M-3
Half Yearly Examination 2024-25
Mathematics- Set 2

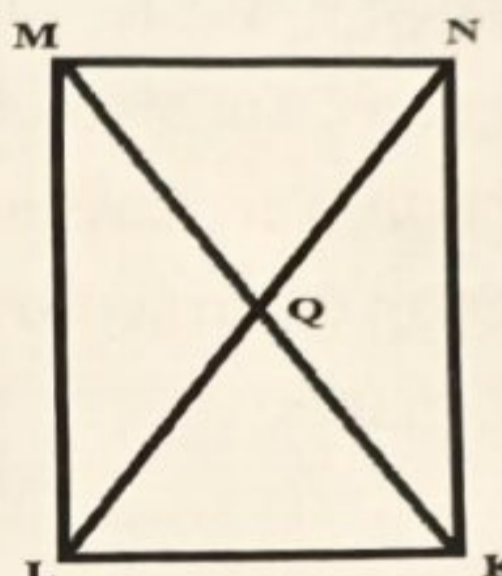Time Duration: 3 hours   M.M: 80

General Instructions:

- This paper consists of Five Sections and a total of 38 questions.
- Section A consists of Q1 to Q20 of 1 mark each.
- Section B consists of Q21 to Q25 of 2 marks each with internal choice in Q22 and Q23.
- Section C consists of Q26 to Q31 of 3 marks each with internal choice in Q26 and Q31.
- Section D consists of Q32 to Q35 of 5 marks each with internal choice in Q34.
- Section E consists of Q36 to Q38 of 4 marks each with 2 parts of 1 mark each and 1 part of 2 marks.
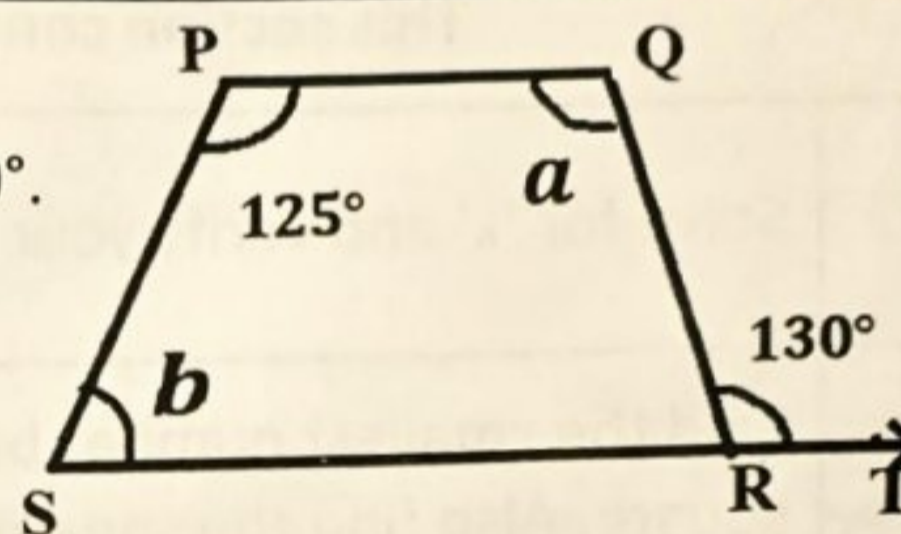
S.No.	SECTION A This section consists of one question with 20 subparts of 1 mark each.	Marks
Q1.	The sum of $1 + 3 + 5 + 7 + 9 + 11 + 13 + 15 + 17$ is _____.	1
Q2.	_____ is the multiplicative inverse of rational number $\frac{-2}{5}$	1
Q3.	The square of 85 is _____.	1
Q4.	The number of sides of a regular polygon whose each exterior angle measures 18° is _____.	1
Q5.	A quadrilateral has its angles in the ratio 3 : 2 : 1 : 4. The measure of the largest angle is _____.	1
Q6.	State True/False: Rational numbers are closed under division. Justify.	1
Q7.	State True/False: There lies 200 non- perfect square numbers between 99^2 and 100^2. Justify.	1
Q8.	State True/False: The solution of the equation $\frac{a}{1.2} = 1.3$ is 156. Justify.	1
Q9.	State True/False: [figure] is a concave polygon. Justify.	1

Q10.	State True/False: The ratio of 8000 m to 27 km is 10: 9. Justify.	1
Q11.	If a man spends 60% of his salary and saves ₹6000, find his original salary.	1
Q12.	Find the degree of the given equation : $$y^3 - 4y^2 = y^3 - 4y^2 - 3y + 2$$	1
Q13.	Find the value of $\dfrac{700}{\sqrt{19600}}$.	1
Q14.	In the adjoining figure, KLMN is a rectangle in which KM and LN are intersecting at Q. If KQ = 5.5 cm, find the length of LN.	1
Q15.	The population of a town increased from 20,000 to 25,000. What is the percentage increase?	1
Q16.	If two sides of a kite are 10 cm and 6 cm, find its perimeter.	1
Q17.	Find the length of the side of square whose area is 625 cm^2.	1
Q18.	Find the simple interest on ₹5000 at 5% p.a. for 3 years.	1
Q19.	**Assertion:** A decrease in the rate of interest decreases the amount of simple interest earned. **Reason:** Simple interest is not directly proportional to the rate of interest. (a) A and R are true and R is the correct explanation of A. (b) Both A and R are true and R is not the correct explanation of A. (c) A is true but R is false. (d) A is false but R is true.	1
Q20.	**Assertion:** The standard form of linear equations in one variable is $$ax^2 + bx + c = 0, \ a \neq 0$$ **Reason:** The linear equation in one variable is the one which contains only one variable with highest power of variable as one. a) A and R are true and R is the correct explanation of A b) Both A and R are true and R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	1

M3 Math Page - 2 (Set-II)

SECTION B

This section consists of 5 questions of 2 marks each.

Q21.	Find the product of the additive inverse of $\frac{-5}{7}$ and multiplicative inverse of $\frac{15}{28}$	2
Q22.	Find the solution for the given equation: $7n = 5n - \frac{8}{3}$ **OR** Check if $x = (-2)$ is the solution of the equation: $4(x - 2) = 16(x + 1)$	2
Q23.	Write a Pythagorean triplet whose one of the members is 18. **OR** Simplify: $(\sqrt{81} + \sqrt{0.81} + \sqrt{0.0081}) \times \sqrt{10000}$	2
Q24.	In the given figure, PQRS is a trapezium in which PQ $\parallel$ SR, $\angle P = 125°$ and $\angle QRT = 130°$. Find the values of 'a' and 'b'. (Give reasons) P, Q, 125°, a, 130°, b, S, R, T	2
Q25.	A TV was bought at a price of ₹21,000. After one year the value of the TV was depreciated by 5%. Find the value of the TV after one year.	2

SECTION C

This section consists of 6 questions of 3 marks each.

Q26.	Simplify the given rational numbers : $(\frac{3}{7} \times \frac{-21}{15}) + (\frac{-8}{15} \times \frac{3}{-24}) - (\frac{2}{9} \times \frac{27}{30})$ **OR** Find any 4 rationals between $\frac{-5}{6}$ and $\frac{-1}{3}$	3
Q27.	Solve for y: $13(y - 4) - 3(y - 9) - 5(y + 4) = 0$	3
Q28.	Find the square root of 12.25	3
Q29.	Find the least number of 4 digits which is a perfect square.	3
Q30.	Mr. Kumar invests ₹12,000 at 10% p.a. compound interest for a certain period of time. The total compound interest earned by him is ₹3,972. Find the time for which this sum in invested.	3

M3 Math Page - 3 (Set-II)

SECTION E

This section consists of 3 questions of 4 marks each.

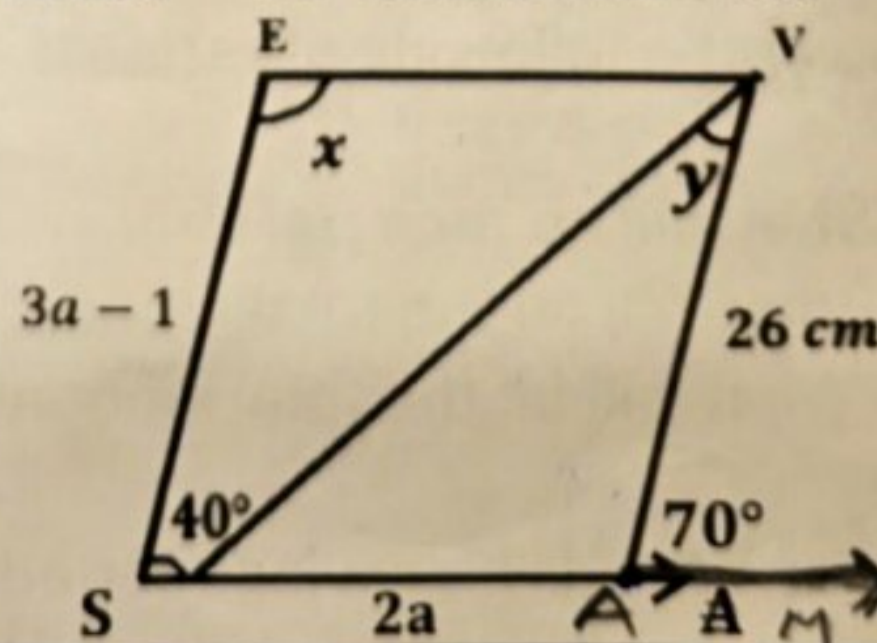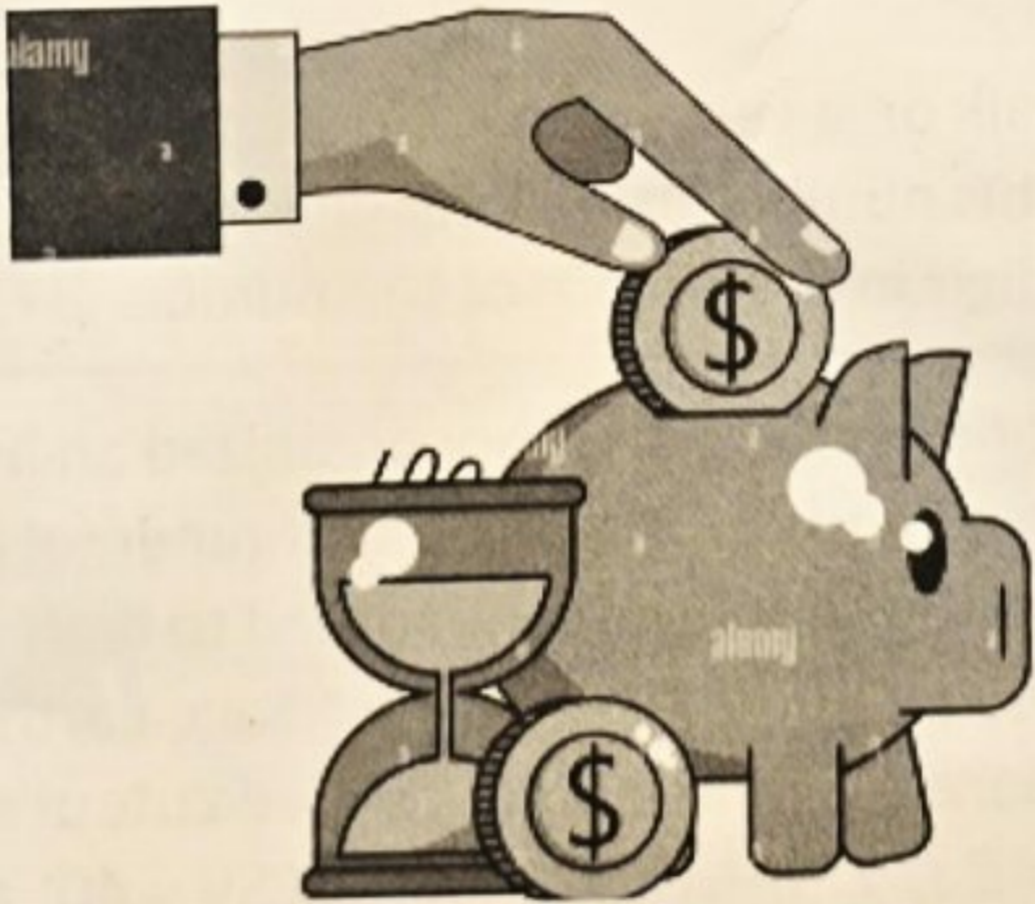|		
Q36.	Smart watches are a big innovation in the wearable industry, performing too many functions. The most common nowadays is to count the number of steps. This has a big impact on health. Garima noticed the number of steps she walked on her smart watch in the evening and found it to be 11,858. Based on the above information, answer the following questions: (i) Is the given number a perfect square? Justify, without actual calculation. (ii) If not, then what is the smallest number that should be multiplied to 11,858 to make it a perfect square? OR Rohan went for a walk on a certain day and stopped after 2809 steps. Find the square root of this number using long division. (iii) Find the one's digit in the square of the number 8719.	1+2+1
Q37.	On the World Environment day, a school organized an inter-school poster making competition, aimed at installing environmental awareness among its students. Anshika, a student of class VIII, opted to craft a visually captivating parallelogram-shaped poster on the theme " Save Earth". To achieve this, she planned to prepare a parallelogram shaped cutout such that AV = 26 cm, SE = 3a − 1 cm, SA = 2a, $\angle$VAM = 70° and $\angle$ESV = 40° as shown in the figure given below. 	1+1+2

On the basis of the above information, answer the following questions:

(i) Find the value of 'a'. (Give reason)

(ii) Write one property of the diagonals of SAVE.

(iii) Find the measures of x and y. (Give reasons)

OR

Find the perimeter of the parallelogram SAVE.

Q38.	Amit and Priya are both saving money to buy a new bike. Amit decides to deposit his savings in a bank that offers simple interest, while Priya opts for a bank that offers compound interest.	1+1+2

- **Amit's Savings:**
  - Principal Amount: ₹10,000
  - Interest Rate: 5% per annum
  - Time Period: 3 years
- **Priya's Savings:**
  - Principal Amount: ₹10,000
  - Interest Rate: 5% per annum, compounded annually
  - Time Period: 3 years

Answer the following questions:

(i) What will be the total interest earned by Amit after 3 years?

(ii) What will be the total amount in Amit's account after 3 years?

(iii) What will be the total amount in Priya's account after 3 years?

OR

If Amit extends his savings period to 5 years without changing the interest rate, what will be the amount in his bank after 5 years?