⓓ		

International Olympiad Foundation

Answers

Chapter-1: Integers																			
1.	B	2.	A	3.	C	4.	A	5.	D	6.	C	7.	A,D	8.	B	9.	D	10.	C
11.	A	12.	A	13.	D	14.	A	15.	B	16.	D	17.	B	18.	A,B	19.	C	20.	A
21.	D	22.	B	23.	A	24.	C	25.	D	26.	B	27.	B,C	28.	A	29.	C	30.	B
31.	D	32.	B	33.	A	34.	D	35.	C										

Chapter-2: Fractions and Decimals																			
1.	A	2.	C	3.	D	4.	A	5.	B	6.	D	7.	A	8.	C	9.	A,D	10.	B
11.	A	12.	D	13.	B	14.	A	15.	C	16.	B	17.	D	18.	C	19.	A	20.	D
21.	A	22.	C	23.	B	24.	A	25.	D	26.	C,D	27.	B	28.	C	29.	A	30.	C
31.	C	32.	B	33.	A														

Chapter-3: Data Handling																			
1.	B	2.	A	3.	A,D	4.	A	5.	C	6.	D	7.	B	8.	C	9.	A	10.	D
11.	C	12.	B	13.	D	14.	A	15.	C	16.	D	17.	B	18.	D	19.	A	20.	A,C
21.	B	22.	D	23.	A	24.	C	25.	D	26.	A	27.	C	28.	C	29.	D	30.	A
31.	B	32.	D	33.	C														

Chapter-4: Simple Equations																			
1.	B	2.	D	3.	B	4.	A	5.	C	6.	A	7.	B	8.	D	9.	C	10.	B,D
11.	A	12.	C	13.	B	14.	D	15.	C	16.	B	17.	D	18.	A	19.	C	20.	D
21.	C	22.	A	23.	B	24.	C	25.	A	26.	C	27.	B	28.	D	29.	C	30.	A
31.	B	32.	D	33.	B	34.	C	35.	D										

Chapter-5: Lines and Angles																			
1.	D	2.	B	3.	A	4.	D	5.	B	6.	A	7.	C	8.	B	9.	D	10.	A
11.	C	12.	B	13.	B	14.	D	15.	A	16.	C	17.	D	18.	B	19.	A	20.	D
21.	A,D	22.	B	23.	D	24.	B,C	25.	A	26.	D	27.	C	28.	A	29.	D	30.	B
31.	B	32.	D	33.	C	34.	C												

Chapter-6: The Triangle and its Properties																			
1.	A	2.	D	3.	C	4.	B,C	5.	A	6.	D	7.	C	8.	B	9.	D	10.	B
11.	C	12.	D	13.	A	14.	C	15.	B	16.	D	17.	A	18.	A	19.	C	20.	D
21.	A	22.	C	23.	B	24.	D	25.	B	26.	C	27.	A	28.	A,D	29.	C	30.	B
31.	C	32.	A	33.	D	34.	B	35.	D										

Chapter-7: Congruence of Triangles																			
1.	D	2.	B	3.	C	4.	D	5.	B	6.	A	7.	D	8.	C	9.	A	10.	B
11.	D	12.	C	13.	A	14.	D	15.	A	16.	B	17.	C	18.	A,D	19.	B	20.	C
21.	D	22.	A	23.	D	24.	B	25.	C	26.	B	27.	C	28.	C	29.	A	30.	A
31.	A	32.	D	33.	A														

Chapter-8: Comparing Quantities																			
1.	A	2.	C	3.	D	4.	A	5.	C	6.	B	7.	A	8.	C	9.	A	10.	D
11.	C,D	12.	C	13.	B	14.	D	15.	B,C	16.	A	17.	C	18.	B	19.	A	20.	C
21.	A	22.	D	23.	C	24.	B	25.	C	26.	D	27.	B	28.	D	29.	A	30.	C
31.	B	32.	C	33.	B	34.	A	35.	C										

Chapter-9: Rational Numbers																			
1.	D	2.	A	3.	B	4.	D	5.	C	6.	A,C	7.	B	8.	A	9.	D	10.	C
11.	A	12.	C	13.	D	14.	C	15.	A	16.	B	17.	C	18.	A	19.	B	20.	A
21.	C	22.	A	23.	A	24.	B	25.	D	26.	A	27.	C	28.	B	29.	D	30.	C
31.	B	32.	C	33.	A	34.	C												

Chapter-10: Practical Geometry																			
1.	B	2.	A	3.	D	4.	A,C	5.	D	6.	A	7.	C	8.	B	9.	C	10.	C
11.	A	12.	D	13.	B	14.	D	15.	A	16.	C	17.	B	18.	B	19.	C	20.	C

Chapter-11: Perimeter and Area																			
1.	A	2.	C	3.	B	4.	B	5.	D	6.	A	7.	C	8.	B	9.	D	10.	D
11.	A	12.	C	13.	B,C	14.	C	15.	D	16.	A	17.	C	18.	B	19.	D	20.	B
21.	C	22.	A	23.	C	24.	A	25.	B	26.	D	27.	A	28.	C	29.	D	30.	A
31.	C	32.	A	33.	D	34.	B	35.	C										

Chapter-12: Algebraic Expressions

1.	B	2.	A	3.	D	4.	B	5.	C	6.	D	7.	B	8.	A	9.	D	10.	C
11.	A	12.	D	13.	B	14.	A	15.	C	16.	B	17.	D	18.	C	19.	A	20.	D
21.	B	22.	D	23.	A	24.	C	25.	D	26.	A	27.	B	28.	D	29.	A	30.	A
31.	D	32.	B	33.	C	34.	B												

Chapter-13: Exponents and Powers

1.	B	2.	D	3.	A	4.	C	5.	D	6.	A	7.	C	8.	B	9.	D	10.	B
11.	A,C	12.	D	13.	B	14.	D	15.	A	16.	C	17.	D	18.	B	19.	A	20.	D
21.	B	22.	A	23.	C	24.	B	25.	D	26.	A	27.	C	28.	B	29.	D	30.	A
31.	A	32.	C	33.	B	34.	A	35.	C										

Chapter-14: Symmetry and Visualising Solid Shapes

1.	D	2.	A	3.	C	4.	B,C	5.	D	6.	B	7.	A,C	8.	D	9.	C	10.	A
11.	B	12.	D	13.	B	14.	A	15.	A	16.	C	17.	D	18.	A	19.	B	20.	C

Chapter-15: Logical Reasoning

1.	C	2.	D	3.	B	4.	C	5.	B	6.	A	7.	C	8.	D	9.	A	10.	C
11.	C	12.	C	13.	C	14.	A	15.	D	16.	A	17.	B	18.	D	19.	C	20.	B
21.	C	22.	D	23.	C	24.	B	25.	B	26.	A	27.	B	28.	D	29.	C	30.	D

Mock Test 1

1.	C	2.	B	3.	D	4.	A	5.	C	6.	B	7.	C	8.	A	9.	D	10.	B
11.	C	12.	A	13.	B	14.	D	15.	B	16.	A	17.	D	18.	B	19.	C	20.	C
21.	A	22.	D	23.	B	24.	D	25.	A	26.	C	27.	D	28.	B	29.	A	30.	D

Mock Test 2

1.	C	2.	D	3.	B	4.	D	5.	A	6.	C	7.	B	8.	D	9.	A	10.	C
11.	D	12.	B	13.	A	14.	C	15.	A	16.	D	17.	C	18.	C	19.	D	20.	B
21.	A	22.	C	23.	D	24.	C	25.	A	26.	A	27.	D	28.	B	29.	A	30.	B