

NOTE:

- * These questions are collection of different district pre final exams of 2018 and 2019.
- * We hope these questions will help the students to perform better in final exams.
- * Don't think that these questions will repeat in final exams.
- * Practice using margin in your practice paper or book.
- * Write the formula or laws and draw the rough diagrams for respective questions if needed.

I also thank you all my colleagues and friends who supported me in collection of all these questions.

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Real numbers

1 Mark

1. 'a' and 'b' are two positive integers, $a > b$ by Euclidian division $a = bq + r$. When $b = 7$ write the values of "r" in roster form
2. Write $2 \log 5 - 3 \log 3 - 5 \log 2$ as single logarithm
3. If $x = \log_3^5, y = \log_3^7$ then express \log_3^{35} in terms of x and y
4. Show that $\log a + \log \frac{1}{a} = 0$
5. Find 'x', if $2 \log 5 - \frac{1}{3} \log 125 = \log x$
6. Find the value of $\log(\tan 30^\circ) + \log(\tan 60^\circ)$.
7. Solve $\log_3^{81} = x$
8. Find the value of \log_7^{343}
9. Rekha argues with Rani, for all natural numbers of m, n the units digit in the product of $2^m 5^n$ is zero. Whom do you support? Why?
10. Find the HCF of 240 and 1024 using Euclid division algorithm.
11. Verify whether GCD of 80 and 120 is 20
12. Solve $\log_c^{\sqrt{c}}$
13. Find the GCD of 15 and 21 using Euclid division lemma.
14. Determine the value of \log_7^{2401}
15. Evaluate \log_4^{729}
16. If $\log(x + 2) + \log(x - 2)$ is $\log 3 + \log 7$ find the value of x.

2 Mark

1. Find the LCM and HCF of the numbers 29 and 175
2. 4320 is expressed as $5^p \times 3^q \times 2^r$. If p, q and r are in arithmetic progression then find the 15th term.
3. Can you find the HCF of 0.8 and 1.28 by using Euclid division lemma? Justify your answer.
4. If $\log_3^{81} + \log_{16}^4 - \log_9^3 = \log_2^x$ then find the value of 'x'.
5. Find the HCF of 135 and 225 by using Euclid division algorithm
6. If $x^2 + y^2 = 6xy$. Prove that $2 \log(x + y) = \log x + \log y + 3 \log 2$
7. If the HCF of 48 and 60 is expressible in the form of $48q - 60$, then find the value of 'q'.

8. If $x = \log_3^9$ and $y = \log_2^{64}$ then find $2x^2 - y$
9. Prove that $(\sqrt{7} + 7)$ is an irrational number.
10. If $\log \frac{64}{243} = p \log 2 + q \log 3$ then find the value of p and q.
11. If $x = \log_{10}^5, y = \log_{10}^6$ then represent \log_{10}^{900} in x, y
12. Find P if $3 \log 2 + \frac{1}{3} \log 8 - \log P = 0$
13. Find the LCM and HCF of 42 and 58 by using prime factorization
14. If $x = \log(a + b), y = \log(a^2 - ab + b^2)$ and $z = \log(a^3 + b^3)$ then find the relation between x, y and z.
15. If the prime factorization of 500 is $2^a \times 5^b$, then find the value of a + b.

4 Mark

1. Prove that $\sqrt{7} - 2\sqrt{3}$ is an irrational number.
2. Use Euclid's division lemma to show that any odd positive integer is of the form of $8q+1$ or $8q+3$ or $8q+7$ are sum integer q
3. Prove that $3 - 2\sqrt{5}$ is an irrational
4. If the HCF of 98 and 280 is equal to $m^2 - 5m$ then find the positive value of 'm'.
5. If $\frac{1}{2} \log 25 + \log 3 - \frac{1}{3} \log 27 = \log x$, then find the value of x.
6. Show that $\sqrt{5} + 2\sqrt{3}$ is an irrational number.
7. Show that the square of any positive integer will be in the form of $4P$ (or) $4P + 1$
8. Prove that $\sqrt{7} - \sqrt{5}$ is irrational number.
9. If $2 \log \left(\frac{x-y}{\sqrt{5}} \right) = \log 5 + \log x + \log y$ then find $\frac{1}{x} + \frac{1}{y}$
10. If $\frac{1}{2} \log 25 + \log 3 - \frac{1}{3} \log 27 = \log x$ then find the value of x.
11. Show that $2\sqrt{3} + 5\sqrt{7}$ is an irrational number
12. If $2 \log (x+4) - 4 \log 2 = 1 + \log x$ then find the value of 'x'
13. If $3 \log (x - y) = \log 8, \log (x + y) + \log (x - y) = \log 16$ (x, y are positive integers) then find the value of x, y
14. Use Euclid's division Lemma to show that square of any positive integer is of the form $8x + r$, Where $r = 0, 1, 4$
15. Prove that $\sqrt{6} + \sqrt{10}$ is irrational
16. Prove that $\sqrt{3} + \sqrt{7}$ is an irrational number.

Sets

1 Mark

1. If $P = \{3, 5, 7, 9\}$, $Q = \{4, 5, 6, 7, 8\}$. Find $n(Q - P)$
2. Write $B = \{x: x \text{ is an alphabet in MATHEMATICS}\}$ in roster form.
3. Draw a venn diagram of $(A \cup B) - (A \cap B)$ when A and B are any two sets
4. Write any two subsets of $\{2, 4, 6, 8\}$
5. Represent $A - (A \cap B)$ in venn diagram.
6. Express the solution set of $x^2 - 4 = 0$ in roster form
7. Draw venn diagram of $A \cap B$, where $A = \{a, b, c\}$, $B = \{x, y, z\}$
8. "If $B \subseteq A$, then sets $A \cap B$ and $A - B$ are disjoint sets." Justify?
9. Represent $A - B$ and $B - A$ through venn diagrams
10. Rewrite the set $A = \{x: x \in \mathbb{N} \text{ and } x < 12\}$ in roster form
11. $S = \{x: x = P^2 - 1, 1 \leq P \leq 5\}$. Express S in roster form
12. Draw the venn diagram of set $(A - B) \cup (B - A)$
13. $C = \{\text{set of all types of triangles}\}$, $D = \{\text{Isosceles triangle, Equilateral triangle, Right angle triangle}\}$. State whether $C \cap D$ or $D \cap C$ are equal. Justify your answer.
14. Draw the venn diagram for the sets A, B such that $A \subset B$
15. Write the set builder form of the set A
16. $A = \{\log_{10}^1, \log_{10}^{10}, \log_{10}^{100}, \log_{10}^{1000}\}$, $B = \{\sin 90^\circ, \cos 90^\circ, \sec 60^\circ, \csc 45^\circ\}$ then find $A \cap B$
17. If $a = \{1, 2, 3, 4\}$ and $B = \{1, 2, 3, 4, 5, 6\}$ then represent $A \cup B$ and $A - B$ through venn diagram.
18. $A = \{x: x \text{ is prime number, } x < 20\}$, $B = \{x: x = 2m+3, 0 < m < 9, m \in \mathbb{Z}\}$ then find $A - B$, $B - A$, $(A - B) \cup (B - A)$

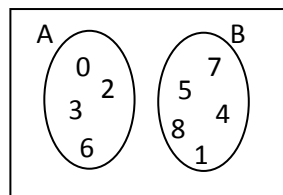
2 Mark

1. $A =$ Set of first five odd composite numbers, $B =$ Set of first five multiples of 9. Represent A, B through in venn diagram.
2. $A = \{x: x \text{ is factors of } 10\}$, $B = \{x: x \text{ is prime number less than } 10\}$ represent sets A, B in venn diagram.
3. Find $A \cap B$ where $A = \{x: x \text{ is a odd natural number and factor of } 6\}$, $B = \{x: x \text{ is a odd natural number less than } 10\}$
4. A is a set of even numbers and B is a set of odd numbers. Draw venn diagram of $A \cap B$ and $A - B$.
5. Set $E = \{a, e, i, o, u\}$. find $E \cup \phi$ and $\phi \cup E$. What do you observe?

6. If $A = \{x: x \text{ is zero of } x^2 - 9\}$ and $B = \{x: x \in \mathbb{Z} \text{ and } -3 \leq x \leq 3\}$ then verify whether A and B are equal sets?
7. $A = \{x: x \text{ is a prime number below } 10\}$, $B = \{x: x \text{ is an even number below } 10\}$. Represent $A \cap B$, $A - B$ using venn diagram.
8. Write any 6 subsets of $E = \{\alpha, \beta, \gamma\}$
9. Write the roster form of set $A = \{x: x = p^2 - 5, p \in \mathbb{W}, p \leq 6\}$
10. If $A = \{1, 3, 4, 5, 6, 7\}$ and $B = \{2, 3, 5, 7, 8\}$ find $A - (A \cap B)$ and list all the subsets of $A - (A \cap B)$.
- 11.

4 Mark

1. Given $A = \{1, 2, 4, 7, 8, 9\}$, $B = \{2, 3, 4, 5, 6, 9\}$ then find i) $A \cup B$ ii) $A \cap B$ iii) $A - B$ iv) $B - A$
2. Let $A = \{x: x \text{ is even natural number}\}$, $B = \{x: x \text{ is odd natural number}\}$, $C = \{x: x \text{ is a multiple of } 5\}$ then find $A \cap B$ and $B \cap C$
3. $A = \{x^2 - 1: x \in \mathbb{N} \text{ and } -2 \leq x \leq 0\}$, $B = \{2x + 1: x \in \mathbb{W} \text{ and } -2 < x < 2\}$ find $(A \cup B)$ and $(A \cap B)$
4. Prove that $n(A \cup B) = n(A - B) + n(B - A) + n(A \cap B)$ with examples.
5. $A = \{\text{prime numbers less than } 10\}$, $B = \{\text{multiples of } 3 \text{ less than } 15\}$ show that $A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$
6. Set $A = \{x: x \text{ is a factor of } 24\}$, Set $B = \{x: x \text{ is a factor of } 36\}$ find $(A - B) \cup (B - A)$ and $(A \cup B) - (A \cap B)$
7. If $P = \{x: x \text{ is prime factor of } 260\}$ and $Q = \{x: x \text{ is prime factor of } 924\}$ then find $P - Q$, $Q \cap P$ by venn diagram
8. $A = \{x: x \text{ is a multiple of } 5 \text{ below } 30\}$, $B = \{x: x \text{ is a multiple of } 3 \text{ below } 30\}$ then find $A \cup B$, $A \cap B$ and $B - A$
9. $A = \{x/x \text{ is a factor of } 12\}$, $B = \{x/x \text{ is a perfect square less than } 20\}$ find $A \cap B$.
With the help of $A \cap B$ find $n(A \cup B)$
10. If $A = \{x: x \text{ is even natural number, } x \leq 14\}$, $B = \{y: y = 2n, n \in \mathbb{W}, n \leq 5\}$ then prove that $(A - B) \cup (A \cap B) = A$
11. From the adjacent venn diagram, find set A, set B, $A \cap B$, $A \cup B$ then prove that $n(A \cup B) = n(A) + n(B)$



Polynomials

1 Mark

1. If $p(x) = x^3 - 2x^2 - 5x - 6$ then find the value of $p(0)$.
2. If $y = ax^2 + bx + c$, ($a > 0$) has no real roots then draw a diagram for this expression (No need graph)
3. The sides of rectangle are $(2x + 3)m$ and $(x + 2)m$. And its perimeter is 28m. Find 'x'.
4. If $P(x) = x^3 - 2$, find the value of $P(1) + P(-1)$
5. Find the values of $P(1)$, $P(-2)$ for the polynomial $P(x) = x^2 - 3x + 2$
6. One zero of $P(x) = ax^2 - 3(a-1)x - 1$ is 1 then find the value of 'a'
7. Write a polynomial of degree 3.
8. Find the product of zeros of cubic polynomial $(P) = x^3 + 4x^2 = x - 6$
9. If $P(x) = Kx^3 - 2x + 3$ and $P(1) = -2$ then find the value of 'k'
10. Find the sum of zeros and product of zeros $3x^2 - 2x + 5$
11. Find the sum of the zeros and product of the zeros of $P(x) = -3x^3 + 7x^2 + 5x - 11$
12. Find the polynomial whose zeros are 0, 1 and 2.

2 Mark

1. Polynomial $p(x) = x^2 - 2x - 3$ then find $p(2)$, $p(-2)$
2. The dimensions of cuboid are $(x + 2)$, $(x + 1)$ and $(x - 1)$ respectively. Find the volume of cuboid.
3. Find the zeros of the polynomial $p(x) = x^2 - 4x + 3$ and verify the relationship between the zeros and the coefficients.
4. Represent $y = 2x + 5$ graphically
5. Find the zero of the polynomial $x^2 + 6x + 8$ and verify the relation between the zeros and the coefficients?
6. Find the quadratic polynomial whose zeros are 3 and $\frac{-1}{2}$
7. Find the value of $P(2)$, $P(-1)$ for the polynomial $P(x) = x^3 - 5x^2 - 2x + 24$
8. Draw the graph of $p(x) = 2x + 3$
9. Samartha constructed a rectangle whose measures are the zeros of quadratic polynomial $p(x) = x^2 - 10x + 21$. Find the measures of rectangle
10. If α, β, γ are the zeros of $P(x) = x^3 - 6x^2 + 11x - 6$ then find the value of $\frac{1}{\alpha} + \frac{1}{\beta} + \frac{1}{\gamma}$
11. Find the quadratic polynomial whose zeros are 3 and $-\frac{1}{2}$
12. The amount at a person is $8x^4 + 14x^3 - 2x^2 - 7x - 8$ rupees. Cost of each TV is $4x^2 + 3x - 2$. How many TVs can he buy with his money? How much money he had left behind?
13. Draw the graph of $P(x) = x^2 - 4x + 5$ and find its zeros.

4 Mark

1. Draw the graph of polynomial $p(x) = x^2 - x - 6$ and find the zeros.
2. Find all the zeros of the polynomial $x^4 + x^3 - 34x^2 - 4x + 120$, if two of its zeros are 2 and -2
3. Draw the graph of the polynomial $p(x) = x^2 + 2x + 2$ and write the zeros with the help of graph if possible
4. Find the zeros of the quadratic polynomial $P(x) = x^2 - 3x + 2$ by using graph.
5. Divide $x^3 + 3x^2 - x - 3$ by $x^2 - 1$ and check the divisibility rule.
6. Draw the graph of $x^2 - 3x + 2$ and find its zeros
7. Draw the graph of the polynomial $p(x) = x^2 - 8x + 15$ and find the zeros from it.
8. Draw the graph of $p(x) = x^2 - 6x - 8$ then find the zeros of $p(x)$
9. Find the zeros of polynomial $p(x) = x^2 - 9x + 18$ graphically
10. Draw the graph of polynomial $x^2 - 3x - 10$. Read off zeros from the graph
11. Verify that $\frac{1}{2}$, 1, -2 are the zeros of the cubic polynomial $2x^3 + x^2 - 5x + 2$ and also verify the relationship between the zeros and the coefficients
12. Draw the graph of polynomial $p(x) = x^2 + 4x + 3$ and find the zeros of the polynomial.

Pair of linear equations in two variables

1 Mark

1. What is the value of 'k', $2x + 3y - 5 = 0$ and $4x + ky + 7 = 0$ are parallel.
2. For which value of k, $2x - ky + 3 = 0$ and $3x + 6y - 5 = 0$ pair of linear equations are parallel.
3. 5 pencils 7 pens together cost Rs. 50 whereas 7 pencils 5 pens cost Rs. 46 write equations for the given information
4. Find the value of $x + y$ from $3x + 2y = 13$ and $2x + 3y = 12$.
5. The length of a rectangle is 6m more than its breadth. Its perimeter is 42cm. write the linear equation for this data.
6. Find the number of solutions to the given system of equations $8x - 16y = 2$ and $-16x + 32 = -4$
7. "In a science fair there are 95 experiments. In this 28 experiments belongs to maths and remaining there are related to environment". Express the data as a linear equation in two variables.
8. Verify whether the system of given linear equations has a unique solution or not.
 $2x + 3y - 7 = 0$ and $6x + 5y - 11 = 0$
9. IF $3x - 2y + p = 0$ and $-21x + 14y - 7 = 0$ are coincident lines then find the value of 'p'?

10. For what value of 'k' the pair of linear equation $2x + y + 3 = 0$ and $4x + 2y + K = 0$ represent coincident lines. Draw the rough diagram
11. The cost of 10 books and 5 pens is Rs.125. Write the linear equation for the given data
12. Check whether the following pair of linear equations $x+3y+9=0$ and $2x-4y+6=0$ are consistent or inconsistent? Give your reason.
13. Find the value of p, for which the pair of equations $2x + 3y - 5 = 0$ and $px - 9y + 10 = 0$. Represents parallel lines.

2 Mark

1. Pink said that the pair of linear equations $x + 2y = 6$ and $2x + 4y - 5 = 0$ have infinite solutions. Do you agree? Give reasons.
2. Solve the equations $\frac{x}{2} + \frac{y}{3} = 1$ and $\frac{x}{3} + \frac{y}{2} = 1$ by elimination method.
3. In a competitive examination every right answer carries 4 marks every wrong answer has 2 negative marks, in the exam Bharati scored 24 marks. If every right answer carries 4 marks, every wrong answer has 1 negative marks then she scores 30 marks. Give two linear equations in two variables for above information
4. Pinky said that the pair of linear equations $x + 2y = 6$ and $2x + 4y - 5 = 0$ have infinite solutions. Do you agree? Give reasons.
5. Check the system of equations $x - 3y = 2$, $-4x + 12y + 8 = 0$ has a unique solution or infinitely many solutions or no solutions
6. If $x + 3y = 6$ and $4x + 12y = P$ equations have infinite solutions then find the value of P.
7. Solve the linear pair $2x + y = 12$, $x - 2y = 1$ by using elimination method
8. Solve the pair of linear equations $x + y - 16 = 0$ and $x - 2y + 2 = 0$ using substitution method
9. Pinky said that the pair of linear equations $x + 2y = 6$ and $2x + 4y - 5 = 0$ have infinite solutions. Do you agree? Give reasons.
10. Verify whether equations $3x + 4y - 2 = 0$ and $6x + 8y - 4 = 0$ are consistent or not.

4 Mark

1. Draw the graph of $x + y + 9 = 0$ and $2x + 2y - 6 = 0$. What type of lines they represent.
2. Find the solution of pair of linear equations $x + y = 7$ and $x - y = 3$ by using graph
3. Solve the following linear equations in two variables graphically. $3x + 2y = 11$ and $2x + 3y = 4$.
4. Draw the graph of pair of linear equations $2x + 5y = 16$ and $5x + 3y = 21$ and write the solution with help of graph.
5. Ramya bought note books and Text books, total number of books are 15. The number of text books is 7 less than the number of note books then find the number of note books and number of text books using graphical method.
6. Find the solution of the set of linear equations $3x + y = 5$ and $2x + 3y + 4 = 0$ graphically.

7. Draw the graphs of the equations $x - y + 1 = 0$ and $3x + 2y - 12 = 0$. Identify the coordinates of the vertices of the triangle formed by these lines and X - axis
8. Represent the solution of pair of linear equations $x + 2y = 4$ and $2x + 4y = 12$ using graph.
9. Find the values of x and y satisfying the following linear equations.

$$\frac{2}{\sqrt{x}} + \frac{3}{\sqrt{y}} = 2, \frac{8}{\sqrt{x}} - \frac{9}{\sqrt{y}} = 1$$
10. Solve the linear equation $5x + 2y = 11$ and $3x + 5y = 18$ graphically
11. If the sum of the present ages of Kiran and his father is 50 years and the product of the ages of them five years ago was 175. Then find their present ages.
12. The sum of the reciprocals of virinchis ages in 5 years ago and 5 years after from now he is $\frac{1}{12}$ find his present age
13. 2 kg onions and 3 KG tomatoes together cost Rs. 150 where as 3 kg onions and 1 kg tomato together cost Rs. 155 then find the cost of 1 kg onion and that of 1kg tomato
14. Solve the following pair of equations by reducing the pair of linear equations $5x + y = 2xy$, $6x - 3y = xy$
15. Solve the following system of equations graphically. $x - 2y = -3$ and $2x + y = 4$
16. Solve the following equations graphically $2x + y - 1 = 0$, $x + 3y + 7 = 0$
17. In a school, there are some benches and some students. If five students sit on each bench, three benches left and three students sit on each bench five students left. Find the number of students and the number of benches using graph
18. Solve $\frac{5}{x-1} + \frac{1}{y-2} = 2$ and $\frac{6}{x-1} - \frac{3}{y-2} = 1$
19. Solve the following systems of equations graphically: $2x - y - 4 = 0$, $x + y + 1 = 0$

Quadratic equations

1 Mark

1. Whether the roots of $x^2 - 16 = 0$ equal or not. Justify?
2. If $x^2 - px + 9 = 0$ has equal roots then find the value of P.
3. What is the nature of the roots without finding roots of the equation $100x^2 - 20x + 1 = 0$
4. If the quadratic equation $4x^2 + kx + 4 = 0$ has equal roots then find the value of k
5. The sum of the squares of the two consecutive even numbers is 884. Write the quadratic equation required to find the numbers
6. Are the roots of $2x^2 - 3x - 1 = 0$ real? Give reason.
7. Madhurima says $3x^2 - 4x + 5 = 0$ has real roots. Do you agree with her? Justify your answer.
8. $x + \frac{1}{x} = 3$ is not a quadratic equation. Do you agree?

- Is $x^2+3 = (x-3)^2$ a quadratic equation or not? Justify
- Write the quadratic equation in which sum of the roots is zero and product of the roots is -2
- The sum of square of two consecutive odd numbers is 34. Represent the above statement in the form of quadratic equation.

2 Mark

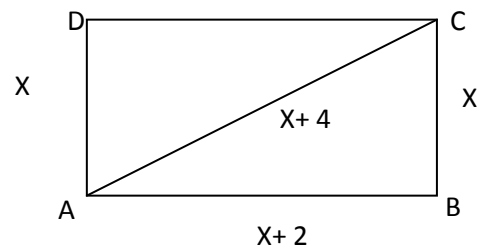
- Find the quadratic polynomial whose zeros are 3 and $-1/2$
- The numerator of fraction is 1 less than the square of denominator, and the fraction is $\frac{8}{3}$.

Write the quadratic equation in its standard form.

- The product of Ages of Sunitha two years ago and 4 years later is 16 then find present age of Sunitha
- If the roots of the quadratic equation $ax^2 + bx + c = 0$, ($a \neq 0$) are equal then show that $b^2 = 4ac$
- Write the quadratic equation whose roots are $2+\sqrt{3}$ and $2-\sqrt{3}$
- “The quadratic equation $3x^2 - 5x + 6 = 0$ has no real roots.” Justify
- If the area of a rectangle is $x^2 + x - 6$, then find the length and the breadth.
- For what value of k, the quadratic equation $9x^2 - 3kx + k = 0$ has equal roots
- Find the roots of $2x^2 + 5x - 3 = 0$ by method of completing the square.
- The diagonal of rectangular plot is 8m more than the shorter side. If the longer side is 7m more than the shorter side, write the equation which gives the relation between the side.

4 Mark

- The adjacent figure ABCD is a rectangle find the length and breadth of the rectangle.



- The area of rectangle is $x^4 - 3x^2 + 4x - 3$ and its length is $x^2 - x + 1$ then finds its breadth.
- Draw the graph of the quadratic polynomial $Y = x^2 - 3x - 4$ and find its zeros
- Solve the quadratic equation $2x^2 - 7x + 13 = 0$ by completing the square.
- Sum of the areas of two squares is $468m^2$. If the difference of their perimeter is 24m, then find sides of the two squares.

- Find the present age of mother and her daughter for the given situation by formulating a quadratic equation. "Mother's present age is four times of her daughter's age. Four years ago product of their ages was 160".
- The diagonal of a right angled triangle is 2 units more than its smallest side and another side is 1 unit less than diagonal. Then find the lengths of the sides of the triangle.
- There are three consecutive positive integers, such that sum of the square of the first and product of other two is 154 find the integers
- The hypotenuse of a right triangle is 5m, more than twice of the shortest side. If the third side is 4m less than hypotenuse, find the sides of the triangle.

Progressions

1 Mark

- Find the nth term of a progression $\frac{x}{2}, \frac{x}{4}, \frac{x}{8}, \dots$
- What is the next term in G.P 2, -6, 18, -54?
- Is $\frac{1}{64}, \frac{1}{32}, \frac{1}{8}$ are in G.P?
- If the second term of an A.P is equal to 5 times its fifth term then show that seventh term of an A.P is zero
- Find the 15th term of A.P: 10, 7, 4,
- 4, -3, -10, -17the list given forms an A.P or not? Give reason.
- Write the formula for the sum 'n' terms of an A.P describe each letter in it
- Write the formula of sum to 'n' terms of Arithmetic progression and explain the terms.
- Find the 10th term of the progressions 3, 3.2, 3.4,
- Write the formula to in the sum of 'n' terms of AP and write about each term in it
- Check whether $\frac{1}{3}, \frac{1}{9}, \frac{1}{27}, \frac{1}{81}$ is in GP or not? Give your reason
- Find x so that x, x + 3, x + 9 are consecutive terms of GP.

2 Mark

- The 1st term of an AP is 3 and 6th term is 18 then find the 11th term of AP.
- If a boy required 3 match sticks to prepare a triangle, 5 match sticks to prepare 2 triangles and 7 match sticks for 3 triangles then find the number of match sticks to prepare 100 triangles.
- The 10th term and 18th term of an A.P are 41 and 73 respectively. Find the 26th term.
- From your pocket money you save Rs. 3 on day 1, Rs.6 on Day 2, Rs. 9 on day 3 and so on. How much money will you save in the month of February 2018
- Find x, if $\frac{1}{5}, x, 5$ are in geometrical progression.

6. If in a G.P 3rd term is $\frac{2}{9}$ and 5th term is $\frac{2}{81}$ then do you agree 7th term is $\frac{2}{243}$? Give reason
7. If three consecutive terms of G.P are -4, x, -9 then find the positive value of 'x'.
8. Find the sum of first 10 terms of A.P 7, 3, -1
9. Find the nth term of an A.P -72, -65, -58, -51,
10. Write the formula to find first 'n' terms of A.P and explain the terms.
11. If $S_n = 45$ in an A.P the find a_5

4 Mark

1. The fourth of term of GP is $\frac{2}{3}$ and the 7th term is $\frac{16}{81}$ then write the GP
2. If the sum of first 6 terms of an arithmetic progression is 36 and that of 15 terms is 225, find the sum of first 'n' terms
3. Show that $7, 10\frac{1}{2}, 14, \dots, 84$ is in A.P find the sum of the terms
4. In an AP the first term is 2, common difference is 8 and sum of 'n' terms is 90, then find the number of terms and nth term.
5. How many terms of the A.P 2, 4, 6.... must be taken so that their sum is 156.
6. Find the sum of three digit numbers divisible by 5.
7. Find the sum of multiples of 7 from 100 to 1000.
8. The nth term of an A.P, $a_n = 4n - 14$, then find the sum of 'n' terms
9. If a, b, c are in G.P then show that $\log_{10}^a, \log_{10}^b, \log_{10}^c$ are in A.P
10. There are 20 rows of trees in a garden in the following manner "in the first row 200 trees, in the second row 196, in the third row 192....." Then find the total number of trees and number trees in the last row.
11. Find the 10th term of GP whose 6th term is 1215 and the first term is 5
12. Find the sum of all 3 digit numbers which leaves the remainder 3 when divided by 5

Coordinate Geometry

1 Mark

1. Find the angle made by the line joining the points A(2, 4) and B(3, 5) with the X – axis in the positive direction.
2. Determine x so that 2 is the slope of the line through (2, 9) and (x, 3).
3. Find the centroid of triangle ABC if A(-4, 6), B(2, 2), C(2, 5)
4. Find the slope of the line passing through the points (-2, 4) and (6, 2)
5. Find the point of intersection of medians of the triangle whose vertices are (2, 4), (6, 4) and (2, 0)

6. Find the distance of the point $(3\sqrt{7}, 1)$ from the origin
7. If the slope of the line passing through the points $(3, 2)$ and $(1, x)$ is 2, then find x .
8. Prove that the distance between $(0, 0)$ and $(a \cos \alpha, a \sin \alpha)$ is independent of 'a'.
9. If the distance from origin to the point $(x, 2)$ is $\sqrt{20}$ units then find 'x' value
10. Find the angle with x – axis made by the line passing through $(-6, \sqrt{3}), (7, 0)$
11. The vertices of a triangle are $(4, -6), (-6, 5)$ and $(8, -2)$. Find its centroid.
12. If the circle with centre $(2, 3)$ passes through a point $(4, 5)$ then find the radius of circle.
13. Find the slope of the line which makes an angle of 60° with the positive direction of x – axis.
14. Explain the characteristic of a line passing through the points $(-3, 7), (0, 7)$ and $(4, 7)$
15. Find the centroid of the triangle whose vertices are $A(-1, -3), B(2, 2)$ and $C(-1, 1)$
16. If the distance between the two points $A(3, 5)$ and $B(x, 3)$ is $\sqrt{3}$
17. Is the line AB joining the points $A(2, -5), B(5, -5)$ parallel to x – axis? Give reasons.
18. A point (x, y) divides the line segment joining the points (a, b) and (c, d) in the ratio of $m:n$ internally and write the Section formula.

2 Mark

1. The angle made by a line with X -axis is 60° , find its slope
2. Can we construct a triangle with the following points $(2, 0), (1, 2)$ and $(-1, 6)$? Give reasons.
3. In a triangle ABC , $A = (2, 3)$ and the midpoint of BC is $(-2, 4)$. Find the centroid of the triangle.
4. If the points $(8, 1), (k, -4)$ and $(2, -5)$ are collinear then find the value of k .
5. Are the given points $(-3, 2), (5, 4)$ and $(7, -6)$ collinear? Why?
6. Find the inclination angle of the line segment joining $(2, 3)$ and $(5, 6)$ with the positive direction of x -axis
7. Find the ratio in which the Y – axis divides the line segment joining the points $(5, -6)$ and $(-1, -4)$
8. Are the points $(2, -3), (0, 5), (-1, 0)$ collinear. Give the reasons.
9. The area of a triangle formed by a line with co-ordinate axes passing through $(0, a)$ and $(b, 0)$ is $\frac{1}{2} ab$. Verify the above.
10. Find the distance between $(-7, -3)$ and origin
11. The slope of a line joining $(2, 6)$ and $(x, 4)$ is 2 then find 'x'.
12. Check whether $(5, 0), (0, 0)$ and $(0, 5)$ are vertices of isosceles triangle.
13. Find the coordinates of the point which divides the line segment joining the points $(2, 3)$ and $(4, -5)$ in the ratio $1:2$ internally.
14. Write two from 5 units away from a point $(2, 3)$.

- Can we construct a triangle with the following points (2, 0), (1, 2) and (-1, 6)? Give reasons.
- For what values of 'k' the points A(1, 2), B(3, 4) and C(5, k) are collinear?

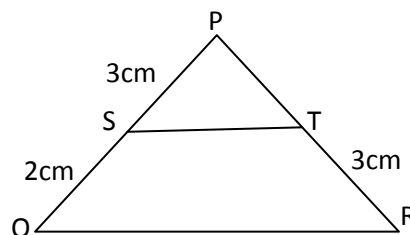
4 Mark

- Find Q, R points that these points are like $PQ = QR = RS$ on the line connecting the points P(2, 3), S(5, 9).
- Name the type of quadrilateral formed by the following points and give reasons for your answer (4, 5), (7, 6), (4, 3) and (1, 2)
- Find the coordinates of the points of trisection of the segment joining (5, 7) and (3, -4)
- Find the ratio in which the point (-3, p) divides the line segment joining the points (-5, -4) and (-2, 3). Hence find the value of 'p'.
- Find the centroid of the triangle ABC with the following points. A ($\tan 45^\circ$, $\sin 30^\circ$), B (\log_3^9 , \log_2^1), C (2^0 , 3^{-1})
- If (1, -2), (3, 6) and (5, 10) are the vertices of a parallelogram taken in order then find the fourth vertex.
- If origin is the centroid of triangle whose vertices are (2, 3), (x, y) and (3, -2) then find the area of triangle.
- Justify the type of triangle formed by the vertices (-2, 1), (2, 1) and (-2, 5) with proper reasons.
- Find the points which divides the line segment joining the points (-2, 3) and (6, 7) into four equal parts
- Find the area of parallelogram whose coordinates are (2, -1), (5, -3), (7, 0) and (4, 2)
- If A(-2, P), B(-5, -4), C(q, -4) and D(5, 2) are the vertices of a parallelogram taken in order find p and q
- Find the ratio in which the y – axis divides the line segment joining the points (7, 3) and (-4, 5). Also find the point of intersection

Similar Triangles

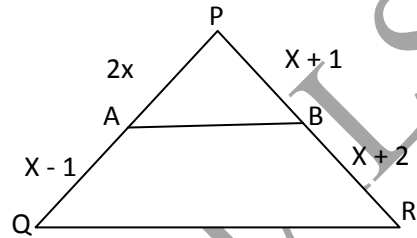
1 Mark

- In triangle ABC, if 'D' and 'E' are mid points of AB and AC, then show that $DE \parallel BC$.
- A line AB is 3 cm in length. AB is produced to 'P' such that $BP^2 = AB \cdot AP$. Frame the quadratic equation to find the length of 'BP'.
- $\Delta PQR \sim \Delta ABC$ if measure of $\angle A = 50^\circ$ and $\angle Q = 70^\circ$. What is the measure of $\angle C$
- Is (4, 5, 6) a Pythagorean triplet? Justify.
- Draw a circle with the radius 2.9cm and construct a tangent to circle from a point on the circle.

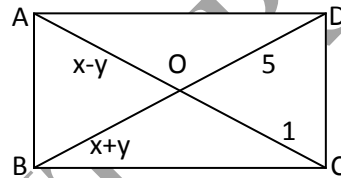


6. In the figure $ST \parallel QR$ then find PT.

7. In the adjacent figure for which value of x is $QR \parallel AB$

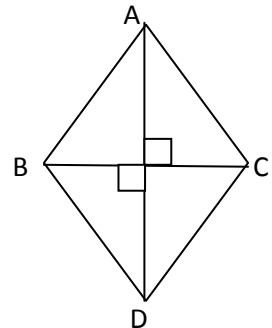


8. ABCD is parallelogram, $OA = x - y$, $OB = x + y$, $OC = 1$ and $OD = 5$. Find the values of x and y.



9. In the adjacent figure $\triangle ABC$ and $\triangle DBC$ are on the same base, AB and DC intersect at O

then show that $\frac{\text{Area of } \triangle ABC}{\text{Area of } \triangle DBC} = \frac{AO}{DO}$



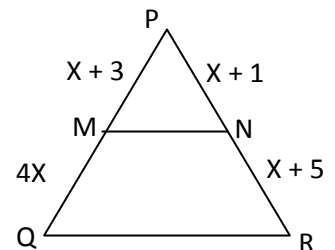
10. It is given that $\triangle DEF \sim \triangle RPQ$. Is it true to say that $\angle D = \angle R$ and $\angle F = \angle R$? Explain your answer.

2 Mark

1. In $\triangle PQR$, $\angle PQR = 90^\circ$, $PQ = 3\sqrt{3}$ and $PR = 6\sqrt{3}$ then find QR

2. In $\triangle ABC$, $\angle B = 90^\circ$ and $BD \perp AC$, If $AC = 7\text{cm}$ and $AD = 2\text{cm}$ then calculate the length of BD.

3. In the $\triangle PQR$, $MN \parallel QR$ then find the value of x.



4 Mark

1. $\Delta ABC, DE \parallel BC$, $AD = x$, $DB = x - 3$, $AE = x + 3$ and $EC = x - 1$. Find the value of x ?
2. Construct a triangle with the measures $AB = BC = 6.4\text{cm}$ and $\angle ABC = 64^\circ$ and also draw the similar triangle of $\frac{3}{5}$ times of ΔABC
3. Draw an equilateral triangle of side 4.5cm , construct a similar triangle to it with each side is $\frac{4}{3}$ of the corresponding side. Is this triangle is also an equilateral triangle?
4. Construct a triangle with sides 4cm , 5cm , 7cm and construct a triangle similar to it with corresponding sides $\frac{4}{5}$ to the given triangle.
5. Prove that the area of square described on hypotenuse of right angled triangle is equal to sum of the areas of square described on other two sides

Tangents and Secants to a circle

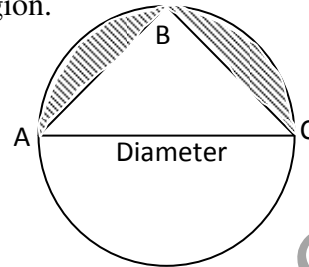
1 Mark

1. Can we draw only one tangent at point of contact on a circle? Justify your answer.
2. Can we encircle a parallelogram which cannot be a rectangle? Justify your answer.
3. What is the perpendicular distance between two tangents drawn to a circle of radius 20cm .
4. The formula $\frac{\theta^\circ}{360^\circ} \times \pi r^2$ is used to find the area of sector. What is the meaning of the letters θ° and r ?
5. Find the length of a tangent drawn to a circle of radius 4cm from an external point 10cm away from the centre.

2 Mark

1. A cow is tied to a peg at one end of a square shaped grass field of side 17m . by means of a 7m . long rope. Find the area of that part of the field in which the cow can gaze.
2. Calculate of length of tangent to a circle of radius 7cm from a point 25cm away from the centre of a circle.

3. In the adjacent figure for the $\triangle ABC$ inscribed inside the circle, if AC is diameter and $AB = 3\text{cm}$, $BC = 4\text{cm}$. then find the area of the shaded region.



4. If the length of a minute hand of a clock is 14 cm then find the area swept by the minute hand in 15 minutes

4 Mark

1. In two concentric circles with radius of 13cm. and 15cm. find the length of the chord of the bigger circle that touches the smaller circle.
2. Draw a circle of radius 3cm from a point 7cm away from the centre, construct the pair of tangents to the circle and write the steps of construction.
3. A chord of a circle radius 8.4cm subtends an angle of 60° at the centre. Find the area of the corresponding minor segment of the circle.
4. Draw a pair of tangents to a circle of radius 3 cm from a point 7 cm away from the centre.
5. Draw a pair of tangents to a circle of radius 4 cm from a point 9 cm away from the centre.
6. A car has two wipers which do not overlap. Each wiper has blade of length 21cm sleeping through an angle of 120° . Find the total area cleaned at each sweep of the blades.

Mensuration

1 Mark

1. Find the area of the sector whose radius is 14cm and making an angle of 60° at the centre.
2. Write the formula to find the volume of cylinder and explain the terms in it.
3. Find the slant height of the cone whose radius is 8cm and height is 15cm.
4. Find the volume of right circular cone with radius 3cm and height 7cm.
5. If the radius of a cylinder is reduced by half and the height of it is double, will there be any change in the lateral surface area of the cylinder. Justify your answer.
6. Find the total surface area of hemisphere of diameter 42cm.
7. If the surface area of a sphere is 616cm^2 then what is the length of the radius?
8. If the height and the slant height of a cone are 8cm and 10cm respectively then find the radius of the cone

2 Mark

1. The height (h) of the cylinder is twice the radius (r) then expresses the total surface area in terms of 'r'.

- $\frac{3}{4}$ of the volume of a sphere of radius 1 cm is equal to the volume of a cylinder of radius 1 cm, find height of the cylinder.
- If the radius of a cone is half of the radius of a cylinder and its height is double to that of cylinder. So that its volume is $\frac{1}{6}$ th of volume of cylinder.
- The base radius and height of a cylinder are in 2:3 ratio and the volume of the cylinder is 1617 cube cm. Find its curved surface area.
- Find the ratio of their volumes of a cylinder and sphere if the height of the cylinder is equal to the diameter of the sphere and both are having same radius.

4 Mark

- A hemispherical bowl of internal radius 18cm is filled with liquid. The liquid is to be filled into cylindrical bottles of radius 3cm and height 4cm. How many bottles are necessary to empty the bowl?
- A solid toy is in the form of a right circular cylinder with hemispherical shape at one end and a cone at the other end. Their common diameter is 7cm. and the height of cylindrical part is 6cm and slant height of conical portion is 5cm. Find the total surface area of the solid toy?
- A solid toy is in the form of a right circular cylinder with a hemispherical shape at one end a cone at other end. Their common diameter is 5.6cm and the height of the cylindrical and conical portions are 10cm and 7cm respectively. Find the volume of the solid toy (Use $\pi = \frac{22}{7}$).
- A copper sphere of radius 4.2cm was melted and made into thin wire of length 1260 cm, find the thickness of wire.
- Four cubes of volume 125 cubic cm each arranged one above the other to form a cuboid. Find the lateral surface area and total surface area of the cuboid.

Trigonometry and Applications of Trigonometry

1 Mark

- Express 'sin θ ' in terms of 'cos θ '.
- If $\cos 0^\circ$, $\sec 45^\circ$ and $\operatorname{Cosec} 30^\circ$ are in Geometric progression then find the common ratio
- If $x = 2 \sin^2 \theta$, $y = \cos^2 \theta$ then the value of $x + y = ?$
- Find the value of $\sin 54^\circ \cdot \sec 36^\circ$
- If $\tan \theta = \sqrt{3}$ and $(0^\circ < \theta < 90^\circ)$ find the value of $\sin \theta$
- Express "Tan θ " in terms of "Sin θ "
- $\cot A + \operatorname{Cosec} 60^\circ = \sqrt{3}$ then find the value of A?

- Show $(\sec 40^\circ - \tan 40^\circ)(\sec 40^\circ + \tan 40^\circ) = 1$
- An observer of 1.8 m is 13.2 m away from a palm tree. The angle of elevation of the top of the tree from his eyes is 45° . Draw the suitable diagram

2 Mark

- If $13\sin A = 5$ then find the value of $\operatorname{Cosec} A$, $\cos A$?
- The angle of elevation of the top of building from the foot of tower 30° and the angle of elevation of the top of tower from the foot of the building is 60° , if the tower is 30m high draw figure for the data.
- Show that $\cot^2 \theta + \cot^4 \theta = \operatorname{Cosec}^4 \theta - \operatorname{Cosec}^2 \theta$
- If θ is an angle in equilateral triangle, then find $\cot \theta + \operatorname{Cosec} \theta$
- If $\sin A + \cos A = \sqrt{2}$ find the value of $\sin A - \cos A$.
- A man observes a cloud which has 'l' meters above the sea level of water in the lake is α° from a building. Which has 5 meters height at the bank of the lake and from the same place the angle of depression of its image in the lake is β° . Draw a diagram to describe the above data.
- If $\sec \theta - \tan \theta = 4$, then find the value of $\cos \theta$.
- A boy is flying a kite with an angle of elevation of 60° and at a height of 200 m. What should be the length of the thread?
- Which is greater value among $\cos 9^\circ$ or $\cos 90^\circ$? Why?

4 Mark

- If $\tan(A+B) = \sqrt{3}$, $\tan(A-B) = \frac{1}{\sqrt{3}}$, $0^\circ < A+B < 90^\circ$, $A > B$. Find A and B.
- Vishwa observes a person on the ground from helicopter at an angle of depression 30° . If the helicopter flies at a height of 600 metres from the ground. What is the distance of the person from Vishwa?
- In $\frac{1+\cos \theta}{\sin \theta} + \frac{\sin \theta}{1+\cos \theta} = 2 \operatorname{Cosec} \theta$ $\pi = \frac{22}{7}$ be the lengths of perpendicular from B on C
prove that $b = \frac{c^2}{\sqrt{c^2 - p^2}}$
- Show that $\cot^2 A - \cot^2 B = \frac{\cos 2A - \cos 2B}{\sin 2A \cdot \sin 2B}$
- From the top of a building 60m high the angles of depression of the top and the bottom of a tower are observed to be 30° and 60° . Then find the height of the tower.
- Show that $\frac{1+\cos \theta}{\sin \theta} + \frac{\sin \theta}{1+\cos \theta} = 2 \operatorname{Cosec} \theta$

7. Two pillars of equal height stand at a distance of 100mts. at a point in between them. The angles of elevation of their tops are found to be 30° and 60° respectively. Determine the heights of the pillars and the position of the point of observation.
8. Two girls on either side of cell tower of 30m height observes it top at angles of elevation 30° and 60° respectively, then show that the distance between two girls is $40\sqrt{3}$.
9. Show that $\left(\frac{1 + \sin \theta - \cos \theta}{1 + \sin \theta + \cos \theta}\right)^2 = \frac{1 - \cos \theta}{1 + \cos \theta}$
10. Show that $(\tan \theta + \cot \theta)(\operatorname{cosec} \theta - \sin \theta)(\sec \theta - \cos \theta) = 1$
11. Two poles of equal heights are standing vertically opposite to each other on opposite sides of a road of width 50 m. From a point on the road the angle of elevation of the tops of pole are 60° and 30° find the height of the poles.
10. The top of a tree broken by the wind fell down on the ground making an angle of 45° with ground as touch it a distance of 5mts from its foot. Draw a diagram for the given data.
12. Show that $\sqrt{\frac{\cot \theta - 1}{\cot \theta + 1}} = \cos \theta - \sin \theta$
13. Find the value of $\frac{\cos 70^\circ}{\sin 20^\circ} + \frac{\cos 55^\circ \cdot \operatorname{cosec} 35^\circ}{\tan 5^\circ \cdot \tan 25^\circ \cdot \tan 45^\circ \cdot \tan 65^\circ \cdot \tan 85^\circ}$
14. A Boat has to cross a river it crosses the river by making an angle of 60° with the bank of the river. Due to the stream of the river it travels a distance of 600 m to reach the other side of the river. What is the width of the river?

Probability

1 Mark

1. It is said that getting a sum of 7 when two dice are rolled is an impossible event. But Sony said that it is more possible event. To whom you support and why?
2. A card is drawn from a pack of 52 cards. What is the probability of getting the ace of spades.
3. When the die is rolled, what is the probability of getting a face with a prime number?
4. What is the probability of getting odd prime number if a die is rolled once.
5. What is the probability of getting two heads and two tails when two coins are tossed simultaneously?
6. Two dice are thrown simultaneously. Find the probability of i) Doublets ii) Sum of the digits is 15.
7. A letter of English alphabet is chosen at random determine the probability that the letter is consonant
8. What is the probability of getting 7 when a dice is thrown.

2 Mark

1. Reshma and Sushma are two friends. They were both born in 2005. What is the probability that their birth falls on (i) same day (ii) different days.
2. If $P(E) = 5 P(\bar{E})$ where E and \bar{E} are complementary Events then find $P(E)$
3. A bag contains 3 red, 4 white and 5 green coloured balls. If a ball is picked at random from the bag.
 - i) What is the probability for the ball picked to be white.
 - ii) What is the probability for the ball picked is not a white one?
4. 10 cards are numbered from 1 to 10. If a card is drawn at random, What is the probability that is an even prime number?
5. If a card is drawn from a well shuffled Deck of cards then find the probability of i) Not getting a king of red colour and ii) For getting a face card.

4 Mark

1. A, B, C and D are the participants in a running race. The winning chances of A, B, C and D is x, 2x, 3x and 4x respectively. Then find the value of x and also probabilities of A, B, C and D.
2. One card is selected from a well shuffled deck of 52 cards. Find the probability of getting multiple of '2', getting a red colour face card, getting the factor of 9 and not be a face card.
3. A box consists of 20 electric bulbs out of which 4 are defective. If a bulb is picked up at random. What is the probability for it to be defective? If it is defective, what is the probability to pick another bulb? Which is defective, without replacing the first one?
4. Two dice are thrown at same time write down all the possible outcomes. What is the probability that the sum of two numbers appearing on the top of the dice is a prime number?
5. Find the probability of getting a black face card. From a deck of well shuffled cards also find the probability of getting a composite number cards without replacement of previous face card.
6. Two dice are thrown at the same time. Write down all the possible outcomes, what is the probability that the sum of two numbers appearing on the top of the dice is i) 7 ii) 13 iii) less than or equal to 12
7. A box contains 90 disc which are numbered from 1 to 90. If one disc is drawn at random from the box find the probability that it bears
 - i) a two digit number
 - ii) a perfect square number
 - iii) a number divisible by 5.

Statistics

1 Mark

1. Find the median of first 10 prime numbers.
2. What is the abscissa of the point of intersection of the “less than type” and of the “more than type” cumulative frequency curve of a grouped data.
3. Prove that mean and median of first 7 numbers are equal
4. Find the mode of first ten even composite numbers.
5. Write the formula to find the median of a classify frequency distribution and explain each term of the formula
6. A data is given as 3, 4, 5, 6, 8, 12 and 4. Does a mode change another observation is taken into the data?

2 Mark

1. Write the formula for assumed mean method and explain the terms involved in the formula.
2. Find the median of $\frac{5}{6}, \frac{2}{3}, 3, -1, 0, \frac{4}{3}$ and $\frac{3}{4}$
3. For given data 25, 15, 10, 25, 1, 14, 15, 16, 18, 25, 20, 25, 20 18. If the observation 14, 16 are both replaced by 18 will there be any change in the value of Median. Justify your answer.
4. Find the median if $l = 16, n = 35, cf = f = 14$ and $h = 2$

4 Mark

1. The daily expenditures of 60 families is given as under.

| | | | | | | |
|-----------------------------|--------|----------|---------|---------|---------|---------|
| Expenditure (Rupees) | 0 - 10 | 10. - 20 | 20 - 30 | 30 - 40 | 40 - 50 | 50 - 60 |
| No. of Families | 5 | P | 20 | 15 | Q | 5 |

The median for the distribution is Rs. 28.5. Find the P and Q values.

2. Draw two “Ogives” for the following distribution.

| | | | | | |
|------------------------|--------|----------|---------|---------|---------|
| Weight (kgs) | 0 - 10 | 10. - 20 | 20 - 30 | 30 - 40 | 40 - 50 |
| No. of Students | 7 | 8 | 12 | 13 | 10 |

| | | | | | | |
|-------------|-------|---------|---------|------|-------|-----------|
| Runs | 0 -25 | 25 – 50 | 50 – 75 | 75 - | 100 – | 125 - 150 |
|-------------|-------|---------|---------|------|-------|-----------|

| | | | | | | |
|-----------------------|---|----|----|-----|-----|---|
| | | | | 100 | 125 | |
| No. of matches | 6 | 11 | 12 | 15 | 10 | 6 |

3. In twenty - twenty cricket the runs scored by one of the famous cricketer in 60 matches a shown in each matches as shown in the given below.

Find the average score in each match

4. Draw the Ogive curves to the given data and also find the median

| | | | | | | | | |
|-----------------------|-------|----------|----------|---------|---------|---------|---------|---------|
| Class Interval | 0 -10 | 10 .- 20 | 20 - 30` | 30 – 40 | 40 – 50 | 50 - 60 | 60 - 70 | 70 – 80 |
| Frequency | 3 | 5 | 6 | 8 | 10 | 9 | 5 | 4 |

5. The distribution below shows ages of 100 people. Find the median of the given data.

| | | | | | | | |
|------------------|---------|---------|---------|---------|---------|---------|---------|
| Age | 20 – 29 | 30 - 39 | 40 – 49 | 50 – 59 | 60 - 69 | 70 - 79 | 80 - 89 |
| Frequency | 10 | 16 | 33 | 16 | 11 | 9 | 5 |

6. The frequency distribution below shows the weights of 50 students of a class. Draw the less than and greater than cumulative frequency curve for the given data.

| | | | | | | | |
|------------------------|---------|---------|---------|---------|---------|---------|---------|
| Weight | 30 – 35 | 35 - 40 | 40 – 45 | 45 – 50 | 50 - 55 | 55 - 60 | 60 - 65 |
| No. of students | 2 | 3 | 7 | 14 | 12 | 8 | 3 |

7. Draw less than cumulative frequency curve and greater than cumulative frequency curve for the data given below.

| | | | | | | | | | | |
|------------------|---------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|
| Class | 0 - 100 | 100 - 200 | 200 – 300 | 300 - 400 | 400 - 500 | 500 – 600 | 600 - 700 | 700 - 800 | 800 - 900 | 900 - 1000 |
| Frequency | 2 | 5 | 9 | 12 | 17 | 20 | 15 | 9 | 7 | 4 |

8. Find the mean of the following data by deviation method.

| | | | | | | | |
|------------------|-------|---------|---------|---------|---------|---------------------|---------|
| Class | 0 - 9 | 10 - 19 | 20 - 29 | 30 - 39 | 40 - 49 | $\frac{50n-59}{59}$ | 60 - 69 |
| Frequency | 3 | 5 | 7 | 13 | 11 | 7 | 10 |

9. The marks scored by 30 students in a 50 mark exam is given below. Find the mean marks in step deviation method.

| | | | | | |
|------------------------|--------|---------|---------|---------|---------|
| Marks | 0 - 10 | 10 - 20 | 20 - 30 | 30 - 40 | 40 - 50 |
| No. of Students | 3 | 7 | 13 | 5 | 2 |

10. Find the mode of the following frequency distribution.

| | | | | | | | |
|-----------------------|--------|---------|---------|---------|---------|---------|---------|
| Class Interval | 5 - 10 | 10 - 15 | 15 - 20 | 20 - 25 | 25 - 30 | 30 - 35 | 35 - 40 |
| Frequency | 20 | 45 | 80 | 55 | 40 | 38 | 5 |