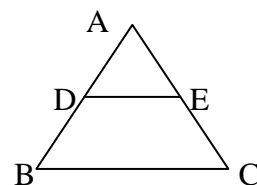
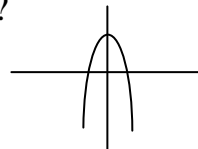


IMPORTANT QUESTIONS FOR PUBLIC EXAM

Class X (Math's) For D,E Grade Students

This assignment is meant for the students who are weak and have been keeping away from Maths during the year and now feel lost as to what to do. You do these assignments and God willing, you will be through. We have carefully selected the questions to do justice to the time available and your capabilities. Good Luck !

1. Find the HCF of 148 & 124 by Euclid div. algorithm.
2. Express 5005 as a product of prime factors.
3. $\text{HCF}(306, 657) = 9$, find LCM.
4. Prove $\sqrt{5}$ is irrational
5. Prove $3 - 2\sqrt{5}$ is irrational.
6. Without actual division check whether $77/210$ is terminating or non-terminating.
7. What can you say about the prime factors of 1.314
8. Expand $\log \frac{343}{125}$?
9. Write $2\log 3 + 3\log 5 - 5\log 2$ as a single logarithm
10. Illustrate $A \cap B$ in venn diagram where $A = \{1, 2, 3\}$, $B = \{3, 4, 5\}$?
11. If $A = \{1, 2, 3, 4, 5\}$, $B = \{4, 5, 6, 7\}$ then find $A - B, B - A$. Are they equal?
12. Let $A = \{2, 4, 6, 8, 10\}$ $B = \{3, 6, 9, 12, 15\}$ then find $(A \cup B) - (A \cap B)$?
13. Find no. of zeros of \longrightarrow
14. Find the zeros and verify the relation between the zeros and the coefficients (i) $x^2 + 7x + 10$ (ii) $x^2 - 3$
15. Find a quadratic polynomial whose sum and product of zeros are $-\sqrt{2}$ and $1/3$.
16. Find a quadratic polynomial whose are $2-\sqrt{2}$ and $3+\sqrt{2}$
17. Find all other zeros of $2x^4 - 3x^3 - 3x^2 + 6x - 2$ if two of the zeros are $\sqrt{2}$ and $-\sqrt{2}$
18. On dividing $x^3 - 3x^2 + x + 2$ by $g(x)$, the quotient and remainder are $x-2$ and $(-2x + 4)$. Find $g(x)$.
19. Check whether the following lines intersect, parallel or coincident $6x - 3y + 10 = 0$ and $2x - y + 9 = 0$
20. Check whether the following lines are consistent or inconsistent. $2x - 3y = 8$ and $4x - 6y = 9$
21. Solve $2x + 3y = 11$ and $2x - 4y = -24$ hence find m if $y = mx + 3$
22. For what value of p the eq. $4x + py + 8 = 0$ and $2x + 2y + 2 = 0$ has unique solution.
23. For what value of k the eq. $kx + 3y - (k - 3) = 0$ and $12x + ky - k$ have infinite many solution.
24. Solve $2/x + 3/y = 13$ and $5/x - 4/y = -2$
25. Solve graphically $2x - y = 2$ and $4x - y = 4$ and find the vertices formed by these lines and x axis.
26. Solve by completing square method $9x^2 - 15x + 6 = 0$
27. Find the nature of roots of $5x^2 - 6x - 2 = 0$
28. Find k if $2x^2 + kx + 3 = 0$ have two equal roots.
29. Find the 11th term from the last of an A.P. 10, 7, 4 (- 62)
30. Determine A.P. if 3rd term is 5 and 7th term is 9
31. Which term of the A.P. 21, 18, 15 is (-81)
32. Check whether 301 is a term of the A.P. 5, 11, 17, 23,.....
33. Which term of the A.P. 3, 15, 27 ... will be 132 more than 54th term.
34. Check 301 is the term of the A.P. 5, 11, 17,.....
35. How many multiples of 4 lie between 10 and 250.
36. Find the sum of 24 terms whose n th term is given by $3 + 2n$
37. Find the A. P. whose sum to n terms is given by $3n^2 - 5n$
38. If a line is drawn parallel to one side of a triangle divides the other two sides proportionally.
39. Find EC , if $DE \parallel BC$, $AD = 2\text{cm}$, $DB = 3\text{cm}$, $AE = 1.5\text{cm}$



40. $\triangle ABC \sim \triangle DEF$, $\text{ar}\triangle ABC = 64\text{cm}^2$, $\text{ar}\triangle DEF = 121\text{cm}^2$. $EF = 15.4\text{cm}$ find BC
41. $DE \parallel BC$ and $AD = 1\text{cm}$, $BD = 2\text{cm}$. what is the ratio of the area of ABC to the area of ADE .
42. Prove that ratio of areas of two similar triangles is equal to the square of the ratio of their corresponding sides.
43. Prove that in a right triangle the square of the hypotenuse is equal to the sum of sq. of other two sides.
44. Prove that in a triangle if the square of one side is equal to the sum of sq. of other two sides then the angle opposite to the first side is right angle.
45. A ladder is placed against a wall such that its foot is at a distance of 2.5m from the wall and its top reaches a window 6m above the ground. Find the length of the ladder.
46. A ladder 10m long reaches a window 8m above the ground. Find the distance of the foot of the ladder from the base of the wall.
47. A wire attached to a vertical pole of height 18m is 24m long. Find the distance from the foot of the pole.
48. In $\triangle ABC$, $AB = 6\sqrt{3}\text{cm}$, $AC = 12\text{cm}$ and $BC = 6\text{cm}$ find $\angle B$
49. Show that (1, 7), (4, 2), (-1, -1) and (-4, 4) are the vertices of a square.
50. Find a point on y axis which is equidistant from (6, 5) and (-4, 3)
51. Determine if (1, 5), (2, 3) and (-2, -11) are collinear.
52. Check whether (5, -2), (6, 4) and (7, -20) are the vertices of an isosceles triangle.
53. In what ratio (-4, 6) divides the line joining (-6, 10) and (3, -8).
54. Three vertices of a parallelogram are (6, 1), (8, 2) and (9, 4). Find the fourth vertex.
55. Find the area of triangle formed by (5, 2), (4, 7) and (7, -4)
56. Find k if (2, 3), (4, k) and (6, -3) are collinear.
57. Find the area of (-5, 7), (-4, -5), (-1, -6) and (4, 5)
58. If $\cot A = 4/3$ check $\frac{1 - \tan^2 A}{1 + \tan^2 A} = \cot^2 A - \sin^2 A$
59. $\sin(A - B) = \frac{1}{2}$, $\cos(A + B) = \frac{1}{2}$ find A and B
60. Evaluate $\tan 5^\circ \tan 25^\circ \tan 30^\circ \tan 65^\circ \tan 85^\circ$
61. Verify $4(\sin^4 30^\circ + \cos^4 60^\circ) - 3(\cos^2 45^\circ - \sin^2 90^\circ) = 2$
62. Show that $\tan 48^\circ \tan 23^\circ \tan 42^\circ \tan 67^\circ = 1$
63. $\sec 4A = \text{cosec}(A - 20)$ find A
64. $\tan A = \cot B$ prove $A + B = 90$
65. A, B, and C are the interior angles of $\triangle ABC$ show that $\sin\left(\frac{B+C}{2}\right) = \cos\left(\frac{A}{2}\right)$
66. From a point 15m away from the foot of a tower, the angle of elevation of the top of the tower is 60° . Find the height of the tower.
67. A vertical tower stands on the ground and is surmounted by a flag-staff of height 5m. From a point on the ground, the angle of elevation of the bottom of the flag is 45° and that of the top of the flag-staff is 60° . Find the height of the tower.
68. The angle of elevation of the top of a tower from a point on the ground is 45° . On walking 30m towards the tower, the angle of elevation becomes 60° . Find the height of the tower and its distance from the foot of the tower.
69. As observed from the top of a cliff 200m above the sea level the angle of depression of two ships on either side of the cliff are 45° and 60° respectively. Find the distance between the ships.
70. The angle of elevation of an aeroplane from a point on the ground is 60° . After a flight of 15 sec. the elevation becomes 30° . If the aero-plane is flying at a constant height of 1200m. Find the speed of the plane.
71. From a point $20\sqrt{3}\text{m}$ away from the foot of a tower, the angle of elevation of the top of a tower is 30° . Find the height of the tower.
72. Prove that the lengths of tangents from an external point are equal.
73. PA and PB are the tangents to a circle with center O. If $\angle APB = 70^\circ$. Find $\angle POA$
74. Find the distance between two parallel tangents to a circle of radius 5cm.

75. The length of tangent from a point A at distance 5cm from the center of the circle is 4cm. find radius.
76. Divide 7.6cm in the ratio 5:4
77. Construct a $\triangle ABC$, $BC = 7\text{cm}$, $B = 45^\circ$ and $A = 105^\circ$. construct a similar triangle with sides $\frac{4}{3}$ times of ABC
78. Draw a circle of radius 6cm. from a point 10cm away from its center draw a pair of tangents.
79. Draw a pair of tangents to a circle of radius 5cm which are inclined to each other at 60° .
80. The length of minute hand of a clock is 14cm. Find the area swept by the minute hand between 9:00am and 9:35am
81. In a circle of radius 21cm, an arc subtends an angle of 60° at the center. Find (i) the area of the minor sector (ii) length of arc (iii) perimeter of the sector
82. A hemispherical bowl of internal diameter 36cm is full of water. The water is to be filled into cylindrical bottles each of radius 3cm and height 9cm. How many bottles are required?
83. A circus tent is made of canvas and is in the form of a right circular cylinder and a right circular cone above it. The diameter and height of the cylindrical part of the tent are 126m and 5m respectively. The total height of the tent is 21m. Find the total cost of the canvas used to make the tent @ of Rs. 12 per sq. m.
84. A bucket of height 16 cm and made up of metal sheet is in the form of frustum of a right circular cone with radii of its lower and upper ends as 3 cm and 15 cm resp. Calculate (i) the volume of water that can be filled in the bucket. (ii) the slant height of the bucket (iii) the area of the sheet used.
83. Find the missing frequencies if the mean is 50.
- | | | | | | | |
|---|--------|----------------|---------|----------------|----------|-------------|
| X | 0 – 20 | 20 – 40 | 40 – 60 | 60 – 80 | 80 – 100 | |
| F | 17 | f ₁ | 32 | f ₂ | 19 | total = 120 |
84. Find the mean, medianmode
- | | | | | | | |
|---|---------|---------|---------|---------|---------|---------|
| X | 100-200 | 200-300 | 300-400 | 400-500 | 500-600 | 600-700 |
| F | 3 | 6 | 10 | 16 | 10 | 5 |
85. Find the missing frequencies if the median is 32.5
- | | | | | | | | |
|---|------|-------|-------|-------|-------|-------|------------|
| X | 0-10 | 10-20 | 20-30 | 30-40 | 40-50 | 50-60 | 60-70 |
| F | x | 5 | 9 | 12 | y | 3 | 2 |
| | | | | | | | total = 40 |
86. What is the median of the more than and less than type ogives if the coordinates of the point of intersection of the two graphs are (20.5, 29)
87. Two dice are thrown simultaneously. What is the probability of getting a multiple of 3 as sum (ii) sum less than 7 (ii) sum more than 7
88. Find the probability of getting 53 Mondays in a (i) leap year (ii) non leap year
89. One card is drawn from a pack of 52 cards. Find the probability of getting (i) a black card. (ii) a face card (iii) black or queen (iv) either red or queen (v) neither a red card nor a king. (vi) jack and red card
90. Cards are numbered from 3 to 51 are put in a box. A card is drawn at random, find the probability of getting (i) an even number (ii) number divisible by 2 or 3 (iii) a prime number (iii) neither divisible by 5 nor by 10 (iv) multiple of 7 (v) a number which is a perfect square. (vi) number divisible by 2 and 3 both
91. Out of 400 bulbs in a box, 15 bulbs are defective. One bulb is taken out at random. Find the probability the bulb is non defective.
92. If the probability of winning a game is 0.3. What is the probability of losing it?
93. In a lottery there are 10 prizes and 25 blanks. Find the probability of getting a prize.