

GOLDEN BELLS ACADEMY, DHINDHAWALI, MZN

Class - 9th

Assignments (Maths)

- ⇒ 1. The rational number between and is verify.
- ⇒ 2. The irrational number between and is justify.
- ⇒ 3. The product of irrational numbers and is . Prove it.
- ⇒ 4. Simplify: $\frac{1}{(27)^{-1/3}} + \frac{1}{(625)^{-1/4}}$
- ⇒ 5. Rationalize the denominator of $\frac{7\sqrt{3} - 5\sqrt{2}}{\sqrt{48} + \sqrt{18}}$
- ⇒ 6. Simplify: $\left(\frac{81}{16}\right)^{-3/4} \times \left[\left(\frac{25}{9}\right)^{-3/2} \div \left(\frac{5}{2}\right)^{-3}\right]$
- ⇒ 7. The degree of Cubic polynomial is 3. Is it true or false ?
- ⇒ 8. If $P(x) = x^3 - x^2 + x - 3$, then $P(0)$ is equal to -3. Justify.
- ⇒ 9. The Expanded form of $(3x-2)^3$ is $27x^3 - 8 - 54x^2 + 36x$. Justify.
- ⇒ 10. Factorise: $x^3 + 13x^2 + 32x + 20$.
- ⇒ 11. Factorise: $27x^3 - \frac{1}{216} - \frac{9}{2}x^2 + \frac{1}{4}x$
- ⇒ 12. Verify that : $x^3 + y^3 + z^3 - 3xyz = \frac{1}{2}(x+y+z)[(x-y)^2 + (y-z)^2 + (z-x)^2]$
- ⇒ 13. If $x > 0$, $y < 0$, then the point (x, y) lies in which quadrant ?
- ⇒ 14. The area of the triangle formed by joining the points $(4, 0)$, $(0, 0)$ and $(0, 4)$ is 8 Sq. units. prove it.
- ⇒ 15. Any point on the x-axis is $(x, 0)$ for all x and any point on the y-axis is $(0, y)$ for all y .
Is it true ?
- ⇒ 16. Plot the following pairs of numbers as point in the Cartesian plane :-
- | | | | | |
|---|---|----|---|----|
| X | 1 | 3 | 4 | 0 |
| Y | 2 | -2 | 3 | -2 |
- ⇒ 17. Plot the points $P(7, -1)$, $Q(3, -3)$, $R(5, 5)$, $S(-2, 2)$, $T(-3, -3)$ on the Cartesian plane.

⇒18. In which quadrant or on which axis do each of the points (-2, 4), (3, -1), (-1, 0), (1, 2) and (-3, -5) lie ? Verify your answer by locating them on the Cartesian plane.

⇒19. If $\frac{x-7}{4} + 6 = \frac{3(x+1)}{2} + 2$. Prove that $x=4$.

⇒20. If the point (2, 3) lies on the graph of the equation $4y = ax + 5$, then prove that .

⇒21. For the equation $6x - 5y = 8$, verify that (3, 2) is a solution and (2, 3) is not a solution.

⇒22. The Taxi fare in a city is as follows : For the first kilometre, the fare is Rs. 50 and for the subsequent distance it is Rs. 20 per Km, taking the distance covered as x km and total fare as Rs y , write a linear equation for this information and draw the graph.

⇒23. Draw a graph of the equations $x+y=5$ and $3x-2y=0$ on the same graph paper. Find the coordinates of the point where the two lines intersect.

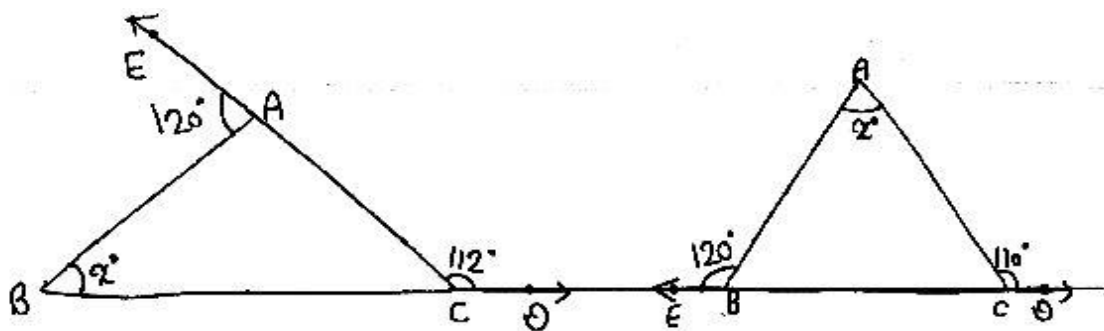
⇒24. A and B do a piece of work in 8 days of which A alone can do in 12 days. In how many days B can do the same work ?

⇒25. The angle whose measure is eight times its complementary angle is given by 80° . Justify.

⇒26. An angle differs from its complement angle by 20° . It is equal to 55° . Prove it.

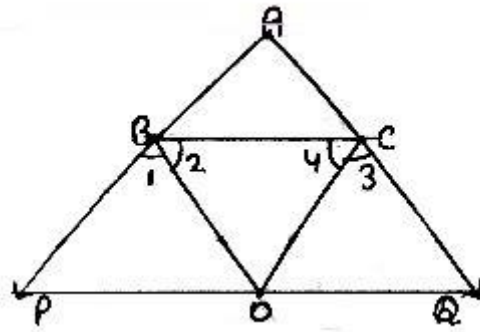
⇒27. The Exterior angle of a triangle, whose interior opposite angles are 37° and 13° is 50° . Justify.

⇒28.

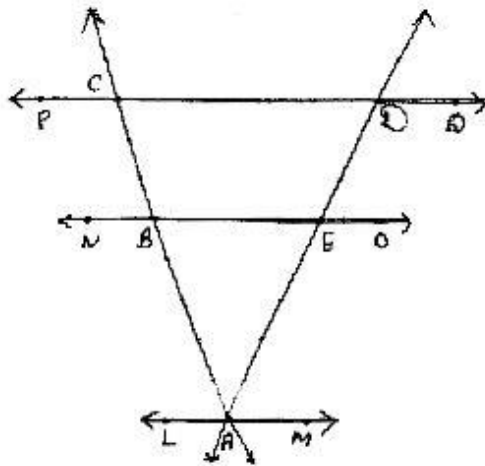


⇒29. In the given figure, the sides AB and AC of a triangle ABC are produced to P and Q respectively. The bisectors of $\angle PBC$ and $\angle QCB$ intersect at O.

Prove that $\angle BOC = 90^\circ - \frac{1}{2} \angle BAC$

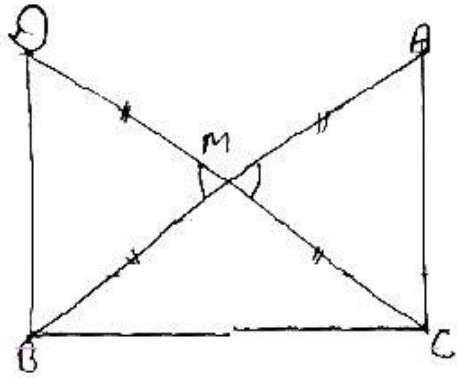


- ⇒30. If a transversal intersects two lines such that the bisectors of a pair of corresponding angles are parallel then prove that the two lines are parallel.
- ⇒31. Which is not a statement ? (a) $4 + 9 = 6$ or (b) Ram is tall.
- ⇒32. Which of the following needs a proof ? Theorem or Axiom.
- ⇒33. The number of dimensions in a surface is 2. Verify.
- ⇒34. From the given figure, name the following:
- (i) Three lines (ii) One rectilinear figure (iii) Four concurrent point
- (iv) Three parallel line.



- ⇒35. Prove that every line segment has one and only one mid point.
- ⇒36. A triangle cannot have two obtuse angle. Prove it.
- ⇒37. In ΔPQR , $\angle R = \angle P$ and $QR = 4\text{cm}$, $PR = 5\text{Cm}$. Then the length of PQ is 4 cm. Prove it.

- ⇒38. AD is median of $\triangle ABC$. Then
 $AB + AC > 2AD$ or $AB + AC = 2AD$.
 Which of these is true.

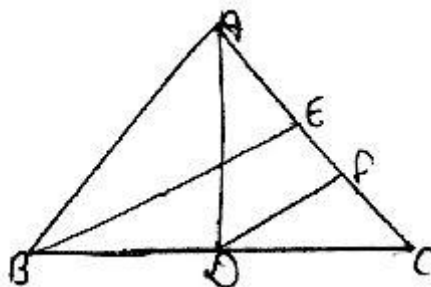


- ⇒39. AD, BE and CE, the altitudes of $\triangle ABC$ are equal prove that $\triangle ABC$ is an equilateral triangle.
- ⇒40. $\triangle ABC$ is an isosceles triangle in which $AB = AC$. D, E and F are the mid - points of the sides BC, AC and AB respectively, prove that $DE = DF$.
- ⇒41. $\triangle ABC$ and $\triangle DBC$ are two isosceles triangles on the same base BC and vertices A and D are on the same side of BC. If AD is extended to intersect BC at P, show that
 (i) $\triangle ABD \cong \triangle ACD$ (ii) $\triangle ABP \cong \triangle ACP$
 (iii) AP Bisects $\angle A$ as well as $\angle D$ (iv) AP is the perpendicular bisector of BC

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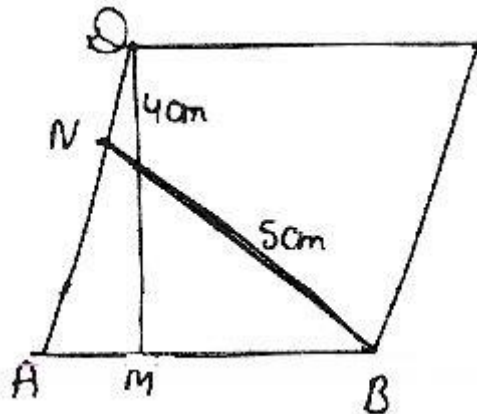
- ⇒42. In a parallelogram PQRS, if $\angle P = (3x-5)^\circ$, $\angle Q = (2x+15)^\circ$, Prove that $x = 34^\circ$
- ⇒43. The fourth angle of a quadrilateral whose three angles are 105° , 115° , 80° is 60° .
 Justify.
- ⇒44. In the given figure AD and BE are medians of $\triangle ABC$ and $BE \parallel DF$. Then prove that

$$CF = \frac{1}{4} AC$$

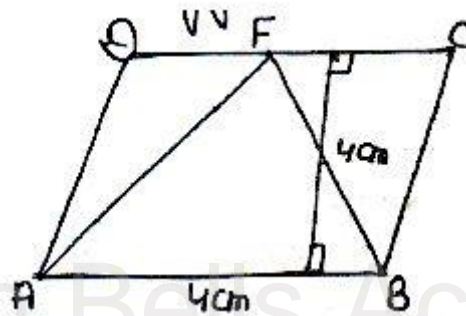


- ⇒45. The diagonals of quadrilateral ABCD are perpendicular. Show that the quadrilateral formed by joining the mid-points of its sides is a rectangle.
- ⇒46. If the diagonals of a parallelogram are equal and intersect at right angles, then the parallelogram is a square.
- ⇒47. Show that the line joining the mid-points of a quadrilateral bisect each other.

⇒48. In a parallelogram ABCD AB = 8 Cm. The altitudes corresponding to sides AB and AD are respectively 4 Cm and 5 Cm. Then AD = 6.4 Cm. Justify.



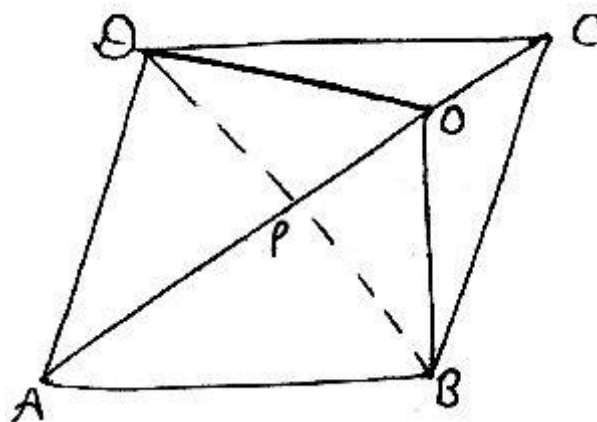
⇒49. In the figure, ABCD is a parallelogram, then ar (Δ AFB) is 8 cm². Justify.



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⇒50. In a Δ ABC, E is the mid-point of median AD. Then prove that $\frac{\text{ar}(\Delta ABC)}{\text{ar}(\Delta BED)} = 4$

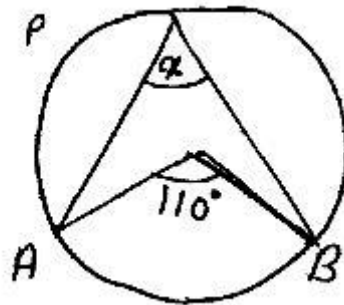
⇒51. P is point is the interior of a 11 gm ABCD. Prove that ar (Δ APB) is less than ar(11gm ABCD).



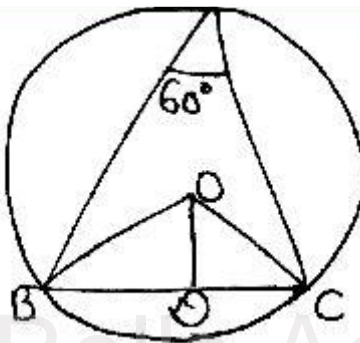
⇒52. In the figure, ABCD is a parallelogram and O is only point on the diagonal AC. Show that ar (ΔAOB) = ar (ΔAOD)

⇒53. Show that diagonals of a parallelogram divide it into four triangles of equal area.

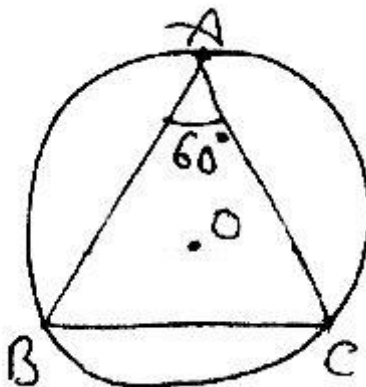
⇒54. If O is the center of the circle, then $x = 55^\circ$. Prove it.



⇒55. In the given fig., O is the circumcentre of $\triangle ABC$ and $OD \perp BC$. Then $\angle BOD = 30^\circ$. Prove it.



⇒56. In the given figure, ABC is a triangle in which $\angle BAC = 60^\circ$. Then $\triangle OBC$ is an equilateral triangle Justify.



⇒57. It is possible to construct a $\triangle ABC$ in which $AB = 4$ Cm, $BC = 3$ Cm. and $AC = 12$ Cm.?

⇒58. Is it possible to construct a $\triangle ABC$ in which $BC = 4$ Cm. and $\angle B = 150^\circ$ and $\angle C = 30^\circ$.

- ⇒59. is it possible to construct a ΔABC whose sides are 6 Cm, 6 Cm and 14 Cm.
- ⇒60. Construct an angle of measure $22\frac{1}{2}^\circ$.
- ⇒61. Construct an angle of measure 135° .
- ⇒62. Construct a triangle XYZ in which $\angle Y = 30^\circ$, $\angle Z = 90^\circ$ and $XY + YZ + ZX = 11$ Cm.
- ⇒63. The area of equilateral triangle of side 'a' is $4\sqrt{3}$ Cm². Its height is given by $2\sqrt{3}$.
Justify.
- ⇒64. The perimeter of an equilateral triangle is 60 cm. The area is $100\sqrt{3}$ m². Prove it.
65. The perimeter of a rhombus is 20cm. One of its diagonals is 8 cm. then other diagonal is 6 cm. Prove it.
- ⇒66. The parallel sides of a trapezium are 25 cm and 11 cm. while its non- parallel sides are 15cm and 13 cm. Find the area of the trapezium.
- ⇒67. A field is in the shape of a trapezium whose parallel side are 25 m and 10 m .
The non-parallel sides are 14 m. and 13cm. Find the area of field.
- ⇒68. The perimeter of a rhombus is 20 cm. One of its diagonals is 8 cm. Find the area of the rhombus And length of the other diagonal.
- ⇒69. Two cubes each of 20 cm edge are joined end to end. Then the surface area of the resulting cuboid is 4000 cm² . Verify.
- ⇒70. The perimeter If each side of a cube is doubled, the total surface area becomes 12 time.
Justify.
- ⇒71. Curved surface area of a cone is 308 cm² and its slant height is 14 cm. Then the radius of base of the cone is 70 m. justify.
- ⇒72. Two cylindrical vessels are filled with oil. The radius of one vessel is 15 cm. and its height is 25 cm. The radius and height of the other vessel are 10 cm and 18 cm respectively. Find the radius of a cylindrical vessel 30 cm. in height which will just contain the oil of the two given vessels.
- ⇒73. A right circle solid cylinder has radius 7 cm and height 25 cm. Find (i) the volume (ii) the curved surface (iii) the total surface (iv) the mass if material of the cylinder weight 8 gm per cm³

(v) the cost at the rate of Rs 40 per kg.

- ⇒74. A Room is half as long as it is broad. The cost of carpeting the room at Rs 3.25 per m^2 is Rs 175.50 and the cost of papering the walls at Rs 1.40 per m^2 is Rs 240.80. if 1 door and 2 window occupy $8m^2$, find the dimensions of the room.
- ⇒75. The class marks of a frequency distribution are: 47,52,57,62,67,72,77,82,87,92,97, 102. The class size is 5. Justify.
- ⇒76. Range for the above data is 55. Prove it.
- ⇒77. The class marks of a distribution 61,66,71,76,81,86,91,96,101,106. Prove that Range=45.
- ⇒78. Find the unknown entries (a,b,c,d,e,f,g)from the following frequency distribution height of 50 students in a class:

Class intervals(Height in cm.)	Frequency	Cumulative Frequency
150-155	12	a
155-160	b	25
160-165	10	c
165-170	d	43
170-175	e	48
175-180	2	f
Total	g	-

- ⇒79. The marks obtained by 30 Candidates in an examination are:

428 306 460 328 425 370 380 405
154 175 210 290 305 325 261 355
380 402 178 253 241 275 315 370
318 380 375 410 170 175

From a cumulative frequency table with the class interval of 50 and answer the following:

- 1- How many students scored marks between 350-400 ?
- 2- How many students scored more than 349 marks ?
- 3- How many students scored less than 300 marks ?

- ⇒80. The electricity bills (in rupees) of 25 house in a locality are given below:
170, 212, 252, 225, 310, 712, 412, 425, 322, 325, 192, 198, 230, 320, 412, 530, 602,
724, 370, 402, 317, 403, 405, 372, 413.

Construct a frequency distribution table with a class size of 75.

⇒81. To draw a histogram to represent the following frequency distribution:

Class interval	5-10	10-15	15-25	25-35	35-45
frequency	6	12	10	8	15

The cumulative frequency for the class 25-35 is 36. Prove it

⇒82. Which of the following cannot be represented graphically ? Frequency polygon or mean.

⇒83. The following two table give the distribution of students of two sections according to the marks obtained by them.

Section A

Section B

Marks	Frequency	Marks	Frequency
0-10	3	0-10	5
10-20	9	10-20	19
20-30	17	20-30	15
30-40	12	30-40	10
40-50	9	40-50	1

Represent the marks of the students of both the sections of the same graph by frequency polygons.

⇒84. The table given below shows the frequency distribution of the scores obtained by 200 candidates in a BCA entrance examination.

Score	200-250	250-300	300-350	350-400	400-450	450-500	500-550	550-600
No. of candidates	30	15	45	20	25	40	10	15

Draw cumulative frequency curves by using (i) less then series (ii) more then series.

⇒85. Construct a frequency polygon for the following data.

Daily Pocket expenses

of a student	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40
No. of students	10	16	30	42	50	30	16	12

⇒86. If \bar{x} is the mean of $x_1, x_2, x_3, x_4, x_5, x_6$, then $(x_1 - \bar{x}) + (x_2 - \bar{x}) + (x_3 - \bar{x}) + (x_4 - \bar{x}) + (x_5 - \bar{x}) + (x_6 - \bar{x}) = 0$. Verify.

⇒87. A Cricketer has a mean score of 56 in 9 innings. How many runs are to be scored in 10th inning to raise the mean score 60. Verify.

⇒88. The following data have been arranged in ascending order: 18,20,25,26,30, , 37,38, 39, 48, If the median of the data is 35, then =40 Justify.

⇒89. If \bar{x} is the mean of n observation $x_1, x_2, x_3, \dots, x_n$, then prove that

$$\sum_{i=1}^n (x_i - \bar{x}) = 0$$

⇒90. (a) Find the mode of 14,25,14,28,17,18,14,23,22,14,18 :

(b) Find the median of 17, 26, 60, 45, 33, 32, 29, 34, 56.

If 26 is replaced by 62, what will be the new.

⇒91. In a mathematics test given to 15 students, the following marks (out of 100) are recorded:

41, 39, 48, 52, 46, 62, 54, 40, 96, 52, 98, 40, 42, 52, 60.

⇒92. Probability of getting 53 Sundays in a leap year is $\frac{2}{7}$. Justify,

⇒93. Probability of getting two heads in a single throw of 3 coins is $\frac{3}{8}$. Justify.

⇒94. Probability of getting a red king from a well shuffled deck of 52 cards is $\frac{1}{26}$ Justify.

⇒95. Following table shows the birth month of 40 students of class IX.

Jan.	Feb.	March	April	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
3	4	2	2	5	1	2	6	3	4	4	4

i- that a students was born in August.

ii- that a students was born in March.

iii- that a student was born in November.

⇒96. To know the opinion of the students about the subject mathematics, a recorded in the following table.

Opinion	Number of student
like	350
Dislike	150

Find the probability that a student chosen at random (i) likes mathematics (ii) does not like it.

⇒97. In tossing a fair die, the probability of getting an old number less than 4 is $\frac{2}{3}$. Prove it.

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