Grade 10
Unit 07

Maths

Course Outline

- Coordinate Geometry
- Probability

MAT
(Monthly Achievement Tests)

Short Code: 447311

Test ID: NMM10U070

SOUVENIR INFOTECH

Guide Lines

1. Each set consists of:

   50 | Warm-up/Foundation Questions

   30 | Regular Questions

   20 | Thinking Ability Questions

2. The time allocation and instructions regarding the questions are printed clearly in the beginning of each question types. The answers should be written or tick marked as per the instructions given. It is suggested to use pencil initially, so as to enable you to reuse the practice papers.

3. **According to the new pattern of CBSE these practice papers will be very useful especially for syllabus related Quiz, Debates, Visuals related checking and Orals etc.,**

4. After marking the answers, the scores of students can be checked and for marks obtained guidelines are given along with the question solving instructions. Follow those instructions and if, you are fully satisfied with your performance then check for your expected grades as per the CBSE guidelines as given on the back of each set.

5. Remember that this is only a guideline not the finally worked out result. You can further improve your performance by increase your practice.

6. For your convenience please follow following essential examiner's advices:

   a. Answer all the questions
   b. Read all the Options carefully
   c. Understand and use correct scientific language in your responses.

We from SOUVENIR INFOTECH **wish skillful learning for your bright future.**

Before going for the test, look at least :

1. First of all go through the syllabus of the test according to the **Course Outline** provided at the front page of each MAT.
2. After going through the syllabus once or twice or even more time as per your satisfaction, first of all do the Warm-up questions. If you score A+ grade in those 50 questions go to the next level otherwise go through the chapter again.
3. The box for **Specific Information** is very useful as it adds to your concept building. Try to fill specific information in the proper way so that you will get the maximum benefit of it.
4. **Let's Chat** portion will help you to prepare for oral assessment. Through this you can increase your capacity to interact on a particular topic related to your syllabus.
5. The **Extra Diet** portion is also there to enhance you knowledge through visulization of concept. This portion provides you added knowledge on various related concepts.
6. The information related to time factor is there to enhance your time management skills.
7. From the examiners point of view it is always advised to use Pencil for initial efforts. The use of pen is fruitful only when the final effort comes.

Examiner's Tips:

- Read the question carefully. Make sure you understand exactly what is required.
- If you find that you are unable to do a part of a question, do not give up. The next part may be easier and may provide a clue to what you might have done in the part you found difficult.
- Note the number of marks per question as guide to the depth of response needed.
- Underline or note the key words that tell you what is required.
- Underline or note data as you read the question.
- Structure your answer carefully.
- Show all steps in calculations. Include equations you use and show the substitution of data. remember to work according to units given.
- Make sure that your answers contain suitable significant figures (wherever necessary) and must include units in numericals.
- Draw diagrams and graphs carefully.
- Read data from graphs carefully; note scales and prefixes on axes.
- Keep your eye on the clock but don't panic.
- If you have time at the end, use it. Check that your descriptions and explanations make sense. Consider whether there is anything you could add to an explanation or description. Repeat calculations to ensure that you have not made a mistake.

50 Warm-up/Foundation Questions

Opening Window

To enlighten your fundamental/basic topic knowledge.

A+. If you score 45 or above marks, move to the next section confidently.

A. If you score between 40 and 45 marks, it is satisfactory. Bit more knowledge will bring excellent result.

B. If you score below 40, kindly go through the topic more seriously.

Section A (50 marks) **Time given – 50 minutes + 5 minutes for revision**

Questions 1 to 50 carry 1 mark each.

For questions 1 to 20 four options are given one of them is the correct answer make your choice and write its name (a, b, c or d) in the answer box provided.

1. Name the triangle formed by the points (3, 2), (–2, –3) and (2, 3).

(a) right triangle (b) isosceles

(c) right isosceles triangle (d) none of these

T – 1 min
S – Coordinate geometry

Ans.

2. Find the value of k for which the distance between the points $A(k, -5)$ and $B(2, 7)$ is 13 units.

(a) –7 (b) 2

(c) 7 (d) –4

T – 1 min
S – Coordinate geometry

Ans.

3. If the points $A(2, 3)$, $B(5, k)$ and $C(6, 7)$ are collinear, then the value of k is

(a) 4 (b) 6

(c) –3/2 (d) 11/4

T – 1 min
S – Coordinate geometry

Ans.

4. x-axis divides the join of $A(2, -3)$ and $B(5, 6)$ in the ratio

(a) 1 : 2 (b) 2 : 1

(c) 3 : 5 (d) 2 : 3

T – 1 min
S – Coordinate geometry

Ans.

5. The distance between the points $A(2,-3)$ and $B(2,2)$ is

(a) 2 units (b) 3 units

(c) 4 units (d) 5 units

T – 1 min
S – Coordinate geometry

Ans.

6. The points $A(0,-2), B(3,1), C(0,4)$ and $D(-3,1)$ are the vertices of a

(a) parallelogram (b) rectangle

(c) square (d) rhombus

T – 1 min
S – Coordinate geometry

Ans.

7. y-axis divides the join of $p(-4,2)$ and $Q(8,3)$ in the ratio

(a) 3 : 1 (b) 1 : 3

(c) 2 : 1 (d) 1 : 2

T – 1 min
S – Coordinate geometry

Ans.

8. We throw a die once, what is the probability of getting a number less than or equal to 5?

(a) 2/3 (b) 5/6

(c) 4/6 (d) 1/6

T – 1 min
S – Probability

Ans.

9. The probability that it will not rain tomorrow is $0 \cdot 7$. What is the probability that it will rain tomorrow?

(a) $0 \cdot 3$ (b) 1

(c) 0 (d) $\cdot 7$

T – 1 min
S – Probability

Ans.

10. Tickets are numbered from 1 to 25 are mixed together and then a ticket is drawn at random. What is the probability that the ticket has a number which is a multiple of 4 or 7?

(a) 2/5 (b) 4/5

(c) 9/25 (d) none of these

T – 1 min
S – Probability

Ans.

11. A bag contains 3 white, 4 red and 5 black balls. One ball is drawn at random. What is the probability that the ball drawn is neither black nor white?

(a) 1/4 (b) 1/2

(c) 1/3 (d) 3/4

T – 1 min
S – Probability

Ans.

12. What is the probability that an ordinary year has 53 Mondays ?

(a) 2/4 (b) 1/7

(c) 7/53 (d) 7/52

T – 1 min
S – Probability

Ans.

13. One card is drawn at random from a well shuff deck of 52 cards. What is the probability of drawing a king?

(a) 4/13 (b) 1/13

(c) 2/13 (d) 3/13

T – 1 min
S – Probability

Ans.

14. Two cubes have their volumes in the ratio 1 : 27. The ratio of their surface area is

(a) 1 : 3 (b) 1 : 8

(c) 1 : 9 (d) 1 : 18

T – 1 min
S – Probability

Ans.

15. We throw a dice once, what is the probability of getting a number less than or equal to 5?

(a) 2/3 (b) 5/6

(c) 4/6 (d) 1/6

T – 1 min
S – Probability

Ans.

16. A bag contains 8 white, 3 red and 4 black balls. One ball is drawn at random. What is the probability that the ball drawn is red ?

(a) 1/4 (b) 1/8

(c) 1/5 (d) 3/4

T – 1 min
S – Probability

Ans.

17. What is the probability of an impossible event?

(a) 0 (b) 1

(c) 1/2 (d) None of these

T – 1 min
S – Probability

Ans.

18. One card is drawn at random from a well-shuffled deck of 52 cards. What is the probability of drawing a queen of red cards?

(a) $\frac{1}{13}$ (b) $\frac{2}{13}$

(c) $\frac{1}{26}$ (d) $\frac{3}{13}$

T – 1 min
S – Probability

Ans.

19. In a throw of a dice, the probability of getting 4 is

(a) $\frac{2}{3}$ (b) $\frac{1}{6}$

(c) $\frac{1}{3}$ (d) $\frac{5}{6}$

T – 1 min
S – Probability

Ans.

20. What is the probability of a sure event?

(a) 1/2 (b) 0

(c) 1 (d) None of these

T – 1 min
S – Probability

Ans.

Fill in the blanks

21. _____ is called distance formula.

T – 1 min
S – Coordinate geometry

Ans.

22. The distance of a point $P(x, y)$ from the origin is _____.

T – 1 min
S – Coordinate geometry

Ans.

23. The points $A(0,6)$, $B(-5,3)$ and $C(3,1)$ are the vertices of a triangle which is _____.

T – 1 min
S – Coordinate geometry

Ans.

24. (2, –4) lie in the ____ quadrant.

T – 1 min
S – Coordinate geometry

Ans.

25. The probability of an sure event is _____.

T – 1 min
S – Probability

Ans.

26. The probability of an event E is a number $P(E)$ such that _____ .

T – 1 min
S – Probability

Ans.

27. The sum of the probabilities of all the elementary events of an experiment is ____.

T – 1 min
S – Probability

Ans.

28. (–4, –4) lie in the _____quadrant.

T – 1 min
S – Coordinate geometry

Ans.

29. The probability of an event E is a number $P(E)$ such that _____ .

T – 1 min
S – Probability

Ans.

30. An action which results in some outcomes is called an _____.

T – 1 min
S – Probability

Ans.

True or False

31. Coordinate geometry has been developed as an algebraic tool for studying geometry of figures.

T – 1 min
S – Coordinate geometry

Ans.

32. The distance of a point $p(x, y)$ from the origin is $\sqrt{x^2 + y^2}$.

T – 1 min
S – Coordinate geometry

Ans.

33. Distance formula $= \sqrt{(x_2 - x_1)^2}$.

T – 1 min
S – Coordinate geometry

Ans.

34. An event having only one out come is called impossible event.

T – 1 min
S – Probability

Ans.

35. $P(E)+P(\bar{E})=1$

T – 1 min
S – Probability

Ans.

36. The measure which takes into account all the data items is mean.

T – 1 min
S – Probability

Ans.

37. $(-1,2)$ lie in second quadrant.

T – 1 min
S – Coordinate geometry

Ans.

38. The probability of an event which is sure to occur is 0.

T – 1 min
S – Probability

Ans.

39. The probability of a sure event is 1.

T – 1 min
S – Probability

Ans.

40. The probability of an event which is sure to occur is 0.

T – 1 min
S – Probability

Ans.

Simple Questions

41. Find the centroid of ΔABC whose vertices are $A(-3,0), B(5,-2)$ and $C(-8,5)$.

T – 1 min
S – Coordinate geometry

Ans.

42. Find the coordinates of the midpoint of the line segment joining the point $A(-5,4)$ and $B(7,-8)$.

T	– 1 min
S	– Coordinate geometry

Ans.

43. Prove that the point $A(1,1)$, $B(-2,7)$ and $C(3,-3)$ are collinear.

T	– 1 min
S	– Coordinate geometry

Ans.

44. Find the value of p for which the points $(1, p)$ and $(4, -2)$ are collinear.

T	– 1 min
S	– Coordinate geometry

Ans.

45. One card is drawn at random from a well shuffled pack of 52 cards. What is the probability that the card drawn is either a red cord or a king ?

T	– 1 min
S	– Probability

Ans.

46. A die is thrown once. What is the probability of getting a prime number ?

T – 1 min
S – Probability

Ans.

47. Two coins are tossed simultaneously, what is the probability of getting at least one head ?

T – 1 min
S – Probability

Ans.

For questions 48-50. A card is drawn at random from a well-shuffled deck of 52 cards. Find the probability that the card drawn is:

48. A king or a jack.

T – 1 min
S – Probability

Ans.

49. A non-ace.

T – 1 min
S – Probability

Ans.

50. Neither a king nor a queen.

T – 1 min
S – Probability

Ans.

30 Regular Questions

Opening Window

To enlighten your regular knowledge of topic. If you score more than 55 marks here, you have achieved this level brilliantly. Move to the next level of test papers.

Section B (60 marks) **Time given – 45 minutes + 5 minutes for revision**

Questions 51 to 80 carry 2 marks each.

51. Find the distance between the points $A(7, 13)$ and $B(10, 9)$.

T – 1 min
S – Coordinate geometry

Ans.

52. If the point $P(x, y)$ is equidistant from the points $A(5, 1)$ and $B(-1, 5)$, prove that $3x = 2y$.

T – 1 min
S – Coordinate geometry

Ans.

53. Find a point on the x-axis which is equidistant from the point (7, 6) and $(-3, 4)$.

T – 1 min
S – Coordinate geometry

Ans.

54. Show that the points $A(a, b+c), B(b, c+a)$ and $C(c, a+b)$ are collinear.

T	– 1 min
S	– Coordinate geometry

Ans.

55. Find the lengths of the medians of a ΔABC whose vertices are $A(7, -3)$, $B(5, 3)$ and $C(3, -1)$.

T	– 1 min
S	– Coordinate geometry

Ans.

56. Find a point on the y-axis, each of which is at a distance of 13 units from the point $(-5, 7)$.

T	– 1 min
S	– Coordinate geometry

Ans.

57. Find the ratio in which the point $P(m, b)$ divides the join of $A(-4, 3)$ and $B(2, 8)$ Also, find the value of m.

T	– 1 min
S	– Coordinate geometry

Ans.

58. Find the area of the triangle whose vertices are $A(2, 7)$ $B(3, -1)$ and $C(-5, 6)$.

T	– 1 min
S	– Coordinate geometry

Ans.

59. Show that the points $A(-1, 1)$ $B(5, 7)$ and $C(8, 10)$ are collinear.

T	– 1 min
S	– Coordinate geometry

Ans.

60. Two vertices of a ΔABC are given by $A(6,4)$ and $B(-2,2)$ and centroid is $G(3,4)$. Find the coordinates of the third of the vertex C of ΔABC.

T	– 1 min
S	– Coordinate geometry

Ans.

61. Find the value of k for which the area formed by the triangle with vertices $A(k,2k)$ $B(-2,6)$ and $C(3,1)$ is 5 square units.

T	– 1 min
S	– Coordinate geometry

Ans.

62. Find the ratio in which the line $2x + y - 4 = 0$ divides the line segment joining $A(2,-2)$ and $B(3,7)$.

T	– 1 min
S	– Coordinate geometry

Ans.

63. There are 35 students in a class of whom 20 are boys and 15 are girls from these students one is chosen at random. What is the probability that the chosen student is a (i) boy (ii) girl?

T – 1 min
S – Probability

Ans.

64. What is the probability that an ordinary year has 53 sundays?

T – 1 min
S – Probability

Ans.

Q.65 to Q.67. A bag contains 7 black, 5 red and 3 white balls. A ball is drawn at random from the bag.

65. The probability that the drawn ball is red or white.

T – 3 min
S – Probability

Ans.

66. The probability that the drawn ball is not black.

Ans.

67. The probability that the drawn ball is neither white nor black.

Ans.

Q.68 to Q.69 Find the probability that a number selected at random from the numbers 1, 2, 3, 4, 5 ..., 34, 35 is.

68. Prime numbers

T – 3 min
S – Probability

Ans.

69. Multiples of 7.

Ans.

Q.70-Q.72 A bag contains 7 black, 5 red and 3 white balls. A ball is drawn at random from the bag. What is

70. the probability that the drawn ball is red or white ?

T – 4 min
S – Probability

Ans.

71. the probability that the drawn ball is not black ?

Ans.

72. the probability that the drawn ball is neither white nor black ?

Ans.

Q.73 to Q.74 Find the probability that a number selected at random from the numbers 1, 2, 3, 4, 5 ..., 34, 35 is a

73. Prime number.

T – 4 min
S – Probability

Ans.

74. Multiple of 7.

Ans.

75. A bag contains 5 red balls, 8 white balls 4 green balls and 7 black balls. A ball is drawn at random from the bag. Find the probability that it is not green.

T – 2 min
S – Probability

Ans.

For questions, 76-78. A dice is thrown once. What is the probability that it shows

76. 3 ?

T – 5 min
S – Probability

Ans.

77. An odd number ?

Ans.

78. Number greater than 4 ?

Ans.

79. There are 35 students in a class out of which 20 are boys and 15 are girls from these students one is chosen at random. What is the probability that the chosen student is a (i) boy (ii) girl?

T – 3 min
S – Probability

Ans.

80. What is the probability that an ordinary year has 53 sundays?

T	– 3 min
S	– Probability

Ans.

20 Thinking Ability Questions

Opening Window

To enlighten your regular knowledge of topic. If you score more than 50 marks here, you have achieved this level brilliantly. Move to the next level of test papers.

Section C (60 marks) **Time given – 45 minutes + 5 minutes for revision**

81. Prove that the points $A(a, a)$ $B(-a, -a)$ and $C(-\sqrt{3}a, \sqrt{3}a)$ are the vertices of an equilateral triangle. Calculate the area of this triangle.

T	– 2 min
S	– Coordinate geometry

Ans.

82. In what ratio is the line segemenl joining the points $A(6, 3)$ and $B(-2, -5)$ divided by the x-axis ? Also, find the coordinates of the point of intersection of AB at the x-axis.

T	– 2 min
S	– Coordinate geometry

Ans.

83. Find the coordinates of the point equidistant from three given points $A(5,1), B(-3,-7)$ and $C(7,-1)$.

T	– 2 min
S	– Coordinate geometry

Ans.

84. Find the area of quadrilateral $ABCD$ whose vertices are $A(-5,7)$ $B(-4,-5)$ $C(-1,-6)$ and $D(4,5)$.

T	– 2 min
S	– Coordinate geometry

Ans.

85. Out of 400 bulbs in a box, 15 bulbs are defectives. One bulb is taken out at random from the box. Find the probability that the drawn bulb is not defective.

T	– 2 min
S	– Probability

Ans.

86. A bag contains 4 white and some red balls. If the probability of drawing a red ball is double that of drawing a white ball, find the number of red balls in the bag ?

T	– 2 min
S	– Probability

Ans.

87. Find the probability of getting 53 fridays in a leap year.

T	– 2 min
S	– Probability

Ans.

88. A bag contains 6 red balls, 8 white balls, 5 green balls and 3 black balls one ball is drawn at random from the bag. Find the probability that the ball drawn is (i) white (ii) red or black (ii) not green (iv) neither white nor black

T	– 2 min
S	– Probability

Ans.

89. A card is drawn at random from a well-shuffled pack of 52 cards. Find the probability that the card drawn is neither a red card nor a queen.

T	– 2 min
S	– Probability

Ans.

90. One card is drawn at random from a well shuffled deck of 52 cards. What is the probability that the card drawn is a face card ?

T	– 2 min
S	– Probability

Ans.

91. One card is drawn at random from a well shuffled deck of 52 cards. What is the probability that the card drawn is a face card ?

T	– 2 min
S	– Probability

Ans.

92. Find the probability of getting 53 Fridays in a leap year.

T	– 2 min
S	– Probability

Ans.

93. Out of 400 bulbs in a box, 15 bulbs are defective. One bulb is taken out at random from the box. Find the probability that the drawn bulb is not defective.

T	– 2 min
S	– Probability

Ans.

94. A bag contains 4 white and some red balls. If the probability of drawing a red ball is double that of drawing a white ball, find the number of red balls in the bag.

T	– 2 min
S	– Probability

Ans.

95. A card is drawn at random from a pack of 52 playing cards. Find the probability that the card drawn is neither a queen nor a jack.

T	– 2 min
S	– Probability

Ans.

96. A card is drawn at random from a well-shuffled pack of 52 cards. Find the probability that the card drawn is neither a red card nor a queen.

T	– 3 min
S	– Probability

Ans.

97. A bag contains 6 red balls, 8 white balls, 5 green balls and 3 black balls. One ball is drawn at random from the bag. Find the probability that the ball drawn is (i) white (ii) red or black (ii) not green (iv) neither white nor black.

T – 3 min
S – Probability

Ans.

98. A bag contains 5 red balls and some blue balls. If the probability of drawing a blue balls from the bag is thrice that of red ball, find the number of blue balls in the bag.

T – 3 min
S – Probability

Ans.

99. If x and y are the independent random variables $\left(5,\frac{1}{2}\right)$ and $\left(7,\frac{1}{2}\right)$, then find the value of $P(x+y\geq 1)$.

T – 3 min
S – Probability

Ans.

100. A box contains 8 pink, 2 violet and 5 yellow balls. One ball is drawn at random. What is the probability that the ball drawn is not black ?

T – 3 min
S – Probability

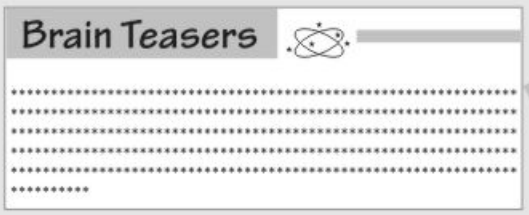
Ans.

Tools at a glance

Opening Window with instructions for your potential analysis and guideline to improve your performance.

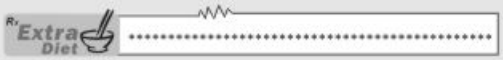
Let's Chat, the feature with suggestive topics for discussion so as to improve your capacity to debate on various topics.

Box with time break-up of questions **(T)** and its concept (**S**, i.e., subject)



Brain Teasers i.e., Questions with difference to make the concepts of students crystal clear. These are the questions with higher difficulty levels to check the grip of the students over the concepts.

Extra Diet, the web link, the notation: www._____ to provide additional information regarding the concept for more clarity of thoughts.



CBSE GRADING PATTERN

As the new pattern includes **CCE** (Continuous and Comprehensive Evaluation) which will be run in two terms i.e., from April to September and October to March. Thus the school will conduct four **Formative** and two **Summative** Assessments.

However, the most generalised version of grades is given below:

MARKS PERCENTAGE	GRADE	GRADE POINT	CATEGORY
91 to 100	A1	10	Exceptional
81 to 90	A2	9	Excellent
71 to 80	B1	8	Very Good
61 to 70	B2	7	Good
51 to 60	C1	6	Ordinary (Fair)
41 to 50	C2	5	Average
33 to 40	D	4	Below Average
21 to 32	E1	3	Improvement Needed
Below 20	E2	Below 2	Unsatisfactory