ROLL NUMBER				

SET	A

INDIAN SCHOOL MUSCAT
HALF YEARLY EXAMINATION 2023
MATHEMATICS (041/241)

CLASS: IX
DATE: 25-09-2023

TIME ALLOTED: 3 HRS.
MAXIMUM MARKS: 80

GENERAL INSTRUCTIONS:

1. This Question Paper has 5 Sections A, B, C, D and E.
2. Section A has 20 MCQs carrying 1 mark each
3. Section B has 5 questions carrying 02 marks each.
4. Section C has 6 questions carrying 03 marks each.
5. Section D has 4 questions carrying 05 marks each.
6. Section E has 3 case based integrated units of assessment (04 marks each) with sub- parts of the values of 1, 1 and 2 marks each respectively.
7. All Questions are compulsory. However, an internal choice in 2 Qs of 5 marks, 2 Qs of 3 marks and 2 Questions of 2 marks have been provided. An internal choice has been provided in the 2marks questions of Section E
8. Draw neat figures wherever required.

SECTION A (Multiple Choice Questions)
Each question carries 1 mark

1. If $\sqrt{2} = 1.41$, then $\frac{1}{\sqrt{2}}$ is 1

(a) 0.075 (b) 0.75 (c) 0.705 (d) 7.05

2. If $x = 7 + 4\sqrt{3}$,then $(x + \frac{1}{x})$ is 1

(a) $8\sqrt{3}$ (b) 14 (c) 49 (d) 48

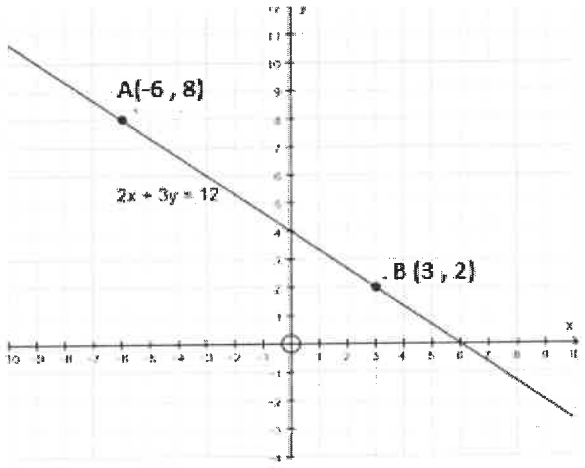
3. If $(3^3)^2 = 9^x$,then 5^x = ? 1

(a) 1 (b) 5 (c) 25 (d) 125

4. The point of the form (a, -a), $a \neq 0$ lies on 1

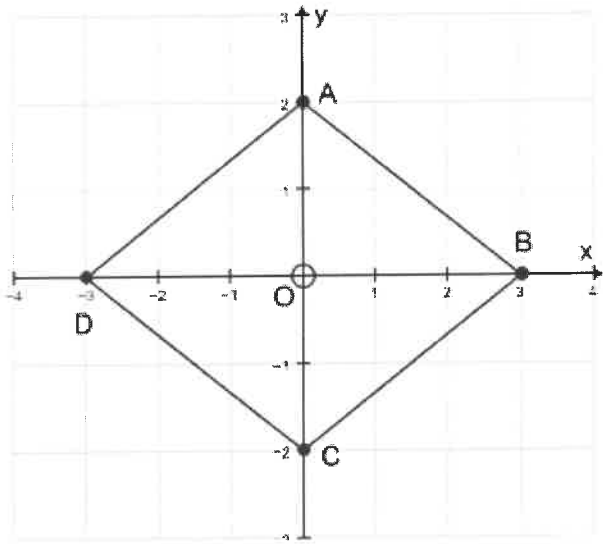
(a)the x- axis (b) the y – axis (c)the line y = x (d) the line x + y = 0

5. In the given figure the mirror image of the point A with respect to y – axis is 1



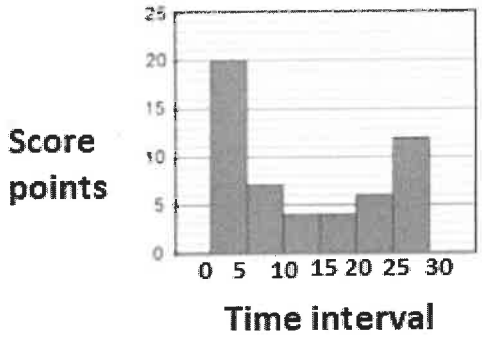
(a) (6 , -8) (b) (6,8) (c) (-6 , -8) (d)(-6, 8)

6. In the given figure, write the co-ordinates of the midpoint of the diagonal DB. 1



(a) (0,0) (b) (-1,0) (c)(0,-1) (d) (1,1)

7. From the graph identify the class marks of the time intervals whose scores are level 1



(a) 17,12.5 (b) 12,17.5 (c) 12.5,15,5 (d)12.5,17.5

8. If $x = \frac{\sqrt{7}}{5}$ and $\frac{5}{x} = p\sqrt{7}$,then the value of p is 1

(a) $\frac{7}{25}$ (b) $\frac{7}{15}$ (c) $\frac{25}{7}$ (d) $\frac{15}{7}$

9. The graph of the line y = -3 does not pass through the point 1

(a) (2,-3) (b) (3 ,-3) (c) (0 ,-3) (d) (-3 , 2)

10. In a Cartesian plane, what are the coordinates of a point P that is 3 units to the left of origin and 2 units below the origin? 1

(a) (3, 2) (b) (-3, 2) (c) (-3, -2) (d) (3, -2)

11. The value of $(x^{p-q})\,(x^{q-r})(x^{r-p})$ is equal to 1

(a) 0 (b) 1 (c) x (d) -1

12. An angle is equal to one fourth of its supplement. Find its measure? 1

(a) 60° (b) 30° (c) 18° (d) 36°

13. If the angles of a triangle are (x – 40°), (x – 20°) and ($\frac{x}{2}$ - 10°) then find the value of x. 1

(a)100° (b)80° (c) 50° (d) 60°

14. If $\Delta ABC \cong \Delta PQR$,then which of the following is not true? 1

(a) BC = PQ (b) AC = PR (c) BC = QR (d) AB = PQ

15. In ΔABC and Δ PQR, it is given that AB = AC, ∠C = ∠P and ∠B = ∠ Q. Then, the two triangles are 1

(a) isosceles but not congruent (b) isosceles and congruent

(c)congruent but not isosceles (d)neither congruent nor isosceles

16. Five friends Anchal, Amisha, Mahi, Vishnu and Sagar are living in a hostel. At the end of every month, they calculate the expenses on food and shopping. The table given below shows their monthly expenses for the month of November. Which graphical representation method would best represent the data given? 1

Name	Anchal	Amisha	Mahi	Vishnu	Sagar
Expenditure (in Rs)	3000	5000	6000	4500	7000

(a) Histogram (b) Bar graph (c) Frequency Polygon (d) None of these

17. If one angle of a triangle is equal to sum of the other two angles, then the triangle is 1

(a) isosceles (b) obtuse angled (c) equilateral (d) right angled

18. A charity surveys the people of a village for their haemoglobin counts. 25 out of 100 adult females in the village were tested. The result is given in this table. 1
A haemoglobin counts below 12 is considered deficient. What proportion of females in the survey can be considered deficient?

Haemoglobin (mg/dl) counts	5	6	7	8	9	10	11	12	13	14
No. of females	3	3	2	5	1	1	3	4	2	1

(a) $\frac{3}{25}$ (b) $\frac{4}{25}$ (c) $\frac{18}{25}$ (d) $\frac{22}{25}$

ASSERTION-REASON BASED QUESTIONS

In the following questions, a statement of assertion (A) is followed by a statement of Reason (R). Choose the correct answer out of the following choices.
(a) Both A and R are true and R is the correct explanation of A.
(b) Both A and R are true but R is not the correct explanation of A.
(c) A is true but R is false.
(d) A is false but R is true.

19. ***Assertion (A)***: $\sqrt{3}$ is an irrational number 1
Reason (R): The sum of a rational and an irrational number is an irrational n umber.

20. ***Assertion (A)***: The graph of the equation $2x + 3y = 1$ is a straight line 1
Reason (R): The equation of y – axis is $y = 0$

SECTION B

(This section comprises of very short answer type-questions (VSA) of 2 marks each)

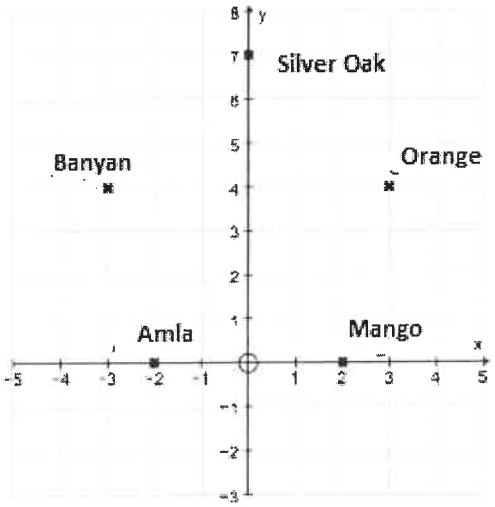
21. Write the simplified values of "m' and 'n' if $0.12\overline{3}$ is written in the form of $\frac{m}{n}$. 2

OR

If $x = 2$ and $y = 3$, then the value of $(x^y + y^x)(x^y - y^x)$

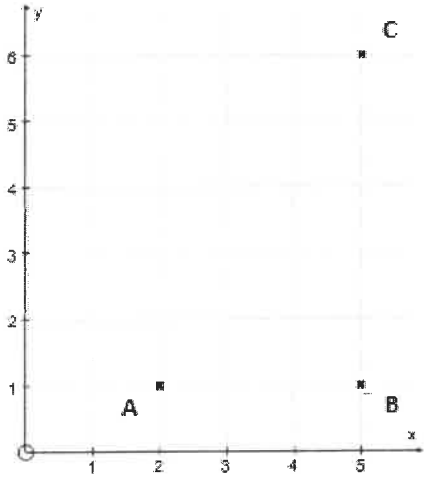
22. How many values 'k 'can have, if (2, 0) is a solution of the linear equation $2x + 3y - k = 0$? 2
Also write the value or values of 'k'.

23. Find the coordinates of location point of 'orange tree' in the given figure. Also write the distances of the locations 'silver oak tree' from x – axis and 'banyan tree' from y – axis. 2

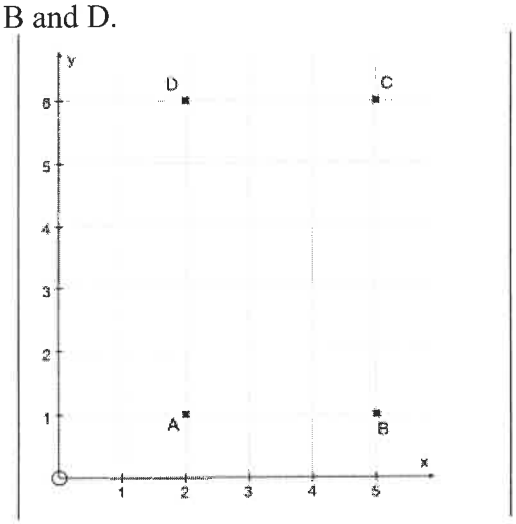


OR

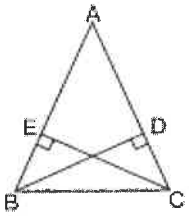
Find the area of the figure obtained by joining the points A, B and C given in the Cartesian plane below.



24. In the given figure, find (i) sum of the abscissa of the coordinates of A and C (ii) product of the ordinates of the points B and D. 2



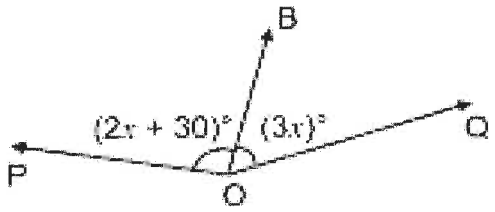
25. In the given figure, BD ⊥ AC and CE ⊥ AB. If BD = CE =3.5 cm and AB = 5 cm, then find the measure of AC. Justify your answer with proper reasons. 2



SECTION C

(This section comprises of short answer type questions (SA) of 3 marks each.

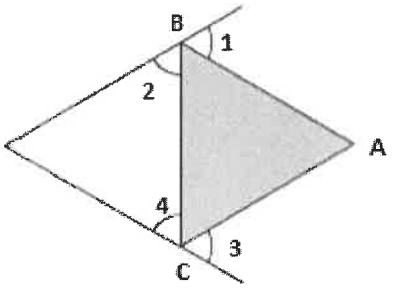
26. Find the value of **x** that will make POQ a straight line in the given figure. Give proper reason(s) for your answer. Also find the complement of angle x. 3



OR

The base BC of triangle ABC is produced both ways and the measures of exterior angles formed are 94° and 126°. Find the measure of ∠BAC.Write proper reason(s) to support the answer.

27. The figure below shows an equilateral tringle(shaded) bounded by two straight lines. What is the sum of the four marked angles? Justify your answer. 3



28. The cost of five pencils is equal to the cost of two ball point pens. Write a linear equation in two variables to represent the situation by taking the cost a pencil to be Rs. x and that of a ball point pen to be Rs.y. Also find the cost of 10 pencils, if the cost of a pen is Rs 8. 3

29. Three vertices of square ABCD are A (3,2), B (-2,2) and D (3, -3). Plot these points on a graph paper and hence find the coordinates of C. Also find the area of square ABCD. 3

30. Prove that the angles opposite to two equal sides of a triangle are equal. 3

OR

AB is a line segment and the line '*l*' is its perpendicular bisector. If a point 'P' lies on '*l*', show that 'P' is equidistant from A and B.

31. Construct a frequency polygon for the data given below. 3

Age(years)	10 - 20	20 - 30	30 - 40	40 - 50	50 - 60	60 - 70
No of Patients	90	50	60	80	50	30

SECTION D

(This section comprises of long answer-type questions (LA) of 5 marks each)

32. If $x = \frac{\sqrt{2}+1}{\sqrt{2}-1}$ and $y = \frac{\sqrt{2}-1}{\sqrt{2}+1}$, find the value of $(x^2 + y^2 + xy)$ 5

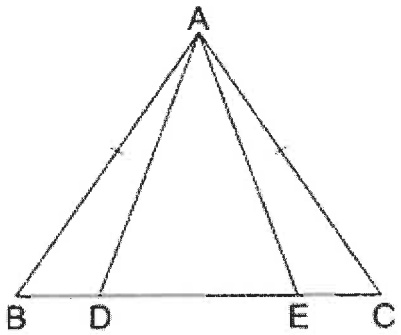
OR

If $x = 3 + 2\sqrt{2}$,check whether $x + \frac{1}{x}$ is rational or irrational. Also find the value of $x^2 - \frac{1}{x^2}$

33. (i) Evaluate: $(0.00032)^{\frac{-2}{5}}$ 5

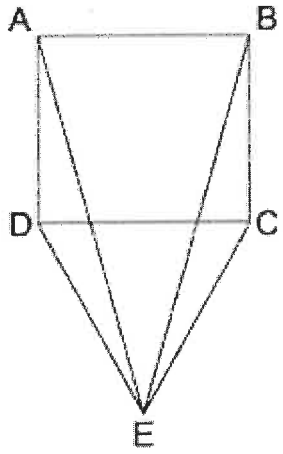
(ii) Prove that $\frac{2^{30} + 2^{29} + 2^{28}}{2^{31} + 2^{30} - 2^{29}} = \frac{7}{10}$

34. In the figure given ΔABC is isosceles with AB = AC, D and E are points on BC such that BE = CD. Show that AD =AE.Write proper reason(s) to support your answer. 5



OR

In the given figure ΔCDE is an equilateral triangle and ABCD is a square.
Is ΔADE ≅ΔBCE? Write proper reason(s) to support your answer. Also write the ratio of the area of ΔCDE to the area of square ABCD.



35. Construct a Histogram for the following data. 5

Marks	100 - 150	150 - 200	200 - 300	300 - 500	500 - 800
No of Students	60	100	100	80	180

SECTION E

(This section comprises of 3 case study/passage – based questions of 4 marks each with two sub parts. First two case study questions have 3 sub – parts (i), (ii), (iii) of marks 1,1, 2 respectively. The third case study has two sub - parts of 2 marks each.)

36. 4

The following frequency distribution data shows the weight (in grams) of 30 Apples picked from a basket. Observe the table and answer the questions given below.

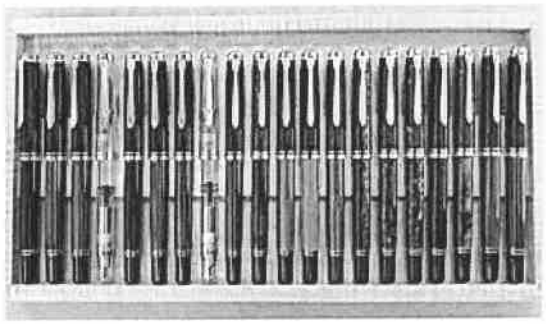
Weight (in grams)	**No of Apples**
60 - 80	3
80 - 100	10
100 - 120	9
120 - 140	5
140 - 160	1
160 - 180	0
180 - 200	1
200 - 220	1
Total	**30**

(i) Write the size of class interval in which no apple is available.
(ii) Name any one of the suitable graphical methods to represent the given data.
(iii) What is the number of apples with weight more than or equal to 120g?

OR

Write the class interval in which 100 g weight apples are included and also find its class mark.

37. Aman bought 5 notebooks and 2 pens for Rs. 120. He told to guess the cost of each notebook and pen to his friends Ajith and Ashish. Aman has given the clue that both the costs are positive integers and divisible by 5 such that the cost of a notebook is greater than that of a pen. 4



Now, Ajith and Ashish tried to guess. Ajith said that price of each notebook could be Rs. 18. Then five notebooks would cost Rs.90, the two pens would cost Rs.30 and each pen could be for Rs. 15. Ashish felt that Rs. 18 for one notebook was too little. It should be at least Rs. 20. Then the price of each pen would also be Rs.10.

(i) Form a linear equation in two variables from this situation by taking cost of one notebook as Rs. **x** and cost of one pen as Rs. y.

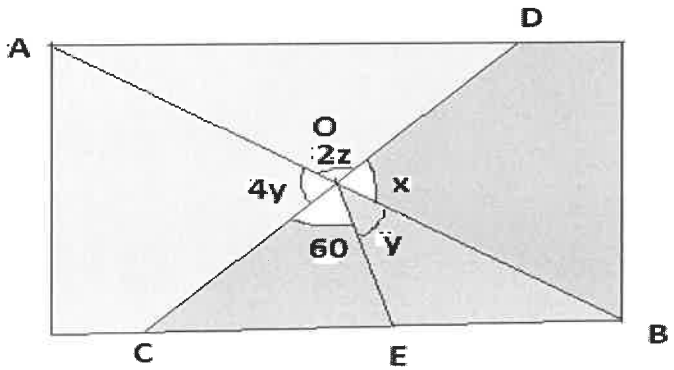
(ii) If the cost of one notebook is Rs. 25 and cost of one pen is 15, then find the total amount.

(iii) What is the standard form of the equation y = 6 as a linear equation in two variables?

OR

Geometrically what do you mean by the cost of a notebook and the cost of a pen in the given situation?

38. A plot is divided into different polygonal regions by using straight fences AB, CD and OE as shown in the figure, where O is the meeting point of all the three fences. As per the angles marked in the figure, answer the questions given below. 4



(i) What is the value of x?

(ii)What is the value of z?

(iii) What should be the value of x + 3z?

OR

Is 2y + z = 90° ? Justify.

******END OF THE QUESTION PAPER******

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8. Draw neat figures wherever required.

SECTION A (Multiple Choice Questions)
Each question carries 1 mark

1. If one angle of a triangle is equal to sum of the other two angles, then the triangle is 1

   (a) isosceles (b) obtuse angled (c) equilateral (d) right angled

2. In ΔABC and ΔPQR, it is given that $AB = AC$, $\angle C = \angle P$ and $\angle B = \angle Q$. Then, the two triangles are 1

   (a) isosceles but not congruent (b) isosceles and congruent

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3. If the angles of a triangle are $(x - 40°)$, $(x - 20°)$ and $(\frac{x}{2} - 10°)$ then find the value of x. 1

   (a)100° (b)80° (c) 50° (d) 60°

4. The value of $(x^{p-q})(x^{q-r})(x^{r-p})$ is equal to 1

(a) 0 (b) 1 (c) x (d) -1

5. The graph of the line y = -3 does not pass through the point 1

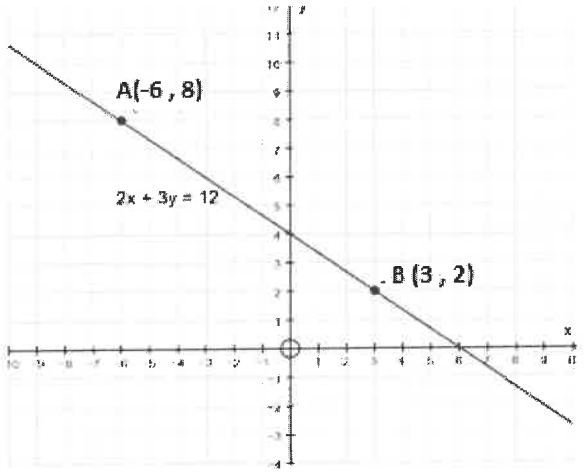
(a) (2,-3) (b) (3 ,-3) (c) (0 ,-3) (d) (-3 , 2)

6. A charity surveys the people of a village for their haemoglobin counts. 25 out of 100 adult females in the village were tested. The result is given in this table. 1
A haemoglobin counts below 12 is considered deficient. What proportion of females in the survey can be considered deficient?

Haemoglobin (mg/dl) counts	5	6	7	8	9	10	11	12	13	14
No. of females	3	3	2	5	1	1	3	4	2	1

(a) $\frac{3}{25}$ (b) $\frac{4}{25}$ (c) $\frac{18}{25}$ (d) $\frac{22}{25}$

7. In the given figure the mirror image of the point A with respect to y – axis is 1



(a) (6 , -8) (b) (6,8) (c) (-6 , -8) (d)(-6, 8)

8. If $(3^3)^2 = 9^x$,then 5^x = ? 1

(a) 1 (b) 5 (c) 25 (d) 125

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(a) 0.075 (b) 0.75 (c) 0.705 (d) 7.05

10. Five friends Anchal, Amisha, Mahi, Vishnu and Sagar are living in a hostel. At the end of every month, they calculate the expenses on food and shopping. The table given below shows their monthly expenses for the month of November. Which graphical representation method would best represent the data given? 1

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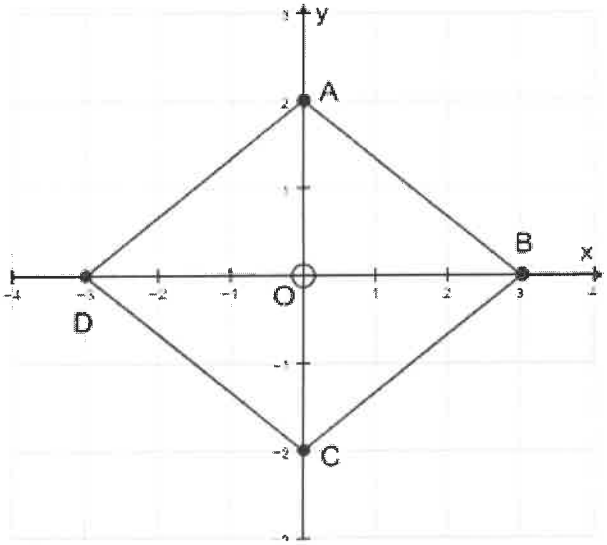
(a) $8\sqrt{3}$ (b) 14 (c) 49 (d) 48

12. The point of the form (a, -a), $a \neq 0$ lies on 1

(a)the x- axis (b) the y – axis (c)the line y = x (d) the line x + y = 0

13. In the given figure, write the co-ordinates of the midpoint of the diagonal DB. 1



(a) (0,0) (b) (-1,0) (c)(0,-1) (d) (1,1)

14. If $x = \frac{\sqrt{7}}{5}$ and $\frac{5}{x} = p\sqrt{7}$,then the value of p is 1

(a) $\frac{7}{25}$ (b) $\frac{7}{15}$ (c) $\frac{25}{7}$ (d) $\frac{15}{7}$

15. In a Cartesian plane, what are the coordinates of a point P that is 3 units to the left of origin and 2 units below the origin? 1

(a) (3, 2) (b) (-3, 2) (c) (-3, -2) (d) (3, -2)

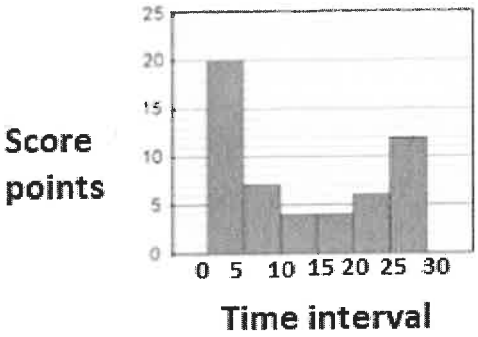
16. An angle is equal to one fourth of its supplement. Find its measure? 1

(a) 60° (b) 30° (c) 18° (d) 36°

17. If $\Delta ABC \cong \Delta PQR$,then which of the following is not true? 1

(a) BC = PQ (b) AC = PR (c) BC = QR (d) AB = PQ

18. From the graph identify the class marks of the time intervals whose scores are level 1



(a) 17,12.5 (b) 12,17.5 (c) 12.5,15,5 (d)12.5,17.5

ASSERTION-REASON BASED QUESTIONS

In the following questions, a statement of assertion (A) is followed by a statement of Reason (R). Choose the correct answer out of the following choices.

(a) Both A and R are true and R is the correct explanation of A.
(b) Both A and R are true but R is not the correct explanation of A.
(c) A is true but R is false.
(d) A is false but R is true.

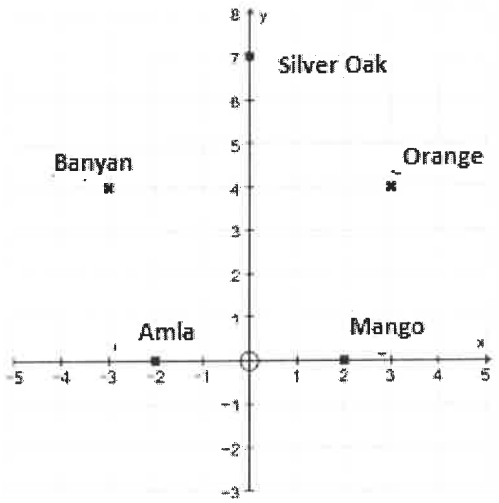
19. ***Assertion (A)***: The graph of the equation $2x + 3y = 1$ is a straight line 1
Reason (R): The equation of y – axis is $y = 0$

20. ***Assertion (A)***: $\sqrt{3}$ is an irrational number 1
Reason (R): The sum of a rational and an irrational number is an irrational n umber.

SECTION B

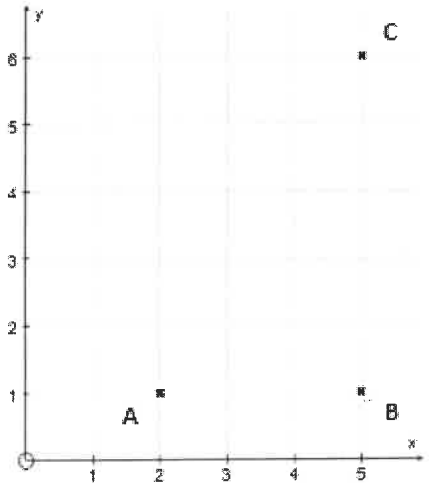
(This section comprises of very short answer type-questions (VSA) of 2 marks each)

21. Find the coordinates of location point of 'orange tree' in the given figure. Also write the distances of the locations 'silver oak tree' from x – axis and 'banyan tree' from y – axis. 2

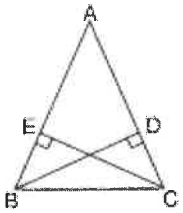


OR

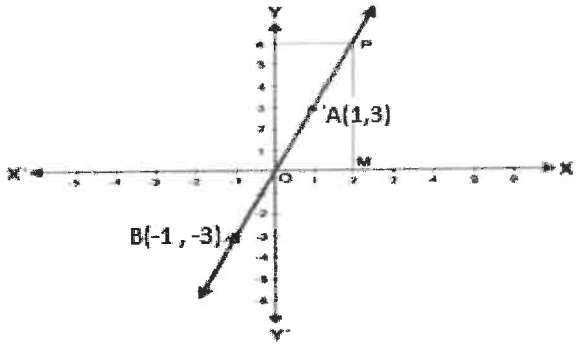
Find the area of the figure obtained by joining the points A, B and C given in the Cartesian plane below.



22. In the given figure, BD ⊥ AC and CE ⊥ AB. If BD = CE =3.5 cm and AB = 5 cm, then find the measure of AC. Justify your answer with proper reasons. 2



23. The graph of the equation y = 3x is given below. From the graph, find 2
(i)the value of y, when x = -3 (ii) the value of x, when y = 3



24. Write the simplified values of "m' and 'n' if $0.12\overline{3}$ is written in the form of $\frac{m}{n}$. 2

OR

If x = 2 and y = 3, then the value of $(x^y + y^x)(x^y - y^x)$

25. If the coordinates of a point M are (-2,9), which can also be expressed as $(1+s, t^2)$ and $t > 0$, then find the coordinates of P (2s, -3t) and Q (s^2 , 1- t). 2

SECTION C

(This section comprises of short answer type questions (SA) of 3 marks each)

26. Prove that the angles opposite to two equal sides of a triangle are equal. 3

OR

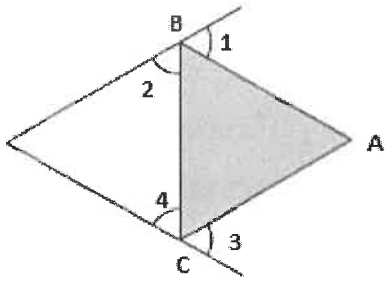
AB is a line segment and the line '*l*' is its perpendicular bisector. If a point 'P' lies on '*l*', show that 'P' is equidistant from A and B.

27. Construct a frequency polygon for the data given below. 3

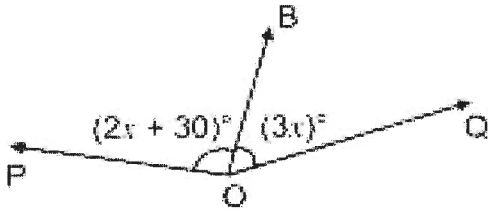
Age(years)	10 - 20	20 - 30	30 - 40	40 - 50	50 - 60	60 - 70
No of Patients	90	50	60	80	50	30

28. Ravi took a cab to go to his office. The cab fare is as follows: for the first kilometre, the fare is Rs 50 and for the subsequent distance it is Rs 10 per kilometre. Take the distance covered as x km and total fare as Rs y, form a linear equation in two variables. If Ravi covered 7 km then how much fare he has to pay? 3

29. The figure below shows an equilateral tringle(shaded) bounded by two straight lines. What is the sum of the four marked angles? Justify your answer. 3



30. Find the value of **x** that will make POQ a straight line in the given figure. Give proper reason(s) for your answer. Also find the complement of angle x. 3

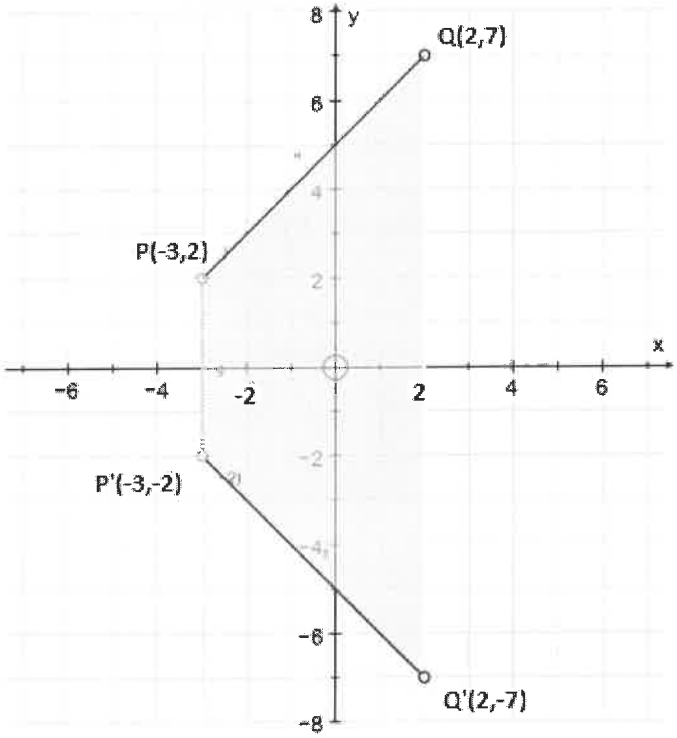


OR

The base BC of triangle ABC is produced both ways and the measures of exterior angles formed are 94° and 126°. Find the measure of ∠BAC. Write proper reason(s) to support the answer.

31. (i) What is the relationship between point P and point P' in the given graphical representation of the points? 3

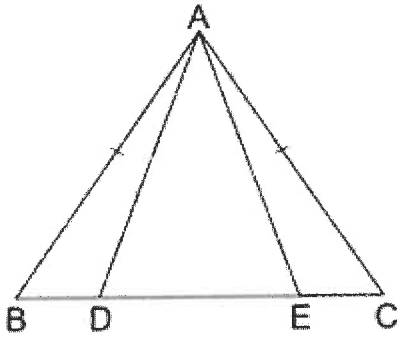
(ii) If the points P, P′, Q, Q' are four corners of a cricket practice field, name the shape of the field and hence find the area of the field in square units.



SECTION D

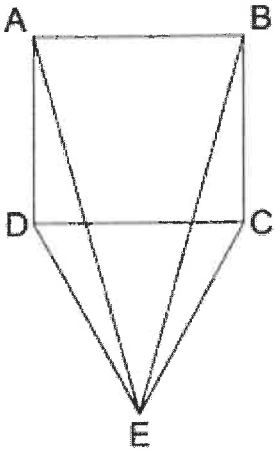
(This section comprises of long answer-type questions (LA) of 5 marks each)

32. In the figure given ΔABC is isosceles with AB = AC, D and E are points on BC such that BE = CD. Show that AD =AE. Write proper reason(s) to support your answer. 5



OR

In the given figure ΔCDE is an equilateral triangle and ABCD is a square.
Is ΔADE ≅ΔBCE? Write proper reason(s) to support your answer. Also write the ratio of the area of ΔCDE to the area of square ABCD.



33. (i) Prove that: $\frac{1}{3+\sqrt{7}} + \frac{1}{\sqrt{7}+\sqrt{5}} + \frac{1}{\sqrt{5}+\sqrt{3}} + \frac{1}{\sqrt{3}+1} = 1$ 5

(ii) Simplify: $\frac{2^{x-1}+2^{x}}{2^{x+1}-2^{x}}$

34. Construct a Histogram for the following data. 5

Age (in years)	1 - 2	2 - 3	3 - 5	5 - 7	7 - 10	10 - 15	15 - 17
No of children	5	3	6	12	9	10	4

35. If $x = \frac{\sqrt{2}+1}{\sqrt{2}-1}$ and $y = \frac{\sqrt{2}-1}{\sqrt{2}+1}$, find the value of $(x^2 + y^2 + xy)$ 5

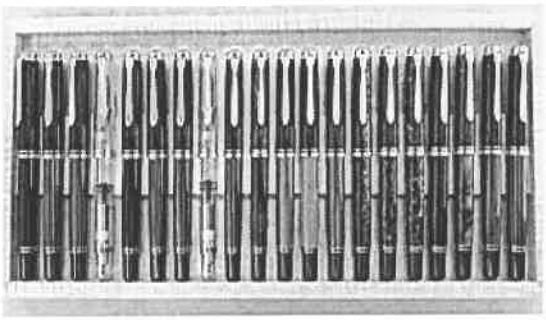
OR

If $x = 3 + 2\sqrt{2}$,check whether $x + \frac{1}{x}$ is rational or irrational. Also find the value of $x^2 - \frac{1}{x^2}$

SECTION E

(This section comprises of 3 case study/passage – based questions of 4 marks each with two sub parts. First two case study questions have 3 sub – parts (i), (ii), (iii) of marks 1,1, 2 respectively. The third case study has two sub - parts of 2 marks each.)

36. Aman bought 5 notebooks and 2 pens for Rs. 120. He told to guess the cost of each notebook and pen to his friends Ajith and Ashish. Aman has given the clue that both the costs are positive integers and divisible by 5 such that the cost of a notebook is greater than that of a pen. 4



Now, Ajith and Ashish tried to guess. Ajith said that price of each notebook could be Rs. 18. Then five notebooks would cost Rs.90, the two pens would cost Rs.30 and each pen could be for Rs. 15. Ashish felt that Rs. 18 for one notebook was too little. It should be at least Rs. 20. Then the price of each pen would also be Rs.10.

(i) Form a linear equation in two variables from this situation by taking cost of one notebook as Rs. **x** and cost of one pen as Rs. y.

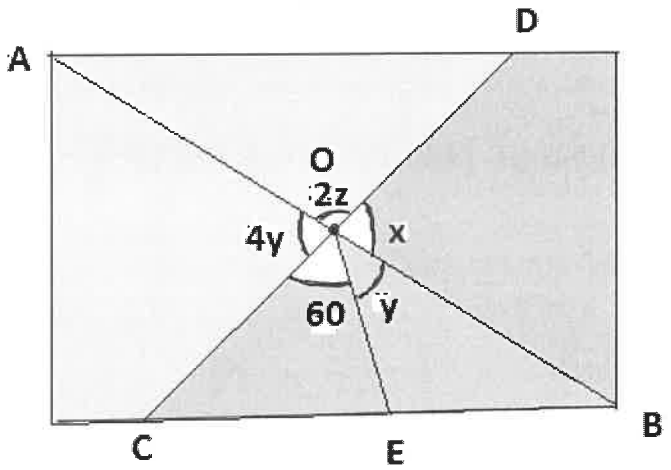
(ii) If the cost of one notebook is Rs. 25 and cost of one pen is 15, then find the total amount.

(iii) What is the standard form of y = 6 as a linear equation in two variables?

OR

Geometrically what do you mean by the cost of a notebook and the cost of a pen in the given situation?

37. A plot is divided into different polygonal regions by using straight fences AB, CD and OE as shown in the figure, where O is the meeting point of all the three fences. As per the angles marked in the figure, answer the questions given below. 4



(i) What is the value of x?
(ii)What is the value of z?
(iii) What should be the value of x + 3z?

OR

Is $2y + z = 90°$? Justify.

38. 4

The following frequency distribution data shows the weight (in grams) of 30 Apples picked from a basket. Observe the table and answer the questions given below.

Weight (in grams)	No of Apples
60 - 80	3
80 - 100	10
100 - 120	9
120 - 140	5
140 - 160	1
160 - 180	0
180 - 200	1
200 - 220	1
Total	**30**

(i) Write the size of class interval in which no apple is available.
(ii)Name any one of the suitable graphical methods to represent the given data.
(iii) What is the number of apples with weight more than or equal to 120g?

OR

Write the class interval in which 100 g weight apples are included and also find its class mark.

******END OF THE QUESTION PAPER******

ROLL NUMBER				

SET	C

INDIAN SCHOOL MUSCAT
HALF YEARLY EXAMINATION 2023
MATHEMATICS-(041/241)

CLASS : IX
DATE: 25-09-2023

TIME ALLOTED : 3 HRS.
MAXIMUM MARKS: 80

GENERAL INSTRUCTIONS:

1. This Question Paper has 5 Sections A, B, C, D and E.
2. Section A has 20 MCQs carrying 1 mark each
3. Section B has 5 questions carrying 02 marks each.
4. Section C has 6 questions carrying 03 marks each.
5. Section D has 4 questions carrying 05 marks each.
6. Section E has 3 case based integrated units of assessment (04 marks each) with sub- parts of the values of 1, 1 and 2 marks each respectively.
7. All Questions are compulsory. However, an internal choice in 2 Qs of 5 marks, 2 Qs of 3 marks and 2 Questions of 2 marks have been provided. An internal choice has been provided in the 2marks questions of Section E
8. Draw neat figures wherever required.

SECTION A (Multiple Choice Questions)
Each question carries 1 mark

1. Five friends Anchal, Amisha, Mahi, Vishnu and Sagar are living in a hostel. At the end of every month, they calculate the expenses on food and shopping. The table given below shows their monthly expenses for the month of November. Which graphical representation method would best represent the data given? 1

Name	Anchal	Amisha	Mahi	Vishnu	Sagar
Expenditure (in Rs)	3000	5000	6000	4500	7000

(a) Histogram (b) Bar graph (c) Frequency Polygon (d) None of these

2. If $\Delta ABC \cong \Delta PQR$,then which of the following is not true? 1

(a) BC = PQ (b) AC = PR (c) BC = QR (d) AB = PQ

3. An angle is equal to one fourth of its supplement. Find its measure? 1

(a) 60° (b) 30° (c) 18° (d) 36°

4. In a Cartesian plane, what are the coordinates of a point P that is 3 units to the left of origin and 2 units below the origin? 1

(a) (3, 2) (b) (-3, 2) (c) (-3, -2) (d) (3, -2)

5. If $x = \frac{\sqrt{7}}{5}$ and $\frac{5}{x} = p\sqrt{7}$,then the value of p is 1

(a) $\frac{7}{25}$ (b) $\frac{7}{15}$ (c) $\frac{25}{7}$ (d) $\frac{15}{7}$

6. If one angle of a triangle is equal to sum of the other two angles, then the triangle is 1

(a) isosceles (b) obtuse angled (c) equilateral (d) right angled

7. The graph of the line y = -3 does not pass through the point 1

(a) (2,-3) (b) (3 ,-3) (c) (0 ,-3) (d) (-3 , 2)

8. The point of the form (a, -a), $a \neq 0$ lies on 1

(a)the x- axis (b) the y – axis (c)the line y = x (d) the line x + y = 0

9. If $x = 7 + 4\sqrt{3}$,then $(x + \frac{1}{x})$ is 1

(a) $8\sqrt{3}$ (b) 14 (c) 49 (d) 48

10. A charity surveys the people of a village for their haemoglobin counts. 25 out of 100 adult females in the village were tested. The result is given in this table. 1
A haemoglobin counts below 12 is considered deficient. What proportion of females in the survey can be considered deficient?

Haemoglobin (mg/dl) counts	5	6	7	8	9	10	11	12	13	14
No. of females	3	3	2	5	1	1	3	4	2	1

(a) $\frac{3}{25}$ (b) $\frac{4}{25}$ (c) $\frac{18}{25}$ (d) $\frac{22}{25}$

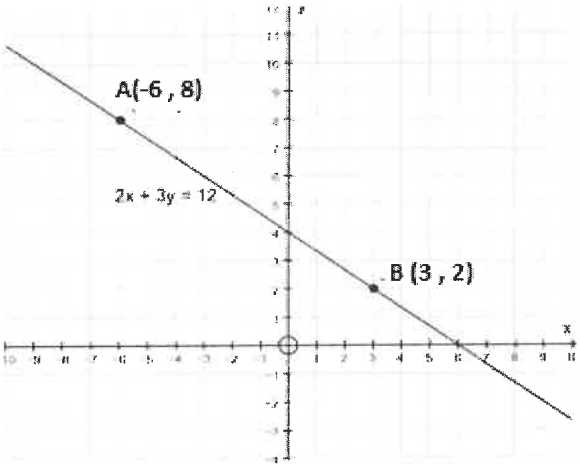
11. If $\sqrt{2} = 1.41$, then $\frac{1}{\sqrt{2}}$ is 1

(a) 0.075 (b) 0.75 (c) 0.705 (d) 7.05

12. If $(3^3)^2 = 9^x$,then $5^x = ?$ 1

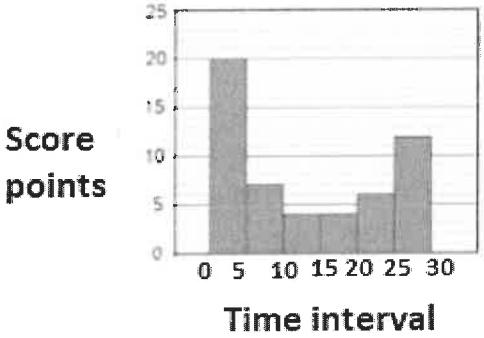
(a) 1 (b) 5 (c) 25 (d) 125

13. In the given figure the mirror image of the point A with respect to y – axis is 1



(a) (6 , -8) (b) (6,8) (c) (-6 , -8) _ (d)(-6, 8)

14. From the graph identify the class marks of the time intervals whose scores are level 1



(a) 17,12.5 (b) 12,17.5 (c) 12.5,15,5 (d)12.5,17.5

15. The value of $x^{p-q} . x^{q-r} . x^{r-p}$ is equal to 1

(a) 0 (b) 1 (c) x (d) -1

16. If the angles of a triangle are (x – 40°), (x – 20°) and ($\frac{x}{2}$ - 10°) then find the value of x. 1

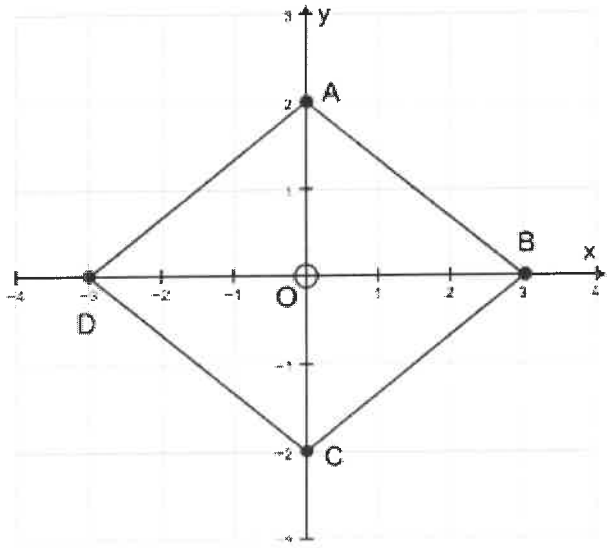
(a)100° (b)80° (c) 50° (d) 60°

17. In ΔABC and Δ PQR, it is given that AB = AC, ∠C = ∠P and ∠B = ∠ Q. Then, the two triangles are 1

(a) isosceles but not congruent (b) isosceles and congruent

(c)congruent but not isosceles (d)neither congruent nor isosceles

18. In the given figure, write the co-ordinates of the midpoint of the diagonal DB. 1



(a) (0,0) (b) (-1,0) (c)(0,-1) (d) (1,1)

ASSERTION-REASON BASED QUESTIONS

In the following questions, a statement of assertion (A) is followed by a statement of Reason (R). Choose the correct answer out of the following choices.
(a) Both A and R are true and R is the correct explanation of A.
(b) Both A and R are true but R is not the correct explanation of A.
(c) A is true but R is false.
(d) A is false but R is true.

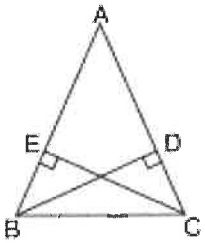
19. ***Assertion (A):*** $\sqrt{3}$ is an irrational number 1
Reason (R): The sum of a rational and an irrational number is an irrational n umber.

20. ***Assertion (A):*** The graph of the equation $2x + 3y = 1$ is a straight line 1
Reason (R): The equation of y – axis is $y = 0$

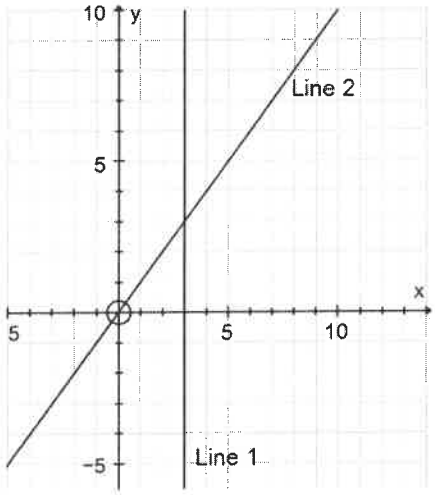
SECTION B

(This section comprises of very short answer type-questions (VSA) of 2 marks each)

21. In the given figure, BD ⊥ AC and CE ⊥ AB. If BD = CE =3.5 cm and AB = 5 cm, then find the measure of AC. Justify your answer with proper reasons. 2

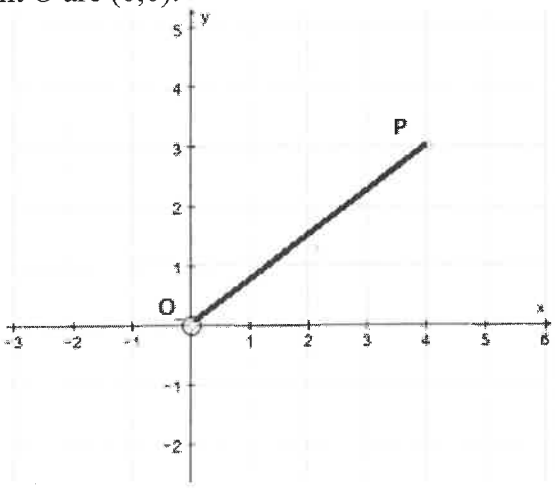


22. 2



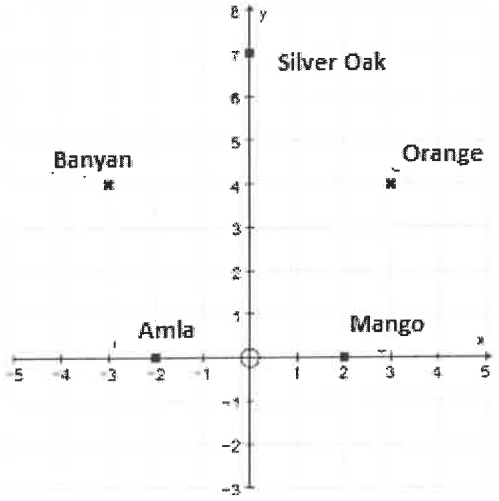
In the given figure
(i) What is the equation of line 1?
(ii) What is the equation of line 2?

23. In a Cartesian plane a child is standing at certain point P and his mother is standing at a point O. The coordinates of point O are (0,0). 2



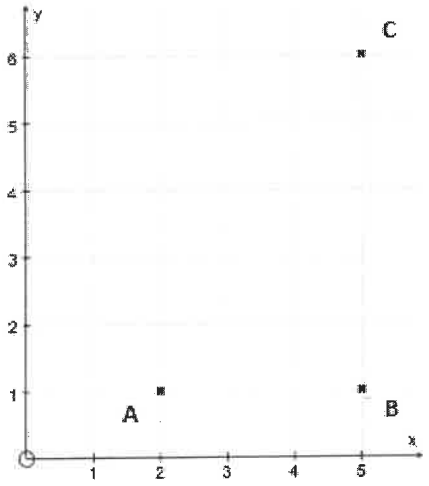
What is the distance between the child and his mother?

24. Find the coordinates of location point of 'orange tree' in the given figure. Also write the distances of the locations 'silver oak tree' from x – axis and 'banyan tree' from y – axis. 2



OR

Find the area of the figure obtained by joining the points A, B and C given in the Cartesian plane below.



25. Write the simplified values of "m' and 'n' if $0.12\overline{3}$ is written in the form of $\frac{m}{n}$ 2

OR

If x = 2 and y = 3, then the value of $(x^y + y^x)(x^y - y^x)$

SECTION C

(This section comprises of short answer type questions (SA) of 3 marks each)

26. Prove that the angles opposite to two equal sides of a triangle are equal. 3

OR

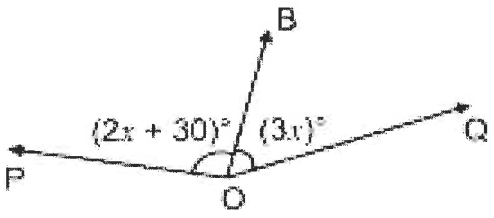
AB is a line segment and the line '*l*' is its perpendicular bisector. If a point 'P' lies on '*l*', show that 'P' is equidistant from A and B.

27. The cost of book (x) exceeds twice the cost of pen (y) by 10 rupees. Express this statement as a linear equation in two variables. Also write the equation of two lines passing through the point (2,3). 3

28. Construct a frequency polygon for the data given below. 3

Age(years)	10 - 20	20 - 30	30 - 40	40 - 50	50 - 60	60 - 70
No of Patients	90	50	60	80	50	30

29. Find the value of **x** that will make POQ a straight line in the given figure. Give proper reason(s) for your answer. Also find the complement of angle x. 3



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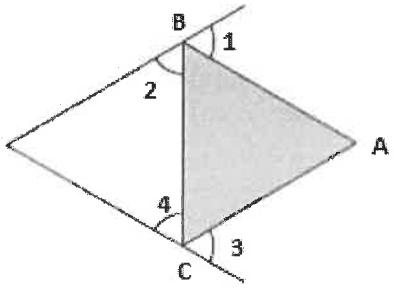

31. Three vertices of square ABCD are A (3,2), B (-2,2) and D (3, -3). Plot these points on a graph paper and hence find the coordinates of C. Also find the area of square ABCD. 3

SECTION D

(This section comprises of long answer-type questions (LA) of 5 marks each)

32. Draw a Histogram to represent the following data. 5

Class interval	10 - 14	14 - 20	20 - 32	32 - 52	52 - 80
Frequency	5	6	9	25	21

33. If $x = \frac{\sqrt{2}+1}{\sqrt{2}-1}$ and $y = \frac{\sqrt{2}-1}{\sqrt{2}+1}$, find the value of $(x^2 + y^2 + xy)$ 5

OR

If $x = 3 + 2\sqrt{2}$,check whether $x + \frac{1}{x}$ is rational or irrational. Also find the value of $x^2 - \frac{1}{x^2}$

34. (i) Evaluate: $(0.00032)^{\frac{-2}{5}}$ 5

(ii) Prove that: $\frac{1}{3+\sqrt{7}} + \frac{1}{\sqrt{7}+\sqrt{5}} + \frac{1}{\sqrt{5}+\sqrt{3}} + \frac{1}{\sqrt{3}+1} = 1$

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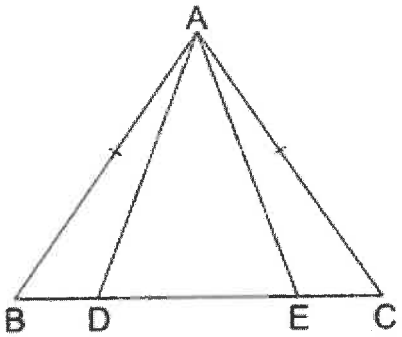

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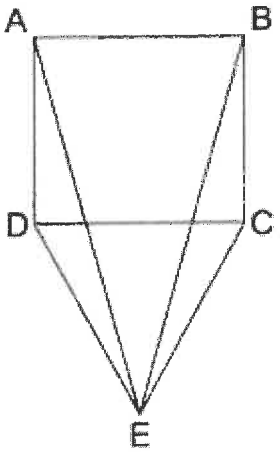

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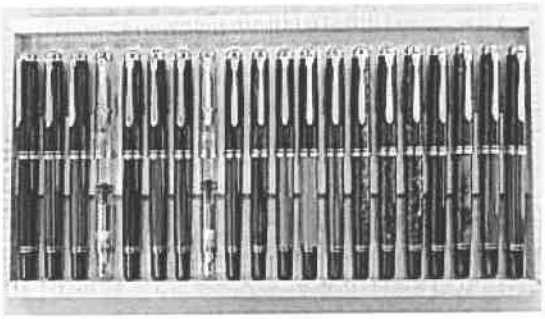

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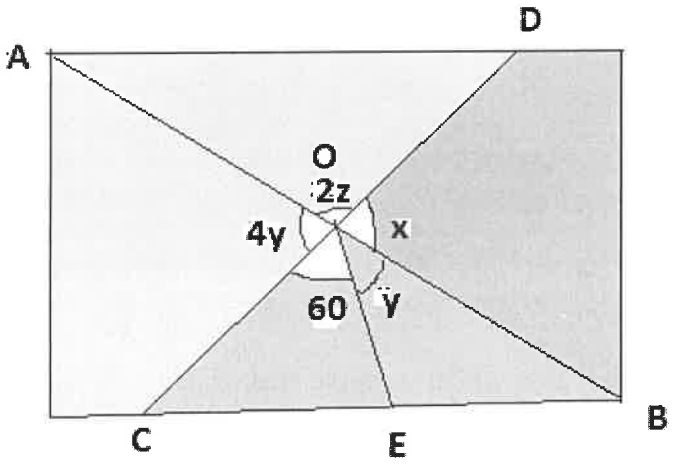

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OR

Is 2y + z = 90° ? Justify.

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******END OF THE QUESTION PAPER******