



# Unique Past Papers Chapter Wise **MATHEMATICS 9**

(2018, 2019, 2021, 2022 & 2023)

**Lahore Board, Faisalabad Board, Multan Board, Gujranwala Board, Sahiwal Board, D.G. Khan Board, Sargodha Board, Rawalpindi Board & Bahawalpur Board.**

## Unit 1: Matrices

1. Define matrix. 4 times
2. What is row matrix? 5 times
3. Define column matrix. 4 times
4. **Define rectangular matrix.** 14 times
5. Define square matrix. 15 times
6. Define zero matrix, give an example. 4 times
7. Find the transpose;  $A = \begin{bmatrix} 1 & 2 & -1 \\ 2 & 1 & 4 \\ 3 & 0 & -2 \end{bmatrix}$  1 time
8. **Define transpose of a matrix.** 11 times
9. **Define symmetric matrix.** 13 times
10. Define skew symmetric matrix. 4 times
11. Define diagonal matrix. 6 times
12. **Define scalar matrix with example.** 9 times
13. Define identity matrix. 4 times



14. Find the value of a, b, c and d which satisfy matrix equation.  $\begin{bmatrix} a+c & a+2b \\ c-1 & 4d-6 \end{bmatrix} = \begin{bmatrix} 0 & -7 \\ 3 & 2d \end{bmatrix}$   
 4 times
15. Find the transpose of the matrix  $B = \begin{bmatrix} 5 & 1 & -6 \end{bmatrix}$   
 3 times
16. If  $B = \begin{bmatrix} 1 & 1 \\ 2 & 0 \end{bmatrix}$ , then verify  $(B^t)^t = B$  **6 times**
17. Verify that if  $B = \begin{bmatrix} 1 & 2 \\ 0 & 1 \end{bmatrix}$ , then verify  $(A^t)^t = A$ . **14 times**
18. Find the transpose of the matrix  $A = \begin{bmatrix} 1 & 2 \\ 2 & -1 \\ 3 & 0 \end{bmatrix}$ . 1 time
19. Find the transpose of the matrix  $E = \begin{bmatrix} 2 & 3 \\ -4 & 5 \end{bmatrix}$ . 1 time
20. Find negative matrix of a given matrix  $A = \begin{bmatrix} 1 \\ 0 \\ -1 \end{bmatrix}$  1 time
21. Find the transpose of the matrix.  $D = \begin{bmatrix} 2 & 3 \\ 0 & 5 \end{bmatrix}$  1 time
22. Find the negative matrix.  $A = \begin{bmatrix} -3 & 2 \\ -4 & 5 \end{bmatrix}$  2 times
23. If  $A = \begin{bmatrix} -1 & 2 \\ 2 & 1 \end{bmatrix}$  then find  $2A$  matrix. 1 time
24. If  $A = \begin{bmatrix} 1 & 2 \\ -1 & 3 \\ 0 & 2 \end{bmatrix}$  and  $B = \begin{bmatrix} 2 & 3 \\ 1 & -2 \\ 3 & 4 \end{bmatrix}$  then find  $A+B$ . 1 time
25. If  $2 \begin{bmatrix} 2 & 4 \\ -3 & a \end{bmatrix} + 3 \begin{bmatrix} 1 & b \\ 8 & -4 \end{bmatrix} = \begin{bmatrix} 7 & 10 \\ 18 & 1 \end{bmatrix}$  then find the value a and b. 1 time
26. If  $A = \begin{bmatrix} -1 & 2 \\ 2 & 1 \end{bmatrix}$  then find  $A + \begin{bmatrix} 1 & 1 \\ 1 & 1 \end{bmatrix}$ . 1 time



27. If  $A = \begin{bmatrix} 1 & 2 \\ 0 & 1 \end{bmatrix}$  then verify that  $A + A^t$  is a symmetric matrix. 1 time
28. If  $A = \begin{bmatrix} 1 & 2 & 3 \\ 2 & 3 & 1 \\ 1 & -1 & 0 \end{bmatrix}$ ,  $B = \begin{bmatrix} 1 & -1 & 1 \\ 2 & -2 & 2 \\ 3 & 1 & 3 \end{bmatrix}$ ; then verify that  $2A+2B=2(A+B)$ . 1 time
29. If  $C = \begin{bmatrix} 1 & -1 & 2 \end{bmatrix}$  then find  $3C$ . 1 time
30. If  $C = \begin{bmatrix} 1 & -1 & 2 \end{bmatrix}$  then find  $(-2)C$ . 1 time
31. If  $C = \begin{bmatrix} 1 & -1 & 2 \end{bmatrix}$  then find the value of  $C + \begin{bmatrix} -2 & 1 & 3 \end{bmatrix}$ . 1 time
32. If  $A = \begin{bmatrix} 1 & 2 & 3 \\ 2 & 3 & 1 \\ 1 & -1 & 0 \end{bmatrix}$ ,  $B = \begin{bmatrix} 1 & -1 & 1 \\ 2 & -2 & 2 \\ 3 & 1 & 3 \end{bmatrix}$ ; then verify that  $A+B=A+B$ . 1 time
33. Find the additive inverse of  $F = \begin{bmatrix} \sqrt{3} & 1 \\ -1 & \sqrt{2} \end{bmatrix}$ . 4 times
34. If matrix  $D = \begin{bmatrix} 1 & 2 & 3 \\ -1 & 0 & 3 \end{bmatrix}$  then find  $3D$ . 2 times
35. If  $A = \begin{bmatrix} 1 & -2 \\ 3 & 4 \end{bmatrix}$  and  $B = \begin{bmatrix} 0 & 7 \\ -3 & 8 \end{bmatrix}$  then find the value of  $3A - 2B$ . 8 times
36. Find  $(A - B)^t$ ; If  $A = \begin{bmatrix} 1 & 2 \\ 0 & 1 \end{bmatrix}$  and  $B = \begin{bmatrix} 1 & 1 \\ 2 & 0 \end{bmatrix}$ . 1 times
37. If  $B = \begin{bmatrix} 1 \\ -1 \end{bmatrix}$  then find  $B + \begin{bmatrix} -2 \\ 3 \end{bmatrix}$ . 5 times
38. If  $D = \begin{bmatrix} 1 & 2 & 3 \\ -1 & 0 & 2 \end{bmatrix}$ , then find  $D + \begin{bmatrix} 0 & 1 & 0 \\ 2 & 0 & 1 \end{bmatrix}$ . 4 times
39. If  $A = \begin{bmatrix} 1 & -2 \\ 3 & 4 \end{bmatrix}$  and  $B = \begin{bmatrix} 0 & 7 \\ -3 & 8 \end{bmatrix}$ ; find  $2A^t - 3B^t$ . 1 time
40. If  $A = \begin{bmatrix} 1 & 2 \end{bmatrix}$  and  $B = \begin{bmatrix} 2 & 0 \\ 3 & 1 \end{bmatrix}$ ; find  $AB$ . 1 time



41. Find  $2A$  if  $A = \begin{bmatrix} -1 & 2 \\ 2 & 1 \end{bmatrix}$ . 1 time
42. Find the product of  $\begin{bmatrix} 1 & 2 \\ 1 & 0 \end{bmatrix} \begin{bmatrix} 4 \\ 0 \end{bmatrix}$ . 2 times
43. Find the product  $\begin{bmatrix} 2 & 3 \\ 1 & 1 \\ 0 & -2 \end{bmatrix} \begin{bmatrix} 2 & -1 \\ 3 & 0 \end{bmatrix}$ . 6 times
44. If  $A = \begin{bmatrix} 3 & 0 \\ -1 & 2 \end{bmatrix}$ ,  $B = \begin{bmatrix} 4 \\ 0 \end{bmatrix}$  find  $AB$ . 6 times
45. Find the product of  $\begin{bmatrix} 6 & 0 \\ 1 & 0 \end{bmatrix} \begin{bmatrix} 4 \\ 0 \end{bmatrix}$ . 2 times
46. Find the product of  $\begin{bmatrix} 1 & 2 \\ 1 & -4 \end{bmatrix} \begin{bmatrix} 5 \\ -4 \end{bmatrix}$ . 8 times
47. Find the product of matrix  $\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \end{bmatrix} \begin{bmatrix} 1 & 2 \\ 3 & 4 \\ -1 & 1 \end{bmatrix}$ . 3 times
48. Let  $A = \begin{bmatrix} -1 & 3 \\ 2 & 0 \end{bmatrix}$  and  $B = \begin{bmatrix} 1 & 2 \\ -3 & -5 \end{bmatrix}$  then find  $AB$ . 1 time
49. Find the product  $\begin{bmatrix} 1 & 2 \\ 1 & 0 \end{bmatrix} \begin{bmatrix} 4 \\ 0 \end{bmatrix}$ . 2 times
50. Find the product  $\begin{bmatrix} 1 & 2 \\ 3 & 4 \\ -1 & 1 \end{bmatrix} \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \end{bmatrix}$ . 3 times
51. Find the product  $\begin{bmatrix} 1 & 2 \\ -3 & 0 \\ 6 & -1 \end{bmatrix} \begin{bmatrix} 4 & 5 \\ 0 & -4 \end{bmatrix}$ . 3 times
52. Find the product  $\begin{bmatrix} 8 & 5 \\ 6 & 4 \end{bmatrix} \begin{bmatrix} 2 & -5 \\ 2 & 4 \end{bmatrix}$ . 3 times



53. Find the product  $\begin{bmatrix} -3 & 0 \end{bmatrix} \begin{bmatrix} 4 \\ 0 \end{bmatrix}$ . 1 time
54. Let  $B = \begin{bmatrix} 1 & 2 \\ -3 & -5 \end{bmatrix}$  and  $C = \begin{bmatrix} 2 & 1 \\ 1 & 3 \end{bmatrix}$  then find  $BC$ . 1 time
55. Find the product  $\begin{bmatrix} x & y \end{bmatrix} \begin{bmatrix} 2 \\ -1 \end{bmatrix}$ . 1 time
56. Find the determinant of the matrix  $B = \begin{bmatrix} 1 & 1 \\ -2 & 3 \end{bmatrix}$  3 times
57. **Define singular and non-singular matrix.** 13 times
58. What is meant by adjoint of a matrix? 1 time
59. Let  $A = \begin{bmatrix} 2 & 3 \\ 1 & 0 \end{bmatrix}$  and  $B = \begin{bmatrix} 5 & -4 \\ -2 & -1 \end{bmatrix}$  then find  $2A + 3B$ . 1 time
60. Is the given matrix singular and non singular? 4 times
61. Find  $2A$  if  $A = \begin{bmatrix} -1 & 2 \\ 2 & 1 \end{bmatrix}$ . 1 time
62. Is the given matrix or non singular? 1 time
63. Find the determinant if  $A = \begin{bmatrix} -1 & 1 \\ 2 & 0 \end{bmatrix}$ . 1 time
64. Find the determinant of the matrix  $\begin{bmatrix} 3 & 2 \\ 1 & 4 \end{bmatrix}$ . 3 time
65. Find the determinant of the matrix  $A = \begin{bmatrix} 3 & 6 \\ 2 & 4 \end{bmatrix}$ . 3 time
66. Find the multiplicative inverse of  $A = \begin{bmatrix} -1 & 3 \\ 2 & 0 \end{bmatrix}$ . 6 times
67. Find the multiplicative inverse of  $\begin{bmatrix} 1 & 3 \\ 2 & 4 \\ 1 & 2 \end{bmatrix}$ . 3 time
68. Find  $|B|$  if  $B = \begin{bmatrix} 1 & 3 \\ 2 & -2 \end{bmatrix}$  8 times
69. Find the multiplicative inverse of  $C = \begin{bmatrix} -2 & 6 \\ 3 & -9 \end{bmatrix}$ . 1 time



70. Find a and b if  $\begin{bmatrix} a+3 & 4 \\ 6 & b-1 \end{bmatrix} = \begin{bmatrix} -3 & 4 \\ 6 & 2 \end{bmatrix}$ . 8 times
71. Find the matrix X, if  $\begin{bmatrix} 2 & 1 \\ 3 & -3 \end{bmatrix} + X = \begin{bmatrix} 4 & -2 \\ -1 & -2 \end{bmatrix}$ . 4 times

**Unit 2: Real And Complex Numbers**

1. Define integers and give example. 2 times
2. Define natural numbers and give example. 1 time
3. **Define rational number.** **11 times**
4. Define the set of real numbers. **5 times**
5. Define terminating decimal fraction with an example. 2 times
6. Define irrational number and also give an example. **5 times**
7. Express the decimal number 0.333... as  $\frac{p}{q}$  where  $p, q \in Z$  and  $q \neq 0$ . 3 times
8. Express the decimal number  $0.\overline{23}$  as  $\frac{p}{q}$  where  $p, q \in Z$  and  $q \neq 0$ . 3 times
9. Represent the number  $2\frac{3}{4}$  on number line. 1 time
10. Give a rational number between  $\frac{3}{4}$  and  $\frac{5}{9}$ . **5 times**
11. Convert the rational number into decimal number  $\frac{19}{4}$ . **5 times**
12. To make the denominator 100, we multiply and divide  $\frac{17}{25}$  by 4. 1 time
13. Convert the fraction.  $\frac{205}{18}$  1 time
14. Represent the number  $1\frac{3}{4}$  on the number line. 1 time
15. Express as a rational number  $0.\overline{13}$ . 1 time
16. Represent the given number on the number line  $\frac{-4}{5}$ . 1 time
17. Express the given number on the number line  $\frac{2}{3}$ . 1 time



18. Express the recurring decimal  $0.\overline{67}$  as the rational number  $\frac{p}{q}$  where  $p, q \in Z$  and  $q \neq 0$ .  
1 time
19. What is additive identity? 4 time
20. Define the multiplicative identity. 2 times
21. Define trichotomy property. 1 time
22. Simplify  $\sqrt[3]{16x^4y^5}$ . **5 times**
23. Simplify the radical expression  $\sqrt[3]{-125}$ . 3 times
24. Simplify  $\sqrt[5]{\frac{3}{32}}$ . **7 times**
25. Simplify  $\sqrt[4]{32}$ . 1 time
26. Simplify  $\sqrt[3]{-\frac{8}{27}}$ . 3 times
27. Simplify  $\frac{x^{-2}x^{-3}y^7}{x^{-3}y^4}$ . 2 times
28. Simplify by using rule of exponent  $\left(\frac{8}{125}\right)^{-4}$ . **8 times**
29. Simplify  $\frac{4(3)^n}{3^{n+1} - 3^n}$ . 4 times
30. Simplify  $(x^3)^2 \div x^{3^2}, x \neq 0$ . **19 times**
31. Simplify  $5^{2^3} \div (5^2)^3$ . **14 times**
32. Simplify  $\frac{(243)^{-\frac{2}{3}}(32)^{-\frac{1}{5}}}{\sqrt{(196)^{-1}}}$ . 3 times
33. Simplify  $\left(\frac{x^{-2}y^{-1}z^{-4}}{x^4y^{-3}z^0}\right)$ . **6 times**
34. Simplify  $(2x^5y^4)(-8x^{-3}y^2)$ . **10 times**
35. Define complex number with an example. 4 times
36. Write the conjugate of  $-i$ . 4 times
37. Write the conjugate of  $-4 - i$ . 2 times
38. Write real and imaginary parts of the numbers  $-1+2i$ . 1 time
39. Evaluate  $i^{27}$ . **14 times**
40. Evaluate  $x$  and  $y$  if;  $x + iy + 1 = 4-3i$ . **12 times**
41. Evaluate  $i^{50}$ . **13 times**
42. Find the value of  $(-i)^8$ . **6 times**



43. Evaluate  $(-i)^5$ . 2 times
44. Write the real and imaginary parts of the number  $-3i$ . 1 time
45. Find the conjugate of  $-3 + 4i$ . 1 time
46. Find the value of  $i^{12}$ . 1 time
47. Write the real and imaginary parts of  $-2-2i$ . 2 times
48. Find the conjugate  $i-3$ . 1 time
49. Express complex number  $(2+3i)(7-2i)$  in the standard form  $a+bi$ . 1 time
50. Express  $\frac{1}{1+2i}$  in standard form  $a+bi$ . **6 times**
51. Express  $\frac{4+5i}{4-5i}$  in the standard form of  $a+bi$ . 2 times
52. Calculate  $z + \bar{z}$  if  $z = z + i$ . 1 time
53. Simplify in the form of  $a+bi$ ;  $\frac{-2}{1+i}$ . **6 times**
54. **Simplify:**  $(\sqrt{5} - 3i)^2$ . **9 times**
55. Simplify in the form of  $a+bi$ ;  $\frac{9-7i}{3+i}$ . 4 times
56. Solve the equation for  $x$  and  $y$ ;  $(2-3i)(x+yi) = 4+i$ . 2 times
57. Simplify  $(2-3i)(\overline{3-2i})$  and write your answer in the form of  $a+bi$ ; 2 times
58. Simplify  $(-7+3i)(-3+2i)$  and write your answer in the form of  $a+bi$ . **5 times**
59. Simplify  $\frac{2+3i}{4-i}$  and write your answer in the form of  $a+bi$ . 3 times
60. Express  $-(-3+5i) - (4+9i)$  in standard form of complex number. 1 time
61. **Simplify;**  $\sqrt{25x^{10n}y^{8m}}$ . **8 times**
62. **Simplify;**  $\sqrt[4]{81y^{12}x^8}$ . **7 times**
63. Simplify  $\left(\frac{x^3y^4z^5}{x^{-2}y^{-1}z^{-5}}\right)^{\frac{1}{2}}$ . 4 times
64. Simplify  $\left(\frac{32x^{-6}y^{-4}z}{625x^{-4}y^{-4}z^{-4}}\right)^{\frac{2}{5}}$ . 1 time





Unit 3: Logarithms

- |     |  |                 |
|-----|--|-----------------|
| 1.  | Write in scientific notation. 0.0063   | 3 times         |
| 2.  | Define scientific notation.  | 2 times         |
| 3.  | Change into ordinary notation $7.61 \times 10^{-4}$ .                              | 1 time          |
| 4.  | Express in scientific notation; 49,800,000   | 1 time          |
| 5.  | Write 5700 in scientific notation.   | 2 time          |
| 6.  | Write 83000 in scientific notation.  | 4 times         |
| 7.  | <b>Write in scientific notation; 0.00643</b>                                       | <b>8 times</b>  |
| 8.  | <b>Write in scientific notation. 0.0074</b>  | <b>7 times</b>  |
| 9.  | Write in scientific notation. 0.00 74  | 3 times         |
| 10. | Express in ordinary notation; $6 \times 10^{-4}$ .                                 | 3 times         |
| 11. | Express in standard notation; $5.06 \times 10^{10}$ .                              | 3 times         |
| 12. | <b>Express the number in ordinary notation. <math>9.018 \times 10^{-6}</math>.</b> | <b>12 times</b> |
| 13. | <b>Express the number in ordinary notation. <math>7.865 \times 10^8</math>.</b>    | <b>12 times</b> |
| 14. | <b>Write in scientific notation. 416.9</b>   | <b>7 times</b>  |
| 15. | <b>Express the number in ordinary notation. <math>5.06 \times 10^{10}</math>.</b>  | <b>12 times</b> |
| 16. | <b>Write in scientific notation. 0.000000035.</b>                                  | <b>7 times</b>  |
| 17. | Find the common logarithm of 0.00032.  | 1 time          |
| 18. | Define logarithm.  | 4 times         |
| 19. | Evaluate $\log_4 2$ .  | 2 times         |
| 20. | Find the value of y; $\log_3 y = 4$ .  | 1 time          |
| 21. | Define common logarithm.   | <b>6 times</b>  |
| 22. | Define characteristic and mantissa of logarithm.                                   | 2 times         |
| 23. | Find the number whose logarithm is 1.3247.   | 2 times         |
| 24. | Evaluate $\log_2 \left( \frac{1}{128} \right)$ .                                   | <b>9 times</b>  |
| 25. | Find the value of log 512 to the base $2\sqrt{2}$ .                                | <b>5 times</b>  |
| 26. | <b>Find the value of x; <math>\log_2 x = 5</math>.</b>                             | <b>12 times</b> |
| 27. | <b>Find the value of x; <math>\log_{81} 9 = x</math>.</b>                          | <b>12 times</b> |
| 28. | <b>Find the value of x; <math>\log_{64} 8 = \frac{x}{2}</math>.</b>                | <b>18 times</b> |
| 29. | <b>Find the value of x; <math>\log_x 64 = 2</math>.</b>                            | <b>15 times</b> |
| 30. | <b>Find the value of x; <math>\log_3 x = 4</math>.</b>                             | <b>15 times</b> |
| 31. | Find the value of a; $\log_a 6 = 0.5$ .  | 3 times         |
| 32. | Write any two laws of logarithm.   | 1 time          |
| 33. | Prove that $\log_a (mn) = \log_a m + \log_a n$ .                                   | 1 time          |
| 34. | Prove that $\log_a \left( \frac{m}{n} \right) = \log_a m - \log_a n$ .             | 1 time          |
| 35. | Evaluate with help of logarithm: $0.2913 \times 0.004236$ .                        | 1 time          |



36. Find the values.  $\log_2 3 \times \log_3 8$  **5 times**
37. If  $A = \pi r^2$ , find A when  $\pi = \frac{22}{7}$  and  $r = 15$ . **2 times**
38. Define natural logarithm. **1 time**
39. Write into sum or difference;  $\log \sqrt[3]{\frac{7}{15}}$ . **4 times**
40. Write into sum or difference;  $\log \frac{(22)^{\frac{1}{3}}}{5^3}$ . **4 times**
41. Express  $\log x - 2 \log x + 3 \log(x + 1) - \log(x^2 - 1)$  as a single logarithm. **1 time**
42. Write  $\log 25 - 2 \log 3$  in form of single logarithm. **4 times**
43. **Write  $2 \log x - 3 \log y$  in form of single logarithm.** **12 times**
44. Write  $\log 5 + \log 6 - \log 2$  in form of single logarithm. **3 times**
45. Calculate  $\log_3 2 \times \log_2 81$ . **6 times**
46. Find the value  $\log_5 3 \times \log_3 25$ . **8 times**
47. Find the value of  $\log \frac{8}{3}$ , if  $\log 2 = 0.3010$ ,  $\log 3 = 0.4771$  and  $\log 5 = 0.6990$ . **1 time**
48. Find  $\log 30$  if  $\log 2 = 0.3010$ ,  $\log 3 = 0.4771$  and  $\log 5 = 0.6990$ . **4 times**
49. Write into sum or difference form.  $\log \frac{25 \times 47}{29}$ . **2 times**
50. Write into sum or difference form.  $\log \frac{21 \times 5}{8}$ . **1 times**
51. Find  $\log 24$  if  $\log 2 = 0.3010$ ,  $\log 3 = 0.4771$  and  $\log 5 = 0.6990$ . **2 times**
52. If  $\log_3 x = 5$  then find the value of x. **3 times**
53. If  $\log_4 256 = x$  then find the value of x. **4 times**
54. If  $\log_{625} 5 = \frac{1}{4} x$  then find the value of x. **4 times**
55. If  $\log_{64} x = \frac{-2}{3}$  then find the value of x. **6 times**
56. Find the value of x if  $\log x = 2.4543$  **2 times**
57. Find the value of x if  $\log x = 0.0044$  **4 times**
58. Find the value of x if  $\log x = 0.1821$  **1 times**

Unit 4: Algebraic Expressions and Algebraic Formulas

1. Define algebraic expression. **3 times**
2. Define polynomial expression. **4 times**



3. Define rational expression and give an exaple. 3 times
4. Simplify:  $\frac{lx + mx - ly - my}{3x^2 - 3y^2}$  2 times
5. Simplify:  $\frac{3x^2 + 18x + 27}{5x^2 - 45}$ . 1 time
6. Find the product  $\frac{x + 2}{2x - 3y} \cdot \frac{4x^2 - 9y^2}{xy + 2y}$ . 2 times
7. Simplify:  $\frac{7xy}{x^2 - 4x + 4} \div \frac{14y}{x^2 - 4}$  2 times
8. Find the value of  $\frac{3x^2\sqrt{y} + 6}{5(x + y)}$  when  $x = -4$  and  $y = 9$  3 times
9. Reduce the rational expression into its lowest form.  $\frac{8a(x + 1)}{2(x^2 - 1)}$  14 times
10. Simplify  $\frac{(x + y)^2 - 4xy}{(x - y)^2}$ . 8 times
11. Simplify:  $\frac{(x + 2)(x^2 - 1)}{(x + 1)(x^2 - 4)}$ . 2 Times
12. Reduce to the lowest form  $\frac{3x^2 - 4x + 4}{2x^2 - 8}$ . 10 times
13. Simplify;  $\frac{9x^2 - (x^2 - 4)}{4 + 3x - x^2}$ . 2 times
14. If  $x = -1$ ,  $y = -9$  and  $z = 4$  then  $\frac{x^3y - 2z}{xz}$ . 6 times
15. Find the value of  $\frac{x^3y - 2z}{xz}$  If  $x = 3$ ,  $y = -1$  and  $z = -2$ . 8 times
16. Evaluate  $\frac{x^2y^3 - 5z^4}{xyz}$  such that  $z = -1$ ,  $y = -2$  and  $x = 4$ . 5 times
17. Reduce the rational expression to the lowest form.  $\frac{120x^2y^3z^5}{30x^3yz^2}$ . 5 times
18. If  $X + \frac{1}{X} = 8$  then find out the value of  $X^3 + \frac{1}{X^3}$ . 1 time
19. Factorize  $64x^3 + 343y^3$ . 2 times



20. Find the product.  $\left(\frac{4}{5}x - \frac{4}{5x}\right)\left(\frac{16x^2}{25} + \frac{25}{16x^2} + 1\right)$ . 1 time
21. **If  $a+b = 10$  and  $a-b=6$  then find the value of  $a^2+b^2$ .** 7 times
22. If  $a+b = 5$  and  $a - b = \sqrt{17}$ ;  $ab = ?$  6 times
23. If  $x + y = 7$  and  $xy = 12$  then find the value of  $x^3+y^3$ . 2 times
24. Factorize  $x^3-y^3-x+y$ . 2 times
25. Factorize  $x^3 - \frac{1}{27y^3}$ . 5 times
26. **Define surd and give an example.** 11 times
27. Simplify:  $\sqrt{14}\sqrt{35}$ . 3 times
28. Write  $\frac{3}{4}\sqrt[3]{128}$  in simple form. 2 times
29. Simplify;  $\frac{4}{5}\sqrt[3]{125}$ . 3 times
30. **Simplify;**  $\frac{\sqrt{21} \times \sqrt{9}}{\sqrt{63}}$ . 8 times
31. **Simplify;**  $\frac{\sqrt{18}}{\sqrt{3}\sqrt{2}}$  8 times
32. **Simplify;**  $\sqrt[5]{243 \times 5y^{10}z^{15}}$ . 8 times
33. **Simplify;**  $\sqrt{21} \times \sqrt{7} \times \sqrt{3}$ . 9 times
34. Simplify;  $2(6\sqrt{5} - 3\sqrt{5})$  6 times
35. **Simplify;**  $(3 + \sqrt{3})(3 - \sqrt{3})$ . 9 times
36. **Simplify;**  $(\sqrt{5} + \sqrt{3})^2$ . 7 times
37. Simplify;  $\left(\sqrt{2} + \frac{1}{\sqrt{3}}\right)\left(\sqrt{2} - \frac{1}{\sqrt{3}}\right)$ . 5 times
38. Simplify;  $(\sqrt{x} + \sqrt{y})(\sqrt{x} - \sqrt{y})(x + y)(x^2 + y^2)$ . 6 times
39. Simplify;  $\sqrt{3}(2\sqrt{3} + 3\sqrt{3})$ . 2 times
40. Simplify;  $\sqrt{45} - 3\sqrt{20} + 4\sqrt{5}$ . 1 time
41. Express  $\sqrt{45} - 3\sqrt{20} + 4\sqrt{5}$  the given surd in the simplest form. 4 times
42. Define monomial surd. 2 times
43. Rationalize the denominator  $\frac{58}{7 - 2\sqrt{5}}$ . 1 time



44. Rationalize the denominator  $\frac{2}{\sqrt{5} + \sqrt{2}}$ . 4 times
45. Rationalize  $\frac{1}{3 + 2\sqrt{5}}$ . 4 times
46. Rationalize  $\frac{2}{\sqrt{5} - \sqrt{3}}$ . 4 times
47. Rationalize the denominator.  $\frac{\sqrt{3}-1}{\sqrt{3}+1}$ . 4 times
48. Find the value of  $\frac{1}{x}$ , when  $x = 2 - \sqrt{3}$ . 10 times
49. Rationalize the denominator  $\frac{\sqrt{5} + \sqrt{3}}{\sqrt{5} - \sqrt{3}}$ . 3 times
50. If  $x = 4 - \sqrt{17}$  then find the value of  $x - \frac{1}{x}$ . 8 times
51. Find the conjugate of  $7 - \sqrt{6}$ . 1 time
52. Find the conjugate of  $2 + \sqrt{3}$ . 2 times
53. If  $x = \sqrt{3} + 2$  find  $x + \frac{1}{x}$ . 4 times
54. Find the conjugate of  $9 + \sqrt{2}$ . 1 time
55. Rationalize the denominator.  $\frac{15}{\sqrt{13} - 4}$ . 1 time

Unit 5: Factorization

1. Factorize;  $64x^3 + 343y^3$ . 1 time
2. Factorize;  $25x^2 + 16x + 40x$ . 5 times
3. Factorize;  $8x^3 - \frac{1}{27}y^3$ . 5 times
4. Factorize;  $25x^2 + 16 + 40x$ . 5 times
5. Factorize;  $pqr + qr^2 - pr^2 - r^3$ . 1 time
6. Factorize;  $12x^2 - 36x + 27$ . 5 times
7. Factorize;  $4x^2 - (2y-z)^2$ . 3 times
8. Factorize;  $6x^4 - 96$ . 3 times
9. Factorize;  $x^2 + 6x + 9 - 4y^2$ . 5 times
10. Factorize;  $1 + 2ab - a^2 - b^2$ . 4 times
11. Factorize;  $3x^2y(x-3y) - 7x^2y^2(x-3y)$ . 1 time



- |            |   |                 |
|------------|---|-----------------|
| 12.        | Factorize; $2xy^3(x^2+5)+xy^2(x^2+5)$ .   | 1 time          |
| 13.        | Factorize; $9xy-12x^2y+18y^2$ .   | 2 times         |
| 14.        | Factorize; $x^3 + 3xy^2 - 2x^2y - 6y^3$ .   | 1 times         |
| <b>15.</b> | <b>Factorize; <math>144a^2 + 24a + 1</math>.</b>  | <b>7 times</b>  |
| 16.        | Factorize; $3x^2 - 75y^2$ .   | <b>5 times</b>  |
| 17.        | Factorize; $x(x - 10) - (y - 1)$ .  | 4 times         |
| 18.        | Factorize; $128m^2 - 242n^2$ .  | <b>5 times</b>  |
| <b>19.</b> | <b>Factorize; <math>3x - 243x^3</math>.</b>   | <b>10 times</b> |
| 20.        | Factorize; $x^2 - a^2 + 2a - 1$ .   | 2 times         |
| 21.        | Factorize; $x^2 - y^2 - 4x - 2y + 3$ .  | 1 times         |
| 22.        | Factorize; $25x^2 - 10x^2 + 1 - 36z^2$ .  | 1 times         |
| 23.        | Factorize; $x^2 - 7x + 12$ .  | 2 times         |
| 24.        | Factorize; $x^2 + 5x - 36$ .  | 2 times         |
| 25.        | Factorize; $27x^3 + 64y^3$ .  | 1 time          |
| 26.        | Factorize; $24x^2 - 65x + 21$ .   | 1 time          |
| <b>27.</b> | <b>Factorize; <math>x^2 - 21x + 108</math>.</b>   | <b>7 times</b>  |
| 28.        | Factorize; $125x^3 - 1331y^3$ .   | 1 time          |
| <b>29.</b> | <b>Factorize; <math>x^2 - 11x - 42</math>.</b>  | <b>7 times</b>  |
| <b>30.</b> | <b>Factorize; <math>x^2 + x - 132</math>.</b>   | <b>7 times</b>  |
| <b>31.</b> | <b>Factorize; <math>5x^2 - 16x - 21</math>.</b>   | <b>12 times</b> |
| <b>32.</b> | <b>Factorize; <math>27 + 8x^3</math>.</b>   | <b>7 times</b>  |
| 33.        | Factorize; $125x^3 - 216y^3$ .  | <b>5 times</b>  |
| 34.        | Factorize; $64x^3 + 27y^3$ .  | 3 time          |
| 35.        | Factorize; $8x^3 + 125y^3$ .  | 1 time          |
| <b>36.</b> | <b>Factorize; <math>x^2 + 14x + 48</math>.</b>  | <b>12 times</b> |
| 37.        | Define remainder theorem.   | 4 times         |
| 38.        | Find the remainder when $9x^2 - 6x + 2$ is divided by $x - 3$ .                                       | 2 times         |
| 39.        | Determine if $(x - 2)$ a factor of polynomial $x^3 - 4x^2 + 3x + 2$ or not.                           | 3 times         |
| 40.        | Factorize $1 - 125x^3$ .  | 4 times         |
| 41.        | Use the remainder theorem to find the remainder when $x^3 - 3x^2 + 4x - 14$ is divided by $x + 2$ .   | 1 time          |
| 42.        | Use the remainder theorem to find the remainder when $3x^3 - 10x^2 + 13x - 6$ is divided by $x - 2$ . | 2 time          |
| 43.        | Factorize; $\frac{a^2}{b^2} - 2 + \frac{b^2}{a^2}$ .  | 3 times         |
| 44.        | Factorize; $4x^2 - 16y^2$ .   | 4 times         |
| 45.        | Factorize; $8x^3 - \frac{1}{27y^3}$ .   | 1 time          |
| 46.        | Factorize; $x^2 + 8x + 16 - 4y^2$ .   | 1 time          |
| 47.        | Factorize; $2y^2 + 5y - 3$ .  | 1 time          |

Unit 6: Algebraic Manipulation

- |    |   |        |
|----|---|--------|
| 1. | Find HCF of the polynomials by factorization; $x^2 - 4, x^2 + 4x + 4$ . | 1 time |
|----|---|--------|



- |     |   |          |
|-----|---|----------|
| 2.  | Define HCF.   | 19 times |
| 3.  | Define least common multiple.   | 9 times  |
| 4.  | Find LCM of the following expressions. $102xy^2z, 85x^2yz, 187xyz^2$  | 7 times  |
| 5.  | Find HCF of the following expression. $39x^7y^3z, 91x^5y^6z^7$ .  | 5 times  |
| 6.  | Find HCF of: $187xyz^3, 85x^2yz, 102xy^2z$  | 2 times  |
| 7.  | Find the HCF by factorization; $x^2 + 5x + 6$ ; $x^2 - 4x - 12$ .   | 15 times |
| 8.  | Find the LCM by factorization; $39x^7yz$ ; $91x^5y^6z^7$ .  | 13 times |
| 9.  | Find LCM $102xy^2, 187xyz^2$ .  | 1 time   |
| 10. | Find the HCF of expression. $x^2 - 4, x^2 + 4x + 4, 2x^2 + x - 6$ .   | 4 times  |
| 11. | Find LCM by factorization; $x^2 - 25x + 100, x^2 - x - 20$ .  | 2 times  |
| 12. | Find HCF $102xy^2z, 85x^2yz$ .  | 2 times  |
| 13. | Find LCM of the given expression $102xy^2z, 85x^2yz$  | 1 time   |
| 14. | Find LCM of the given expression $102xy^2z, 85x^2yz, 187xyz^2$  | 4 times  |
| 15. | Simplify to the lowest form. $\frac{x^2 + x - 6}{x^2 - x - 6} \times \frac{x^2 - 4}{x^2 - 9}$ .                     | 4 times  |
| 16. | Define square root of an algebraic expression.  | 2 times  |
| 17. | Find the square root of $4x^2 - 12x + 9 = 0$ using factorization.   | 11 times |
| 18. | Find the square root of $4x^2 - 12xy + 9y^2 = 0$ using factorization.   | 11 times |
| 19. | Use factorization to find square root of $x^2 - 1 + \frac{1}{4x^2}$ .   | 5 times  |
| 20. | Find the square root of $\frac{1}{16}x^2 - \frac{1}{12}xy + \frac{1}{36}y^2$ .                                      | 6 times  |
| 21. | Simplify; $\frac{a^3 - b^3}{a^4 - b^4} \div \frac{a^2 + ab + b^2}{a^2 + b^2}$ .                                     | 3 times  |
| 22. | Find square root $x^4 + \frac{1}{x^4} + 2$ .  | 1 time   |
| 23. | Simplify; $\frac{a + b}{a^2 - b^2} \div \frac{a^2 - ab}{a^2 - 2ab + b^2}$ .   | 3 times  |
| 24. | Find HCF of $a^2 - b^2$ and $a^3 - b^3$ .   | 2 times  |
| 25. | Find the square root using factorization $\left(x^2 + \frac{1}{x^2}\right) + 10\left(x + \frac{1}{x}\right) + 27$ . | 1 time   |

Unit 7: Linear Equations And Inequalities

Define linear equation in one variable.

9 times



1. What are equivalent equations? 2 times
2. Solve the equation  $\frac{3x}{2} - \frac{x-2}{3} = \frac{25}{6}$ . 9 times
3. Prove that  $\frac{3}{y-1} - 2 = \frac{3y}{y-1}$ ,  $y \neq 1$ . 1 time
4. Solve the equation;  $\frac{3x-1}{3} - \frac{2x}{x-1} = x$ . 3 times
5. Define radical equation with example. 7 times
6. Define extraneous roots. 3 time
7. Solve the equation  $\sqrt{2x-3} - 7 = 0$ . 7 times
8. Solve the equation:  $\sqrt[3]{3x+5} = \sqrt[3]{x-1}$ . 8 times
9. Find the solution set  $\sqrt{5x-7} = \sqrt{x+10}$ . 5 times
10. Solve it.  $\sqrt[3]{2x-4} - 2 = 0$ . 3 times
11. Solve the equation;  $\sqrt[3]{3-t} = \sqrt[3]{2t-28}$ . 2 times
12. Solve the equation;  $\frac{2}{3}x - \frac{1}{2}x = x + \frac{1}{6}$ . 5 times
13. Solve the equation:  $\frac{x-3}{3} - \frac{x-2}{2} = -1$ . 11 times
14. Solve the equation;  $\sqrt{3x+4} = 2$ . 13 times
15. Solve the equation;  $\sqrt[3]{2x-4} - 2 = 0$ . 8 times
16. Solve the equation;  $\sqrt{x-3} - 7 = 0$ . 7 times
17. Solve the equation and check for extraneous roots;  $2\sqrt{t+4} = 5$ . 6 times
18. Solve the equation and check for extraneous roots;  $\sqrt[3]{2x+3} = \sqrt[3]{x-2}$ . 6 times
19. Solve the equation;  $\sqrt{\frac{2x+3}{x+5}} = 2, x \neq \frac{-5}{2}$ . 5 times
20. Define absolute value of a real number. 7 times
21. Find solution set of;  $|2x+3| = 11$ . 12 times
22. Find solution set of;  $|8x-3| = |4x+5|$ . 3 times
23. Find solution set of;  $|3x+10| = 5x+6$ . 4 times
24. Find solution set of;  $|3x-10| = 4$ . 20 times
25. Find solution set of;  $\frac{1}{2}|3x+2| - 4 = 11$ . 3 times
26. Find solution set of;  $|2x+5| = 11$ . 19 times





27. Find solution set of;  $|3 + 2x| = |6x - 7|$ . 4 times
28. Find solution set of;  $|x + 2| - 3 = 5 - |x + 2|$ . 6 times
29. Find solution of  $\left| \frac{3 - 5x}{4} \right| - \frac{1}{3} = \frac{2}{3}$ . 6 times
30. Find the solution set of equation  $\left| \frac{x + 5}{2 - x} \right| = 6$ . 14 times
31. Find the solution set of  $\frac{1}{2}|x + 3| + 21 = 9$ . 1 time
32. Define linear inequality in one variable. 7 times
33. Define inequality. 2 times
34. Define strict inequalities. 2 times
- 35.
36. Solve  $9 - 7x > 19 - 2x$ , when  $x \in \mathbb{R}$ . 7 times
37. Solve the inequality.  $\frac{1}{2}x - \frac{2}{3} \leq x + \frac{1}{3}$ . 1 time
38. Solve:  $-6 < \frac{x - 2}{4} < 6$ . 1 time
39. Solve the inequality  $3x + 1 < 5x - 4$ . 6 times
40. Solve the inequality  $4x - 10.3 \leq 21x - 1.8$ . 6 times
41. Solve inequality;  $14 - \frac{1}{2}x \geq -7 + \frac{1}{4}x$ . 2 times
42. Solve the equation;  $\sqrt{3x - 1} - 2\sqrt{8 - 2x} = 0$ . 2 times
43. Find the solution of the equation;  $|3x + 14| - 2 = 5x$ . 3 times
44. Solve inequality;  $-\frac{1}{3}x + 5 \leq 1$ . 4 times
45. Solve the inequality;  $-3 < \frac{1 - 2x}{5} < 1$ . 1 time
46. Solve the equation;  $\sqrt{2t + 4} = \sqrt{t - 1}$ . 2 times

**Unit 8: Linear Graphs & their Applications**

1. Draw the points  $(-6, 4)$ ,  $(-3, -3)$  on graph paper. 1 time
2. Determine the quadrant of the coordinate plane in which the points  $P(-4, 3)$  and  $Q(-5, -2)$  lie. 3 time
3. Draw the graph of  $x = 2$  and  $x = -3$ . 1 time
4. Draw the graph of  $x = 2$ . 1 time
5. Define an ordered pair of real numbers. 14 times
6. Define cartesian plane. OR Define coordinate plane. 27 times



- |     |   |                 |
|-----|---|-----------------|
| 7.  | <b>Define co-ordinate axis.</b>   | <b>7 times</b>  |
| 8.  | <b>Indicate origin and co-ordinate axes with the help of diagram. OR Define origin. OR Define x-axis and y-axis.</b>  | <b>19 times</b> |
| 9.  | What are vertical and horizontal lines?   | 1 time          |
| 10. | Define abscissa and ordinate.   | <b>6 times</b>  |
| 11. | Plot the points on quadrant. P(2,2), Q(6,6).  | 1 time          |
| 12. | Express two points P(2,2) and Q(6,2) on graph draw the line segment.  | 2 times         |
| 13. | Plot on the graph paper P(3,2) and Q(3,7).  | 1 time          |
| 14. | Plot the given points on graph paper P(3,2), Q(6,7).  | 1 time          |
| 15. | Determine the quadrant in which point line; P(-4,3) and S(2, -6).   | 4 times         |
| 16. | Determine the quadrant in which point line; R(2,2) and S(2, -6).  | 4 times         |
| 17. | <b>Find the values of m and c for line <math>2x + 3y - 1 = 0</math> by expressing it in the form of <math>y = mx + c</math> by the equation <math>2x + 3y - 1 = 0</math>.</b> | <b>10 times</b> |
| 18. | <b>Express <math>x - 2y = -2</math> in the form of <math>y = mx + c</math>.</b>   | <b>20 times</b> |
| 19. | <b>Find the value of m and c by expressing the ine <math>3x + y - 1 = 0</math> in the form of <math>y = mx + c</math>.</b>  | <b>15 times</b> |
| 20. | <b>Find the value of m and c by expressing the ine <math>2x - y = 7</math> in the form of <math>y = mx + c</math>.</b>  | <b>15 times</b> |
| 21. | <b>Find the value of m and c by expressing the ine <math>2x = y + 3</math> in the form of <math>y = mx + c</math>.</b>  | <b>15 times</b> |
| 22. | <b>Verify whether the point (0,0) lies on line <math>2x - y + 1 = 0</math> or not.</b>  | <b>10 times</b> |
| 23. | <b>Does the point (-1, 1) lies on the line <math>2x - y + 1 = 0</math>?</b>   | <b>9 times</b>  |
| 24. | <b>Verify wheter point (2,5) lies on line <math>2x - y + 1 = 0</math> or not.</b>   | <b>10 times</b> |
| 25. | Verify wheter the points (2,5) and (-1,1) lie on the line $2x - y + 1 = 0$ or not?  | 1 time          |
| 26. | <b>Verify whether point (5,3) lies on the line <math>2x - y + 1 = 0</math> or not?</b>  | <b>9 time</b>   |
| 27. | Draw the graph $x = -3$ .   | 1 time          |
| 28. | The formula of degree fahrenheit is given by $F = \frac{9}{5}C + 32$ if $C = 10$ , then find F.   | 4 times         |
| 29. | Find the value of "C". If $C = \frac{5}{9}(F - 32)$ and $F = 68^\circ$ .  | 1 time          |
| 30. | Find the value of "C". If $C = \frac{5}{9}(F - 32)$ and $F = 176^\circ$ .   | 1 time          |
| 31. | Draw graph of the equation: $y = 3x$ .  | 3 times         |
| 32. | Draw graph of line; $2x + 6 = 0$ .  | 2 times         |
| 33. | Draw graph of equation $x = -6$ .   | 3 times         |
| 34. | Draw graph of equation $y = 7$ .  | 3 times         |
| 35. | Draw the graph of $y = 4x$ .  | 3 times         |
| 36. | Draw the graph of the following $y = 2x + 1$ .  | 1 time          |
| 37. | Draw the point (4, -5) on the graph paper.  | 1 time          |
| 38. | Draw the point (-6,4) on the graph paper.   | 1 time          |



1. Let P be the point on x-axis with x-coordinate "a" and Q be the point on y-axis with y-coordinate "b". Find the distance between P and Q if  $a = -2$ ,  $b = -3$ . 1 time
2. Define coordinate geometry. **5 times**
3. Write down distance formula between two points. 4 times
4. Find the distance between two points R(3, -2) and S(-1, 3). 1 time
5. Using the distance formula find the distance between the points P(1, 2) and Q(0, 3). 3 times
6. Find the distance between points; A(9, 2), B(7, 2). **6 times**
7. **Find the distance between points A(2, -6), B(3, -6).** **12 times**
8. **Find the distance between the pair of points; A(-8, 1), B(6, 1).** **20 times**
9. **Find the distance between the pair of points; A(-4,  $\sqrt{2}$ ), B(-4, -3).** **10 times**
10. **Find the distance between the points A(3, -11) and B(3, -4).** **11 times**
11. **Find the distance between two points A(0, 0) and B(0, -6).** **19 times**
12. Define triangle. 3 times
13. Define rectangle. **5 times**
14. Find the mid point of two points A(2, 5) and B(-1, 1). 4 times
15. **Find the mid point of A(2, -6) and B(3, -6).** **12 times**
16. **Find the mid-point of the line segment joining the pair of points A(9, 2), B(7, 2).** **12 times**
17. **Find the midpoint of the line segment joining the pair of points. A(-8, 1), B(6, 1).** **11 times**
18. **Find the midpoint of the line segment joining the pair of points; A(-4, 9) and B(-4, -3).** **12 times**
19. **Find the midpoint of line segment joining points: A(3, -11), B(3, -4).** **11 times**
20. **The one end-point of line segment  $\overline{PQ}$  is P(-3, 6) and its mid-point is (5, 8). Find coordinates of point Q.** 2 times
21. Find the midpoint; A(0, 0) and B(0, -5). **5 times**
22. Find the distance between the points (6, 3), (3, -3). 1 time
23. Find the midpoint of points A(-7, -5) and B(-5, -7). 3 times
24. Find the mid-point of (8, 10) and (0, -12). 2 times
25. Define scalene triangle. 15 times
26. **What do you mean by collinear and non-collinear points in the plane?** **8 times**
27. **Define collinear points.** **17 times**
28. Define non-collinear points. 4 times
27. **Define equilateral triangle and give an example.** **16 times**
28. **Define isosceles triangle.** **8 times**
29. **Define right angled triangle.** **13 times**
30. **Define square.** **8 times**
31. Find the mid-point of pair of point: (7, 5), (2, -1) 4 times
32. Find the mid-point of the line segment formed by joining the points A(6, 6) and B(4, -2). **6 times**

Unit 10: Congruent Triangles

1. **What is meant by congruency of triangles?** **27 times**
2. Write the name of the following symbols.  $\leftrightarrow$ ,  $\cong$ . 1 time
3. **What do you mean by S.A.S postulate?** **33 times**
4. **Define A.S.A postulate.** **15 times**



- |     |  |                 |
|-----|--|-----------------|
| 5.  | What do you mean by $S.A.A \cong S.A.A$ ?  | 6 times         |
| 6.  | <b>Describe S.S.S postulate.</b>   | <b>11 times</b> |
| 7.  | <b>What do you mean by <math>H.S \cong H.S</math> postulate?</b>   | <b>11 times</b> |
| 8.  | If two angles of a triangle are $90^\circ$ and $60^\circ$ then what will be the value of $3^{rd}$ angle? | 3 times         |
| 9.  | <b>Find the unknowns <math>x</math> and <math>m</math> from given congruent triangles.</b>               | <b>9 times</b>  |
| 10. | <b>If <math>\triangle ABC \cong \triangle LMN</math> then, find the value of <math>x</math>.</b>         | <b>10 times</b> |

**Unit 11: Parallelograms and Triangles**

- |     |   |                 |
|-----|---|-----------------|
| 1.  | <b>Differentiate between parallelogram and trapezium. OR Define arallelogram. OR Define trapezium.</b>                      | <b>33 times</b> |
| 2.  | <b>One angle of a parallelogram is <math>130^\circ</math>. Find the other angles.</b>                                       | <b>16 times</b> |
| 3.  | One exterior angle formed on producing one side of a parallelogram is $40^\circ$ . Find the measure of its interior angles. | 3 times         |
| 4.  | Define medians of a triangle.   | <b>6 times</b>  |
| 5.  | Define quadrilateral.   | 1 time          |
| 6.  | <b>Find values of unknown <math>x^\circ</math> and <math>m^\circ</math> in following figure.</b>                            | <b>9 times</b>  |
| 7.  | <b>The given figure LMNP is a parallelogram. Find the value of <math>m, n</math>.</b>                                       | <b>17 times</b> |
| 8.  | <b>Find values of unknown <math>n^\circ</math> and <math>x^\circ</math> in following figure.</b>                            | <b>9 times</b>  |
| 9.  | <b>Find the value of '<math>x</math>' and '<math>m</math>' in the given figure.</b>   | <b>12 times</b> |
| 10. | Find the value of ' $m$ ' from the parallelogram ABCD.  | 1 time          |
| 11. | If the given figure ABCD is a parallelogram then find $x$ .   | 1 time          |
| 12. | In parallelogram ABCD find: $m\angle 1 = \underline{\hspace{2cm}}$ and $m\angle 2 = \underline{\hspace{2cm}}$ .             | 1 time          |
| 13. | Find the remaining angles if sum of the opposite angles of the parallelogram is $110^\circ$ .                               | 1 time          |

**Unit 12: Line Bisectors and Angle Bisectors**

- |     |  |                 |
|-----|--|-----------------|
| 1.  | Define supplementary angles. Give example.   | 2 times         |
| 2.  | What a triangle is called if its two sides are congruent?  | 1 time          |
| 3.  | Where do the right bisectors of the sides of an acute triangle and right triangle intersect each other?  | 1 time          |
| 4.  | Draw a diagram if any point in the bisector of an angle is equidistance from its arm.  | 1 time          |
| 5.  | If line $\overline{CD}$ is right bisector of segment $\overline{AB}$ then $m\overline{OA} = \underline{\hspace{2cm}}$ and $m\overline{AQ} = \underline{\hspace{2cm}}$                              | 4 times         |
| 6.  | Draw a diagram if any point in the bisector of an angle is equidistant from its arms.  | 1 time          |
| 7.  | Differentiate between bisector of a line segment and angle bisector.   | 1 time          |
| 8.  | <b>Define bisector of an angle.</b>  | <b>33 time</b>  |
| 9.  | <b>What is meant by right bisector of an angle?</b>  | <b>34 times</b> |
| 9.  | <b>The given <math>\triangle ABC</math> is equilateral triangle and <math>\overline{AD}</math> is bisector of angle A. Then find the values of unknown <math>x^\circ, y^\circ, z^\circ</math>.</b> |                 |
| 10. | <b>Define bisector of an angle of a triangle.</b>  | <b>7 times</b>  |
| 11. | If $\overline{CD}$ is right bisector of the line segment $\overline{AB}$ and $m\overline{AB} = 6\text{cm}$ , then find $m\overline{AL}$ and $m\overline{LB}$ .                                     | 9 time          |
| 12. | In the given congruent triangles LMO and LNO, find the unknowns $x$ and $m$ :  | 7 times         |

**Unit 13: Sides and Angles of a Triangle**

1. Which is the greatest side of obtuse angle triangle? 1 time
2. 2cm, 3cm and 5cm can not be the lengths of the sides of a triangle, why? Give reason 19 times
3. Is the following set of the lengths can be the lengths of sides of a triangle? 17 times
4. 2cm, 4cm, 7cm can not be the sides of a triangle. Why? 12 times
5. Examine can the triangles be formed from given set of triangles? 2cm, 4cm and 5cm. 5 times
6. In the triangle ABC,  $m\angle B = 70^\circ$  and  $m\angle C = 45^\circ$ . Which of the sides of the triangle is shortest? 2 times
7. What will be the angle from the shortest distance from an outside point to the line. 8 times
8. Lengths of the sides of a triangle are 13cm, 12cm and 5cm. Verify that difference of lengths of any two sides of the triangle is less than the length of third side. 13 times
9. If 10cm, 6cm and 8cm are sides of triangle then verify that sum of two sides is greater than third. 12 times
10. lengths 3cm, 4cm and 7cm are not the lengths of sides of triangle. Explain. 33 times
11. If 3cm and 4cm are lengths of two sides of a right angled triangle then find the hypotenuse. 16 times

**Unit 14: Ratio Proportion**

1. What is two difference between similar congruent triangles. 1 time
2. What is difference between a line and a plane? 1 time
3. In triangle ABC,  $\overline{DE} \parallel \overline{BC}$  and  $\overline{AD} = 1.5\text{cm}$ ,  $\overline{DB} = 3\text{cm}$  and  $\overline{AE} = 1.3\text{cm}$  then find the length of  $\overline{CE}$ . 4 times
4. In triangle ABC,  $\overline{DE} \parallel \overline{BC}$  and  $\overline{EC} = 4.8\text{cm}$ ,  $\overline{AE} = 3.2\text{cm}$  and  $\overline{AD} = 2.4\text{cm}$  then find the length of  $\overline{CE}$ . 14 times
5. In triangle ABC,  $\overline{DE} \parallel \overline{BC}$  then find the length of  $\overline{AE}$  such that  $\frac{\overline{AD}}{\overline{DB}} = \frac{3}{5}$  and  $m\overline{AC} = 4.8$ . 7 times
6. Define ratio and proportion. 5 times
7. Define ratio. 47 times
8. Define proportion. 39 times
9. In triangle shown in the figure,  $\overline{MN} \parallel \overline{PQ}$   $m\overline{LQ} = 2.3\text{cm}$ ,  $m\overline{LM} = 5\text{cm}$  and  $m\overline{LP} = 2.5\text{cm}$  then find the value of  $m\overline{LN}$ . 6 times
10. In triangle shown in the figure,  $\overline{MN} \parallel \overline{PQ}$   $m\overline{LQ} = 2.5\text{cm}$ ,  $m\overline{LM} = 6\text{cm}$  and  $m\overline{QN} = 5\text{cm}$  then find the value of  $m\overline{LP}$ . 12 times



11. **Define congruent triangles.** 22 times
12. If  $m\overline{LN} = m\overline{LQ} + m\overline{QN}$ ,  $m\overline{LN} = 4\text{cm}$ ,  $m\overline{LM} = 6\text{cm}$  and  $m\overline{MN} = 8\text{cm}$   
then find  $m\overline{MA}$ ,  $m\overline{MN}$ . 2 times
13. In isosceles triangle PQR find the value of x and y. 1 time
14. **Define similar triangles.** 47 times

Unit 15: Pythagoras Theorem

1. What is meant by right angled triangle? 4 times
2. **Write down the formula of Pythagoras theorem.** 10 times
3. **What is meant by Pythagoras theorem?** 37 times
4. Find the value of unknown x: Fig. Pg 186. 1 time
5. **What is meant by converse of pythagoras theorem.** 10 times
6. Define obtuse triangle. 2 times
7. **Verify that the triangle having the following measures of sides is right-angled.  $b=12\text{cm}$ ,  $a=5\text{cm}$  and  $c=13\text{cm}$ .** 22 times
8. **Verify that the triangle having the following measures of sides is right-angled.  $b=2\text{cm}$ ,  $a=15\text{cm}$  and  $c=2.5\text{cm}$ .** 22 times
9. **Verify that the given sides are of right angled triangle.** 21 times
10. **Are the given sides those of right angled triangle?  $c=34\text{cm}$ ,  $b=30\text{cm}$  and  $a=16\text{cm}$ .** 16 times
11. The three sides of the triangle are measure of 8, x and 17 respectively. For what value of x will it become the base of right angle triangle. 2 times
12. In the given figure, find the value of x. 6 times
13. **Find value of x.** 13 times
14. If hypotenuse of an isosceles right angled triangle is cm. Then what will be the length of each of other two sides? 2 times
15. **Find the value of x.** 29 times
16. **Find the value of x.** 28 times
17. **Find the value of unknown x from figure.** 26 times
18. Find x in triangle ABC. 1 time
19. Verify that and are the measures of sides of a right angled triangle where a and b are any two real numbers ( $a>b$ ). 1 time
20. What is meant by converse of theorem? 3 times
21. Find the value of x in given triangle. 1 time
22. Find the value of x in triangle PQR. 1 time



**Unit 16: Theorems Related with Area**

- |     |   |                 |
|-----|---|-----------------|
| 1.  | Define interior of a triangle.                                      | 6 times         |
| 2.  | <b>Define area of triangle.</b>                                     | <b>18 times</b> |
| 3.  | <b>Define congruent area axiom.</b>                                 | <b>7 times</b>  |
| 4.  | <b>Define rectangular region.</b>                                   | <b>24 times</b> |
| 5.  | Define altitude of parallelogram.                                   | 5 times         |
| 6.  | <b>Find the area of figure.</b>                                     | <b>23 times</b> |
| 7.  | <b>Find the area.</b>   | <b>11 times</b> |
| 8.  | <b>Find area of Figure.</b>   | <b>11 times</b> |
| 9.  | <b>Find the area of the given figure ABC.</b>                       | <b>16 times</b> |
| 10. | <b>Define area of figure.</b>                                       | <b>20 times</b> |
| 11. | <b>Define height of triangle. OR Define Altitude of a triangle.</b> | <b>24 times</b> |

**Unit 17: Practical Geometry Triangles**

- |     |  |                 |
|-----|--|-----------------|
| 12. | Construct ABC in which $m \overline{AB} = 4.6\text{cm}$ , $m \overline{AC} = 4\text{cm}$ , $m \angle A = 60^\circ$ .                                     | 6 times         |
| 13. | Draw angle of bisector of a triangle in which $m \overline{AB} = 4.6\text{cm}$ , $m \overline{BC} = 4.2\text{cm}$ and $m \overline{CA} = 5.1\text{cm}$ . | 1 time          |
| 14. | Construct $\triangle ABC$ when; $m \overline{CA} = 5.2\text{cm}$ , $m \overline{BC} = 4.2\text{cm}$ and $m \overline{AB} = 3.2\text{cm}$ .               | 26 times        |
| 15. | Construct a triangle ABC $m \overline{AB} = 4.2\text{cm}$ , $m \overline{BC} = 3.9\text{cm}$ and $m \overline{CA} = 3.6\text{cm}$ .                      | 20 times        |
| 16. | Construct a triangle ABC $m \angle B = 60^\circ$ $m \overline{BC} = 3.7\text{cm}$ and $m \overline{AB} = 4.8\text{cm}$ .                                 | 17 times        |
| 17. | Construct a triangle ABC $m \angle B = 45^\circ$ $m \overline{AB} = 3\text{cm}$ and $m \overline{AC} = 3\text{cm}$ .                                     | 17 times        |
| 18. | Construct a triangle ABC $m \angle C = 70^\circ$ $m \overline{BC} = 4.2\text{cm}$ and $m \overline{CA} = 3.5\text{cm}$ .                                 | 1 time          |
| 19. | Construct a triangle ABC $m \angle A = 30^\circ$ $m \angle B = 105^\circ$ and $m \overline{AB} = 2.5\text{cm}$ .   | 17 times        |
| 20. | Construct a triangle ABC $m \angle A = 75^\circ$ , $m \angle B = 45^\circ$ and $m \overline{AB} = 3.6\text{cm}$ .  | 5 times         |
| 21. | Construct a triangle XYZ $m \angle X = 90^\circ$ , $m \overline{AB} = 6.1\text{cm}$ and $m \overline{YZ} = 7.6\text{cm}$ .                               | 12 times        |
| 22. | Construct a triangle XYZ $m \angle Y = 90^\circ$ , $m \overline{AB} = 6.4\text{cm}$ and $m \overline{AB} = 2.4\text{cm}$ .                               | 11 times        |
| 23. | Construct a triangle XYZ $m \angle Z = 90^\circ$ , $m \overline{XY} = 5.5\text{cm}$ and $m \overline{ZX} = 4.5\text{cm}$ .                               | 8 times         |
| 24. | <b>What are concurrent lines?</b>  | <b>10 times</b> |
| 25. | What is the difference between in-centre and centroid of a triangle?   | 1 time          |
| 26. | Draw an angle of $45^\circ$ .  | 1 time          |
| 27. | <b>Define incentre of a triangle.</b>  | <b>39 times</b> |
| 28. | <b>Define circumcenter of a triangle.</b>  | <b>30 times</b> |
| 29. | <b>Define orthocentre of a triangle.</b>   | <b>23 times</b> |
| 30. | <b>Define centroid.</b>  | <b>26 times</b> |

# Online Learning Program

## Launched by *Unique Group of Institutions*

- Most important Topics for Paper point of view
- Lecture delivered by Experienced Subject Experts
- Guideline for Teachers to deliver a Lecture



- ▶ **Lecture 1**      Types of matrices
- ▶ **Lecture 2**      Integral powers of  $\varphi$
- ▶ **Lecture 3**      Scientific Notations
- ▶ **Lecture 4**      Surd
- ▶ **Lecture 5**      Factorization
- ▶ **Lecture 6**      Highest common factor, Least common multiple, square root
- ▶ **Lecture 7**      Congruent triangles
- ▶ **Lecture 8**      Pythagora's theorem
- ▶ **Lecture 9**      Converse of Pythagora's theorem
- ▶ **Lecture 10**      Concurrent lines point of concurrency

**This booklet is complementary & Free for all our students**

**For Free Home Delivery Call**

**0324-6666661, 0324-6666662, 0324-6666663**