

General Instructions:

1. All questions are compulsory.
2. The question paper consists of 31 questions divided into four sections A, B, C, D and E. Section – A comprises of 4 questions of 1 mark each, Section – B comprises of 6 questions of 2 marks each, Section – C comprises of 8 questions of 3 marks each and Section – D comprises of 10 questions of 4 marks each. Section – E comprises of two questions of 3 marks each and 1 question of 4 marks from Open Text theme.
3. There is no overall choice.
4. Use of calculator is not permitted.

SECTION – A

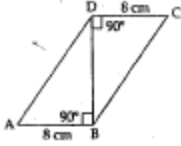
Question numbers 1 to 4 carry one mark each.

1. Garvit and Ashwini contributed Rs. 540 to P.M.'s relief fund for earthquake victim. Express this situation as a linear equation in two variables.
2. In the linear equation $x - y - 1 = 0$, if $x = 0$, then find the value of y .
3. Name the special type of parallelogram whose diagonals are equal and bisect each other. Also, a pair of adjacent sides is unequal. State its one more property.
4. The radius and the lateral surface area of right circular cone are 8 cm and 220 cm^2 respectively. Find its slant height.

SECTION – B

Question numbers 5 to 10 carry two marks each.

5. The area of a rhombus is 72 cm^2 . If an altitude of the rhombus is half of the corresponding base, determine the measure of each side of the rhombus.
6. Construct an angle of measure 30° .
7. ABCD is a quadrilateral and BD is one of its diagonals as shown in the figure. Show that ABCD is a parallelogram.



8. The length, breadth and height of cuboidal tank are 16 m, 13.5 m and 5 m respectively. Find the amount of water in litres it can hold.
9. The table shows the marks obtained by a student in unit tests (out of 50):

Unit test	I	II	III	IV	V
Marks (out of 50)	34	35	36	34	37

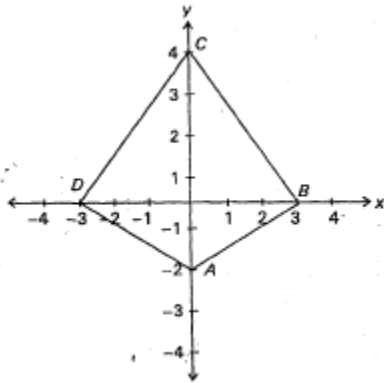
Find the probability that the student gets 70% or more in the next unit test.

10. The probability of guessing the correct answer to a certain question is $\frac{x}{3}$. If the probability of not guessing the correct answer is $\frac{5x}{3}$, then find the value of x .

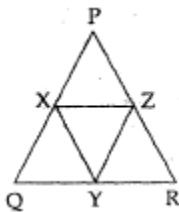
SECTION – C

Question numbers 11 to 18 carry three marks each.

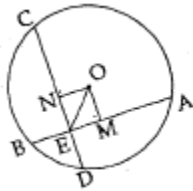
11. Anita has x apples and y mangoes. If number of apples is 2 more than thrice the number of mangoes, then write this information as a linear equation in two variables. Draw its graph.
12. ABCD is a kite. Write the equations of its diagonals. Also find the area.



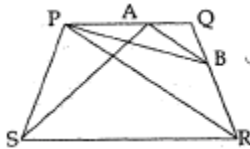
13. In ΔPQR ; X, Y and Z are respectively the mid – points of sides PQ, QR and PR. If ar $(\Delta XPZ) = 12 \text{ cm}^2$, find ar (ΔZYR) .



14. In the given figure, equal chords AB and CD of a circle with centre O intersect at right angles at E. If M and N are the mid – points of AB and CD respectively, prove that $\angle EOM = 45^\circ$.



15. Draw a line segment PQ of length 6 cm. Construct perpendicular at point P. Name it as l . Also construct perpendicular bisector of PQ. Name it as m . Is $l \parallel m$?
16. ΔPQR is right angled at Q. A and B are the mid – points of sides PQ and PR respectively. If $PQ = 10$ cm and $PR = 26$ cm, then find the length of AB.
17. PQRS is a trapezium with $PQ \parallel SR$. A line drawn parallel to PR meets PQ at A and QR at B. Show that $\text{ar}(\Delta PAS) = \text{ar}(\Delta PBR)$.

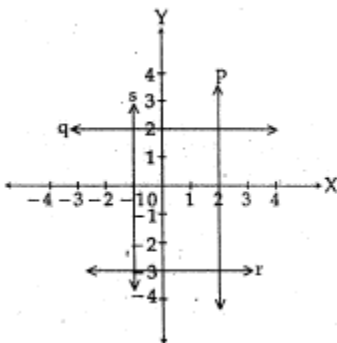


18. Three cubes of metal with edges 3 cm, 4 cm and 5 cm are melted to form a single cube. Find the total surface area of the cube formed.

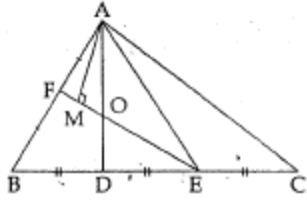
SECTION – D

Question numbers 19 to 28 carry four marks each.

19. Cost of 1 chair is Rs. x and that of 1 table is Rs. y . Cost of 2 chairs and 3 tables together is Rs. 1800. Write a linear equation which satisfies this data. Draw the graph for the same.
20. Write the equations of the lines drawn in the following graph. Also, find the area enclosed between them.



21. In the given figure, points D and E trisect the base BC of triangle ABC. Also, $AF = FB$ and $AM \perp EF$. Prove that $\text{ar}(\Delta BEF) = \text{ar}(\Delta ADE) = 3 \text{ ar}(\Delta AOF)$.



22. In a triangle ABC, if $\angle A = 60^\circ$ and the altitudes from B and C meet AC and AB at P and Q respectively and intersect each other at I, prove that APIQ and PQBC are cyclic quadrilaterals. Hence, find the measure of $\angle BIC$.
23. Construct $\triangle TUV$ in which $TU + UV + VT = 12.5$ cm, $\angle U = 90^\circ$, $\angle V = 45^\circ$.
24. PQRS is a parallelogram in which X is the mid – point of PQ and SX bisects $\angle PSR$.
Prove that:
- RX bisects $\angle SRQ$.
 - $\angle SXR = 90^\circ$.
25. A conical heap is formed when a farmer pours food grains on the ground. The slant height of the heap is 35 cm. The circumference of the base is 132 cm. What amount of tarpaulin is needed to cover the grains? Farmer goes to the orphanage and gives half of the food grains for the children living there. How many grains farmer donated? List values you learn from this act of the farmer.
26. A corn cob, shaped somewhat like a cone has the diameter of its broadest end as 4 cm and length as 20 cm. If each 1 cm^2 of the surface of the cob carries an average of three grains, find how many grains you would find on the entire cob?
27. A heap of wheat is in the form of a cone whose diameter is 10.5 m and the height is 3 m. Find its volume. If cost of 1 m^3 wheat is Rs. 10, then find the total cost. Also find slant height of the heap.
28. Two sections of Class IX having 27 students each appeared for Mathematics Olympiad. The marks obtained by them are shown below:
46, 31, 74, 68, 42, 54, 14, 61, 48, 37, 26, 8, 64, 57, 93, 72, 53, 59, 38, 16, 88, 56, 46, 66, 45, 61, 54, 27, 27, 44, 63, 58, 43, 81, 64, 36, 49, 50, 76, 38, 47, 77, 62, 53, 40, 71, 60, 45, 42, 34, 46, 40, 59, 42
One student is selected at random. Find the probability that selected student is:
- Having marks more than 49.
 - Having marks between 39 and 99.

SECTION – E

Theme: Atithidevo Bhavah

29. Refer to Table – 2 and answer the following questions:
- What is the difference in FTAs from Europe and Australia for the year 2012?
 - What is the difference in FTAs from America and Africa for the year 2012?
 - What was the FTA from Asia in the year 2012?

30. Consider month – wise percentage share of FTA and answer the following questions:
- Find the mean percentage of foreign visitors in the summer (April - July)
 - Find the mean percentage of foreign visitors in the winter (November - February)
31. Refer Table – 2; Arrival of foreign tourists in India from different regions.
- Draw bar diagram for arrival of foreign tourists in India from different regions in 2012, taking the number of foreign tourists' arrival (in lakhs approx.) on horizontal line and region on vertical line.
 - State the difference of maximum arrival and minimum arrival from different regions in 2012 in thousands.

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