Grade 07
Unit 09

Maths

Course Outline

Formative 3
⊙ Rational numbers
⊙ Practical geometry
⊙ Perimeter and area
⊙ Algebraic expressions

MAT
(Monthly Achievement Tests)

Short Code: 447308

Test ID: NMM07U090

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 each question 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. $\frac{5}{7}+\frac{2}{7}=\square$

T – 1 min
S – Rational numbers

(a) 8 (b) 7
(c) 1 (d) 3

Ans.

2. Reciprocal of $-\frac{3}{11}$ is

T – 1 min
S – Rational numbers

(a) $\frac{3}{11}$ (b) $\frac{11}{3}$
(c) $\frac{-11}{3}$ (d) $\frac{-3}{11}$

Ans.

3. Reciprocal of $\frac{4}{17}$ is

T – 1 min
S – Rational numbers

(a) $\frac{17}{4}$ (b) $\frac{4}{17}$
(c) $-\frac{4}{17}$ (d) $-\frac{17}{4}$

Ans.

4. $6x^2-3x^2=$

T – 1 min
S – Algebraic expression

(a) $6x^2$ (b) $3x^2$
(c) $2x^2$ (d) 0

Ans.

5. Subtract $3x^2 - 2$ from $5x^2 - 2$

(a) $8x^2 - 4$ (b) $2x^2$

(c) $-2x^2$ (d) 0

T – 1 min
S – Algebraic expressions

Ans.

6. Sum of $6x^2 - 7$ and $7 - 6x^2$

(a) $12x^2$ (b) 14

(c) $12x^2 - 14$ (d) 0

T – 1 min
S – Algebraic expressions

Ans.

7. Perimeter of a square of side 4 cm

(a) 8 cm (b) 16 cm

(c) 12 cm (d) 18 cm

T – 1 min
S – Perimeter and area

Ans.

8. Area of a circle of radius 7 cm

(a) 21 cm^2 (b) 7cm^2

(c) 12cm (d) 18 cm

T – 1 min
S – Perimeter and area

Ans.

9. 1 m^2 = ☐ cm^2

(a) 100 (b) 10000

(c) 1000 (d) 10

T – 1 min
S – Perimeter and area

Ans.

10. Diameter of a circular garden is 9.8m. Find its area

(a) 75.46 m^2 (b) 70.20 cm^2

(c) 80cm^2 (d) 49 cm^2

T – 1 min
S – Perimeter and area

Ans.

True or False

11. To subtract rational numbers, we add the additive inverse of the rational number that is being subtracted the other rational number.

T – 1 min
S – Rational numbers

Ans.

12. We can not draw an isosceles triangle.

T – 1 min
S – Practical geometry

Ans.

13. 15 m width of a rectangular plot has 60 m^2 area, then length is 4m.

T – 1 min
S – Perimeter and area

Ans.

14. A variable can take various values.

T – 1 min
S – Algebraic expressions

Ans.

15. $x \times x = 2x$

T – 1 min
S – Algebraic expressions

Ans.

16. $2x^2 + 3x = 2 \times x \times x \times 3 \times x$

T – 1 min
S – Algebraic expressions

Ans.

17. Area of circle $= 2\pi r$

T – 1 min
S – Perimeter and area

Ans.

18. Area of parallelogram $= \frac{1}{2} \times$ base $\times$ height.

T – 1 min
S – Perimeter and area

Ans.

19. Area of a circular sphere can not be determined.

T – 1 min
S – Perimeter and area

Ans.

20. Area of a square sheet $= 4 \times$ side of the sheet

T – 1 min
S – Perimeter and area

Ans.

Fill in the blanks

21. A sphere has a _____ surface.

T – 1 min
S – Perimeter and area

Ans.

22. $\frac{-2}{3}, \frac{2}{-3}, \frac{4}{-6}, \frac{6}{-9}$ ____, ____, ____ .

T – 1 min
S – Rational numbers

Ans.

23. $\frac{1}{1}, \frac{-2}{8}, \frac{-3}{12}$ _____, _____, _____ .

T – 1 min
S – Rational numbers

Ans.

24. The circumference of a circle of radius 2 cm is _____.

T – 1 min
S – Perimeter and area

Ans.

25. The circumference of a circle of diameter 8 cm is _____.

T – 1 min
S – Perimeter and area

Ans.

26. SSS means _____.

T – 1 min
S – Practical geometry

Ans.

27. $\frac{-3}{5} \times \left(\frac{-4}{9}\right) =$ _____.

T – 1 min
S – Rational numbers

Ans.

28. $\frac{5}{8} + \left(\frac{-6}{5}\right) = -\frac{23}{40}$

T – 1 min
S – Rational numbers

Ans.

29. An algebraic expression having two terms is known as _____ .

T – 1 min
S – Algebraic expression

Ans.

30. An algebraic expression containing three terms is said to be _____ .

T – 1 min
S – Algebraic expression

Ans.

31-32. Find the coefficient of x in each of the following.

31. $-8xy^2+5y$

T – 1 min
S – Algebraic expression

Ans.

32. $3yz-5xyz$

T – 1 min
S – Algebraic expressions

Ans.

33. $-7x=14$, then $x=?$

(a) 2 (b) -2 (c) 3 (d) 4

T – 1 min
S – Algebraic expressions

Ans.

34. $5x=30$, then $x=?$

(a) 1 (b) 3 (c) 6 (d) 10

T – 1 min
S – Algebraic expressions

Ans.

35. $7x-45=2x-30$, then $x=?$

(a) 1 (b) 2 (c) 3 (d) 4

T – 1 min
S – Algebraic expressions

Ans.

36. Add, $3pq, -2pq$ and -11pq

T – 1 min
S – Algebraic expressions

Ans.

37. Subtract, $8ab^2$ from $24ab^2$

T – 1 min
S – Algebraic expression

Ans.

38. By what number should $\frac{-33}{8}$ be divided to get $\frac{-11}{2}$?

T – 1 min
S – Rational numbers

Ans.

39. A number consists of two digits whose sum is 7, on subtracting 9 from the number its digits are inter changed. The number is

T – 1 min
S – Rational numbers

Ans.

40. If $5x - \frac{3}{4} = 2x - \frac{2}{3}$, then the value of x

T – 1 min
S – Algebraic expressions

Ans.

41. Multiply $(5x^2 - 6x + 9)$ by $2x - 3$

T – 1 min
S – Algebraic expressions

Ans.

42. Write four rational number equivalent to $\frac{4}{3}$.

T – 1 min
S – Rational numbers

Ans.

43. Express $\frac{-3}{7}$ as (i) denominator $= -28$ (ii) numerator $= 18$

T – 1 min
S – Rational numbers

Ans.

44. Each diagonal of a square is 12 cm long. Find area.

T	– 1 min
S	– Perimeter and area

Ans.

45. The length of room is 15 m. The cost of carpeting it with a carpet 75 cm wide at Rs. 50 per metre is Rs. 6000. Find the width of the room.

T	– 1 min
S	– Perimeter and area

Ans.

46. The area of a square and that of a square drawn on its diagonal are in the ratio of?

T	– 1 min
S	– Perimeter and area

Ans.

47. The difference between the circumference and radius of a circle is 37 cm. Find the area.

T	– 1 min
S	– Perimeter and area

Ans.

48. Construct a triangle of 3cm, 5cm and 7 cm

T – 1 min
S – Practical geometry

Ans.

49. Construct a triangle of 2 cm, 3cm and 4 cm

T – 1 min
S – Practical geometry

Ans.

50. Can we construct a triangle of 4 cm, 5 cm and 8cm.

T – 1 min
S – Practical geometry

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. What should be added to $x^2 + xy + y^2$ to obtain $2x^2 + 3xy - 3y^2$?

T – 1 min
S – Algebraic expressions

Ans.

52. What should be added to $5x^2 + 4x - 3$ to get $6x + 7$?

T – 1 min
S – Algebraic expressions

Ans.

53. If $x = 2$, $y = 3, z = 7, a = 2$ and $b = -3$, then find the value of the following expression.

$x^2y + 4z^2 - 8y + 3ax^2 - 2by$

T – 1 min
S – Algebraic expressions

Ans.

54. Find the value of the expression $81x^2 + 16y^2 - 72xy$, when $x = \frac{2}{3}$ and $y = \frac{3}{4}$.

T	– 1 min
S	– Algebraic expressions

Ans.

55. If $x^2 + y^2 = 29$, and $xy = 2$ find the value of:
(a) $x - y$ (b) $x^4 + y^4$

T	– 1 min
S	– Algebraic expressions

Ans.

56. If $x^2 + \frac{4}{x^2} = 32$, calculate $x + \frac{2}{x}$.

T	– 1 min
S	– Algebraic expressions

Ans.

57. Simplify the following:

(a) $\frac{198\times198-102\times102}{96}$

(b) $\frac{8.63\times8.63-1.37\times1.37}{0.726}$

T – 1 min
S – Algebraic expressions

Ans.

58. $\frac{3}{4}(7x-2)-\left(2x-\frac{3-x}{2}\right)=x-1\frac{3}{2}$

T – 1 min
S – Algebraic expressions

Ans.

59. $0.25(4y-3)=0.5y-9$

T – 1 min
S – Algebraic expressions

Ans.

60. Each diagonal of a square is 12 cm long. Find area.

T	– 1 min
S	– Perimeter and area

Ans.

61. The length of room is 15 m. The cost of carpeting it with a carpet 75 cm wide at Rs. 50 per metre is Rs. 6000. Find the width of the room.

T	– 1 min
S	– Perimeter and area

Ans.

62. The area of a square and that of a square drawn on its diagonal are in the ratio of?

T	– 1 min
S	– Perimeter and area

Ans.

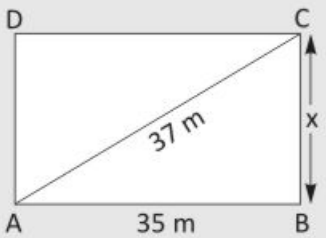
63. Find the breadth of a rectangular plot of land, if its area is 440 sq. m and the length is 22 m. Also find its perimeter.

T – 1 min
S – Perimeter and area

Ans.

64. A door of dimension 3 m × 2 m is on the wall of dimension 10 m × 10 m. Find the cost of painting the wall if the rate of painting is Rs. 2.50 per sq. m.

T – 1 min
S – Perimeter and area



Ans.

65. The area of a circle is 55.44 m^2. Find the radius.

T – 1 min
S – Perimeter and area

Ans.

66. The length and the breadth of a rectangular piece of land is 500 m by 300 m. Find its area.

T – 2 min
S – Perimeter and area

Ans.

67. Find the circumference of a circle of radius 10.5 cm.

T – 2 min
S – Perimeter and area

Ans.

68. The circumference of a circle exceeds its diameter by 20 cm. Find the radius of the circle.

T – 2 min
S – Perimeter and area

Ans.

69. The area of a right triangle is 40 cm^2. If one of its legs measures 8 cm. Find the length of the other leg.

T	– 2 min
S	– Perimeter and area

Ans.

Questions 70–71. Find the standard form of the following.

70. $\frac{7}{9} - \frac{2}{5}$

T	– 2 min
S	– Rational numbers

Ans.

71. $2\frac{1}{5} - \left(\frac{-1}{3}\right)$

T	– 2 min
S	– Rational numbers

Ans.

72. Find the twenty rational numbers between $\frac{1}{4}$ and $\frac{1}{2}$.

T	– 2 min
S	– Rational numbers

Ans.

73. Find the rational numbers between $\frac{2}{5}$ and $\frac{1}{2}$.

T – 2 min
S – Rational numbers

Ans.

74. Find a rational number between 3 and 4.

T – 2 min
S – Rational numbers

Ans.

75. Write $0.\overline{745}$ in the form $\frac{p}{q}$ without solving it.

T – 2 min
S – Rational numbers

Ans.

76. Find the value of $\frac{4}{5}+\frac{6}{10}-\frac{3}{5}$.

T – 2 min
S – Rational numbers

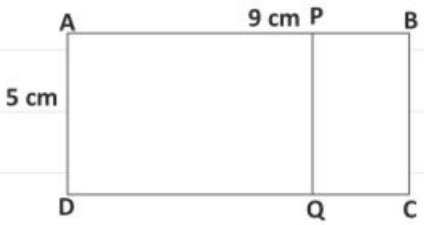
Ans.

77. The perimeter of a rectangular sheet is 90 cm. If the breadth of the sheet is 15 cm. find its length.

T – 2 min
S – Perimeter and area

Ans.

For question 78-80



78. Find the perimeter of figure *ABCD*

T – 3 min
S – Perimeter and area

Ans.

79. Find the area of figure *APQD*

Ans.

80. Find the Perimeter of figure *PBCQ*

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. The length of a rectangular field is twice its breadth. If the perimeter of the field be 150 m, find the dimensions of the rectangle.

T	– 1 min
S	– Perimeter and area

Ans.

82. Find the dimensions of a rectangle, if its perimeter is 100 cm and its length is 20 cm more than its breadth.

T	– 1 min
S	– Perimeter and area

Ans.

83. Present age of Ruchi's mother is 5 times Ruchi's age. Five years hence, her age will be 20 years more than that of Ruchi's age. Find their present ages.

T – 1 min
S – Algebraic expressions

Ans.

84. Find two consecutive positive integers whose sum is 63.

T – 2 min
S – Algebraic expressions

Ans.

85. A number is divided into two parts such that one part is 15 more than other. If the two parts are in the ratio 5 : 4. Find the number and the two parts.

T – 2 min
S – Algebraic expressions

Ans.

86. Rakesh is 19 years younger than his father. After five years, their ages will be in the ratio 2 : 3. Find their present age.

T	– 2 min
S	– Algebraic expressions

Ans.

87. The base of parallelogram is twice its height. If its area is 512 cm^2, find the base and the height.

T	– 2 min
S	– Perimeter and area

Ans.

88. The ratio of the radii of two circles is 3 : 4. Find the ratio of their circumferences.

T	– 2 min
S	– Perimeter and area

Ans.

89. Construct a right triangle having hypotenuse of length 6 cm and whose acute angles measure 30°.

T – 2 min
S – Perimeter and area

Ans.

90. The circumference of two circles are P_1 and P_2. Find the circumference of the third circle, whose area is equal to the sum of the areas of first two circles.

T – 2 min
S – Perimeter and area

Ans.

91. Circumference 264 cm. Find area of the circle?

T – 2 min
S – Perimeter and area

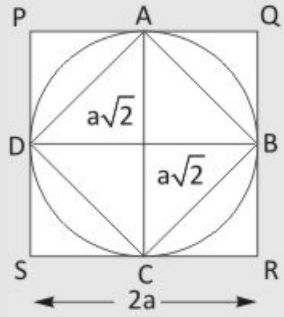
Ans.

92. If two cubes of dimension 2 cm by 2 cm by 2 cm are placed side by side. What would be the dimensions of the resulting cuboid be?

T – 2 min
S – Perimeter and area

Ans.

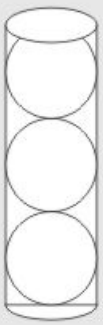
93. Which is larger, perimeter of smaller square or the circumference of the circle?



T – 3 min
S – Perimeter and area

Ans.

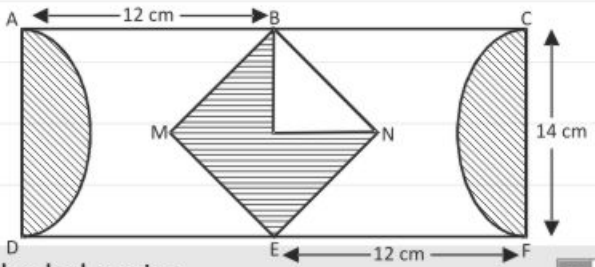
94. A tennis ball can is 3 tennis ball height. Is the height of the can is greater than the circumference of the ball?



T – 3 min
S – Perimeter and area

Ans.

ABCD is a rectangular garden and AMEN is a square shaped figure. Find the answer of the following questions



95. Find the area of shaded region.

T – 3 min
S – Perimeter and area

Ans.

96. Find the area of unshaded region.

T	– 3 min
S	– Perimeter and area

Ans.

97. Find the perimeter of unshaded region.

T	– 3 min
S	– Perimeter and area

Ans.

98. Construct a triangle of length 6cm, 5cm and 9 cm.

T	– 3 min
S	– Practical geometry

Ans.

99. Construct a triangle of length 3cm, 4cm and angle between them is 90°

T	– 3 min
S	– Practical geometry

Ans.

100. Draw a triangle of 9cm, 4cm and 6cm.

T	– 3 min
S	– Practical geometry

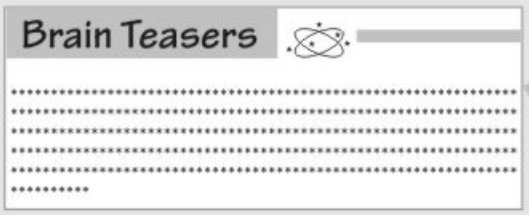
Ans.

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
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