

ACHIEVERS FOUNDATION

SAMPLE QUESTION PAPER

Class 9th

MATHEMATICS

SET-01

Time: 120 Minutes

M.M.: 80

General Instructions:

1. Answers to this Paper must be written on the paper provided separately.
2. You will not be allowed to write during first 15 minutes.
3. This time is to be spent in reading the question paper.
4. The time given at the head of this Paper is the time allowed for writing the answers.
5. Section A is compulsory. Attempt any four questions from Section B.
6. The intended marks for questions or parts of questions are given in brackets [].

SECTION-A

(Attempt all questions from this Section.)

1. Choose the correct answers to the questions from the given options.

(Do not copy the question, write the correct answers only.)

- (i) What will be the rationalizing factor for the

number $\frac{2\sqrt{2}}{2-\sqrt{2}}$? [1 Mark]

(A) $2-\sqrt{2}$

(B) $\sqrt{2}+1$

(C) $1-\sqrt{2}$

(D) $\sqrt{2}-2$

- (ii) On a certain sum, the compound interest accrued in one year is ₹550. If the rate of interest is 10%, the sum is [1 Mark]

(A) ₹5000

(B) ₹6000

(C) ₹4500

(D) ₹5500

- (iii) Expand $(x+9)(x+11)$. [1 Mark]

(A) $x^2+20x+99$

(B) $x^2+2x+99$

(C) $12x+99$

(D) x^2-2x+2

(iv) The relation between $(a - b)$ and $(a^2 - b^2)$:

Statement I: $a^2 - b^2 = (a - b)^2 + 4ab$

Statement II: $a^2 - b^2 = (a + b)(a - b)$

Which of the following is valid?

[1 Mark]

- (A) Both Statement I and II are true.
- (B) Both Statement I and II are false.
- (C) Statement I is true Statement II is false.
- (D) Statement I is false, Statement II is true.

(v) Solution of the equations $11x - 7y = 29$ and $7x - 11y = 25$ is [1 Mark]

- (A) $x = 2, y = 1$
- (B) $x = 2, y = -1$
- (C) $x = -2, y = 1$
- (D) $x = -2, y = -1$

(vi) The value of $a^m \times a^n$ is equal to [1 Mark]

- (A) a^{m-n} (B) a^{mn}
- (C) a^{m+n} (D) $a^{m/n}$

(vii) Which of the following congruency criteria is applicable when two angles and one side of one triangle are congruent to the corresponding angles and side of another triangle? [1 Mark]

- (A) SAS
- (B) AAS
- (C) Both (A) and (B)
- (D) No such congruency criteria exist

(viii) In a rhombus, its diagonals are 30 cm and 40 cm, its perimeter is [1 Mark]

- (A) 20 cm
- (B) 10 cm
- (C) 60 cm
- (D) 100 cm

(ix) A chord of length 8 cm is drawn in a circle of diameter 20 cm, its distance from the centre of the circle is [1 Mark]

- (A) 4 cm (B) 10 cm
- (C) 6 cm (D) 8 cm

(x) Find the median of the data: 19, 17, 23, 10, 12, 6, 11, 14? [1 Mark]

- (A) 11 (B) 12
- (C) 13 (D) 14

(xi) If the mean of a_1 and a_2 is 13 and mean of a_1, a_2 and a_3 is 17. The value of a_3 is

[1 Mark]

- (A) 25 (B) 8
- (C) $\frac{51}{26}$ (D) 4

(xii) The dimensional ratio of a cuboid is 1 : 2 : 3. If its volume is 1296 cm^3 , the actual dimensions of the cuboid are: [1 Mark]

- (A) 8 cm, 12 cm and 12 cm
- (B) 12 cm, 8 cm and 8 cm
- (C) 12 cm, 12 cm and 12 cm
- (D) 6 cm, 12 cm and 18 cm

(xiii) If $\tan(90^\circ - x) = 0$, then the measure of x is

[1 Mark]

- (A) 0° (B) 30°
(C) 60° (D) 90°

(xiv) Lines $4x = 1$ and $y - 5 = 0$ intersect each other at point P. The coordinates of point P are

[1 Mark]

- (A) $\left(\frac{1}{4}, 5\right)$
(B) $\left(-\frac{1}{3}, 5\right)$
(C) $\left(5, \frac{1}{3}\right)$
(D) $\left(5, -\frac{1}{3}\right)$

(xv) Distance between the points P(5, 2) and Q(9, 5) is equal to

[1 Mark]

- (A) 1 unit (B) 3 units
(C) 5 units (D) 6 units

2. (i) Ram borrows ₹62500 from Arjun for 2 years at 10% per annum simple interest. He immediately lends out this sum to Kunal at 10% per annum for the same period compounded annually. Calculate Ram's profit in the transaction at the end of two years (Without using formula). [4 Marks]

(ii) Solve: $3x + 2y = 2xy$, $6x + 2y = 3xy$, where $x \neq 0$ and $y \neq 0$

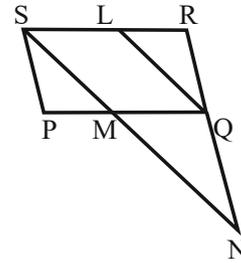
[4 Marks]

(iii) In triangle ABC, D is a point on AB, such that $AD = \frac{1}{4} AB$, and E is a point on AC such that $AE = \frac{1}{4} AC$. Prove that $DE = \frac{1}{4} BC$.

[4 Marks]

3. (i) In a parallelogram PQRS, L is the mid-point of side SR, and SN is drawn parallel to LQ which meets RQ produced at N and cuts side PQ at M.

[4 Marks]



Prove that:

(a) $SP = \frac{1}{2} RN$

(b) $SN = 2LQ$

(ii) In a quadrilateral ABCD, AO and BO are the bisectors of $\angle A$ and $\angle B$, respectively. Prove that angle $AOB = \frac{1}{2} (\angle C + \angle D)$.

[4 Marks]

(iii) Factorise: [5 Marks]

(a) $9x^2 - (x^2 - 4)^2$

(b) $(x + 1)^6 - (x - 1)^6$

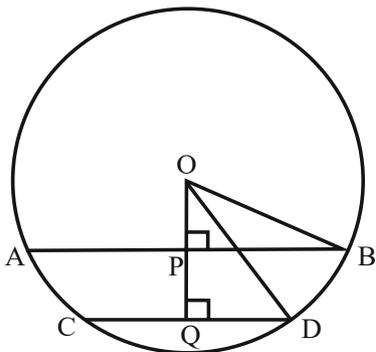
SECTION-B

(Attempt any four questions from this section - 40 Marks)

4. (i) Prove that $\sqrt{5} + \sqrt{11}$ is an irrational number. [3 Marks]

(ii) Calculate the amount and the compound interest (Without using formula) on ₹25000 for 2 years at 8% per annum compounded annually. [3 Marks]

(iii) If parallel chords AB and CD are in the same half plane of a line containing diameter parallel to them and $AB = 8$ $CD = 6$ and the perpendicular distance between them is 1, then find the length of the diameter of the circle. [4 Marks]



5. (i) If $(3a + 4b) = 16$ and $ab = 4$, find the value of $(9a^2 + 16b^2)$. [3 Marks]

(ii) Show that $97^3 + 14^3$ is divisible by 111. [3 Marks]

(iii) Find the median of [4 Marks]

(a) 15, 6, 16, 8, 22, 21, 9, 18, 25

(b) 10, 75, 3, 15, 9, 47, 12, 48, 4, 81, 17,

27

6. (i) A father is 25 years older than his son. After 5 years, his age will be twice that of his son. Find their present ages. [3 Marks]

(ii) Simplify:
$$\frac{5 \times (25)^{n+1} - 25 \times 5^{2n}}{5 \times 5^{(2n+3)} - (25)^{n+1}}$$
 [3 Marks]

(iii) Draw a frequency polygon for the following frequency distribution: [4 Marks]

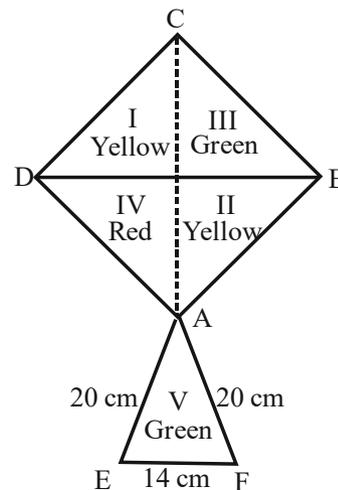
Class-interval	1-10	11-20	21-30	31-40	41-50	51-60
Frequency	8	3	6	12	2	7

7. (i) If $\cot \theta = \frac{7}{8}$, evaluate [5 Marks]

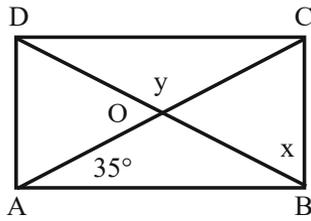
(a)
$$\frac{(1 + \sin \theta)(1 - \sin \theta)}{(1 + \cos \theta)(1 - \cos \theta)}$$

(b) $\tan^2 \theta$

(ii) In the given figure, ABCD is a square with diagonal 44 cm. How much paper of each shade is needed to make a kite given in the figure? ($\sqrt{39} = 6.25$) [5 Marks]



8. (i) In the figure, ABCD is a rectangle. Find the values of x and y . [3 Marks]

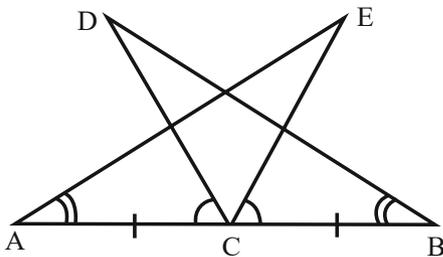


- (ii) AB and AC are two chords of a circle of radius r such that $AB = 2AC$. If p and q are the distances of AB and AC from the centre, then prove that $4q^2 = p^2 + 3r^2$. [3 Marks]

- (iii) A godown measures $40 \text{ m} \times 25 \text{ m} \times 10 \text{ m}$. Find the maximum number of wooden crates each measuring $1.5 \text{ m} \times 1.25 \text{ m} \times 0.5 \text{ m}$ which can be stored in the godown.

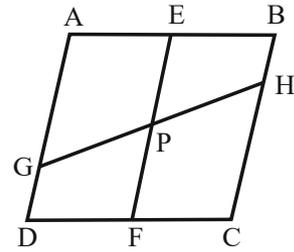
[4 Marks]

9. (i) In the given figure, C is the midpoint of AB. If $\angle DCA = \angle ECB$ and $\angle DBC = \angle EAC$, prove that $DC = EC$. [3 Marks]



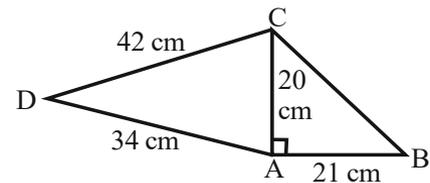
- (ii) ABCD is a parallelogram. E is the mid-point of AB and F is the mid-point of CD. GH is any line which intersects AD, EF and BC at

- G, P and H, respectively. Prove that $GP = PH$. [3 Marks]



- (iii) Find the area of the quadrilateral ABCD in which $AB = 21 \text{ cm}$, $\angle BAC = 90^\circ$, $AC = 20 \text{ cm}$, $CD = 42 \text{ cm}$ and $AD = 34 \text{ cm}$.

[4 Marks]



10. (i) How many bricks will be required to construct a wall 8 m long, 6 m high and 22.5 cm thick if each brick measures $25 \text{ cm} \times 11.25 \text{ cm} \times 6 \text{ cm}$? [3 Marks]

- (ii) Find the area of a circle whose centre is $(5, -3)$ and it passes through the point $(-7, 2)$.

[3 Marks]

- (iii) Solve the below pair of simultaneous equations graphically: [4 Marks]

$$2x + 3y = 2 \text{ and } x - 2y = 8$$

