Grade 08
Unit 10

Maths

Course Outline

Formative 4

- **Mensuration**
- **Factorization**
- **Playing with numbers**

MAT

(Monthly Achievement Tests)

Short Code: 447309

Test ID: NMM08U100

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

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. A solid cube is cut into two cuboids of equal volumes. Find the ratio of surface area of given cube and that one of cuboids

(a) 3 : 2 (b) 4 : 2

(c) 1 : 3 (d) 2 : 2.

T – 1 min
S – Mensuration

Ans.

2. In a right prism, the angle between the lateral edge and its base is

(a) 30° (b) 60°

(c) 90° (d) 0°

T – 1 min
S – Mensuration

Ans.

3. In a prism, side faces are

(a) square (b) rectangle

(c) parallelogram (d) triangle

T – 1 min
S – Mensuration

Ans.

4. Which of the following is a polyhedron?

(a) Sphere (b) cylinder

(c) cube (d) cone

T – 1 min
S – Mensuration

Ans.

5. Polygons forming a polyhedron are called

(a) edges (b) faces

(c) vertices (d) lines.

T – 1 min
S – Mensuration

Ans.

6. The perimeter of the parallelogram $PQRS$ where $PQ = 12$ cm and $QR = 7$ cm is

(a) 30 cm (b) 34 cm

(c) 38 cm (d) 40 cm

T – 1 min
S – Mensuration

Ans.

7. The factor of $x^2 + x - 6$ is

(a) $(x + 3)(x + 2)$ (b) $(x - 3)(x - 2)$

(c) $(x + 3)(x - 2)$ (d) $(x - 3)(x + 2)$

T – 1 min
S – Factorization

Ans.

8. Find the common factors of $12x$ and 36

(a) x (b) 12

(c) 36 (d) 3

T – 1 min
S – Factorization

Ans.

9. If a, b, c are three rational numbers then.
$a \times (b + c) = a \times b + a \times c$ and $(a + b) \times c = ?$

(a) $a \times b + b \times c$ (b) $a \times c + b \times c$

(c) $a \times b + a \times c$ (d) none of these

T – 1 min
S – Factorization

Ans.

10. Factorise $(8x^2 - 18x + 9)$

(a) $(4x - 3)(2x + 3)$ (b) $(8x - 1)(x - 9)$

(c) $(8x - 3)(x - 3)$ (d) $(2x - 3)(4x - 3)$

T – 1 min
S – Factorization

Ans.

True or False

11. Area of rhombus $= \frac{1}{2} d_1 d_2$ cm^2.

T – 1 min
S – Mensuration

Ans.

12. $(a + b)^2 = (a + b)(a - b)$.

T – 1 min
S – Factirisation

Ans.

13. 5 and $x + 4$ is a factor of $5x + 20$.

T – 1 min
S – Factorisation

Ans.

14. Area of cuboid is length × breadth × length

T – 1 min
S – Mensuration

Ans.

15. Area of a parallelogram = length × breadth

T – 1 min
S – Mensuration

Ans.

16. $A \times A = A$ then $A = 1$

T – 1 min
S – Playing with numbers

Ans.

17. PP – P = 50 then P = 5

T – 1 min
S – Playing with numbers

Ans.

18. Factors of ab are a and b

T – 1 min
S – Factorization

Ans.

19. $2xy - 4x$ has no factors

T – 1 min
S – Factorization

Ans.

20. Common factor of x^2y and $xy3$ is xy.

T – 1 min
S – Factorization

Ans.

Fill in the blanks

21. Cube has ___ faces.

T – 1 min
S – Cube

Ans.

22. Perimeter of a regular polygon = _____.

T – 1 min
S – Perimeter

Ans.

23. _____ is a polyhedron.

T – 1 min
S – Polyhedron

Ans.

24. Perimeter of a regular polygon = _____.

T – 1 min
S – Perimeter

Ans.

25. For any natural m greater than 1, _____ is a pythagorean triplet.

T – 1 min
S – Pythagorean triplet

Ans.

26. Solve the following linear equation :

$\frac{x}{2} - \frac{1}{5} = \frac{x}{3} + \frac{1}{4}$

T – 1 min
S – Linear eq. in one variable

Ans.

27. Write the expressions

(a) n more than 13 ☐ ◯ ☐ =

(b) 243 more than k is = _____

T – 1 min
S – Expressions

Ans.

28. Raju has 45 books. Subra has g books more than Raju. Subra has _____ books.

T – 1 min
S – Expressions

Ans.

29. $-(-x) =$ ___.

T – 1 min
S – Simple maths

Ans.

30. Comman factor of x^3y^3z and xy is _____.

T – 1 min
S – Factorization

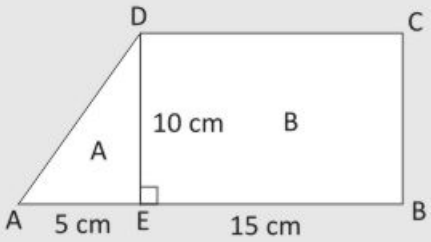
Ans.

31. The circumference of the base of cylindrical vessel is 132 cm and its height is 25 cm. How many litres of water can it hold?

T	– 1 min
S	– Mensuration

Ans.

32. A trapezium is shown as below. What is the ratio of area *A* and *B*?



T	– 1 min
S	– Mensuration

Ans.

33. A right circular cylinder has base radius 8 cm and height 35 cm. Find the curved surface area of the cylinder.

T	– 1 min
S	– Mensuration

Ans.

34. Find the curved surface area of a right circular cone whose slant height is 10 cm and base radius is 7 cm.

T – 1 min
S – Mensuration

Ans.

35. Check the divisibility of 7893 by 9.

T – 1 min
S – Playing with numbers

Ans.

36. Check the divisibility of 4380 by 5.

T – 1 min
S – Playing with numbers

Ans.

37. Check the divisibility of 5624 by 2.

T – 1 min
S – Playing with numbers

Ans.

Factorise the following expression. For questions 38 to 40

T – 3 min
S – Factorisation

38. $4\,m^2 - 12\,m + 9$

Ans.

39. $p^2 - 2pq + q^2 - r^2$

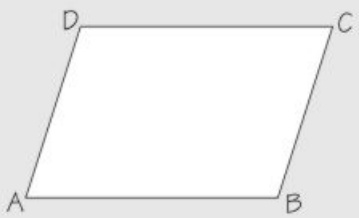
Ans.

40. $3x^2 + 9x + 6$

Ans.

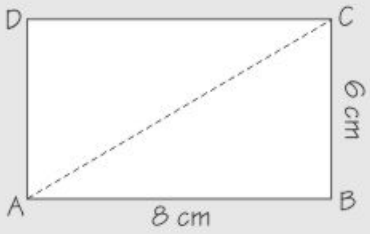
41. Two adjacent angles of a parallelogram are as 2 : 3. Find the measure of each of its angles?

T – 1 min
S – Mensuration



Ans.

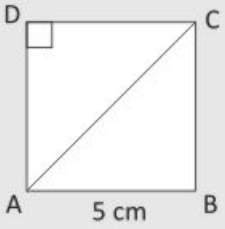
42. The length of a rectangle is 8 cm and breadth is 6 cm. Find the length of the diagonal.



T	– 1 min
S	– Mensuration

Ans.

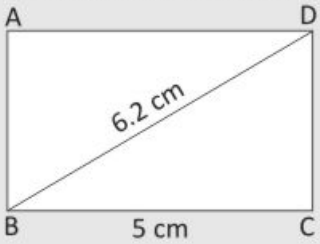
43. In the given figure *ABCD* is a square. Find the measure of $\angle CAD$.



T	– 1 min
S	– Mensuration

Ans.

44. Draw a rectangle *ABCD*, with side $BC = 5$ cm and diagonal $BD = 6.2$ cm.



T	– 1 min
S	– Mensuration

Ans.

45. Subtract the sum of $\frac{-3}{10}$ and $\frac{5}{8}$ from the sum of $\frac{4}{15}$ and $\frac{2}{-5}$.

T – 1 min
S – Rational number

Ans.

46. Find the area of a regular hexagon, each of whose sides measures 6 cm.

T – 1 min
S – Hexagon

Ans.

Complete the Table:

T – 3 min
S – Mensuration

	length	Breadth	Height	Volume of cuboid
47.	18 cm	12 cm	4 cm	
48.	12 cm	8 cm	5 cm	
49.	10 m	10 m	5m	

Ans.

50. If the lateral surface of a cylinder of height 5 cm is 94.2 cm^2, then find (i) Radius of the base (ii) Volume of the cylinder ($\pi = 3.14$)

T – 1 min
S – Solids

Ans.

30

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. The surface area of a cube is 1734 cm^2. Find its volume.

T – 1 min
S – Mensuration

Ans.

52. How many cubes of 10 cm edge can be put in a cubical box of 1 m edge?

T – 1 min
S – Mensuration

Ans.

53. The areas of the three adjacent faces of a cuboidal box are 120 cm^2, 72 cm^2 and 60 cm^2, respectively. Find the volume of the box.

T – 1 min
S – Mensuration

Ans.

Questions 54-55, Find the volume of a right circular cylinder whose base radius (r) and the height (h) are:

54. $r = 7$ cm , $h = 15$ cm

T – 1 min
S – Mensuration

Ans.

55. $r = 3.5$ m, $h = 16$ m

T – 1 min
S – Mensuration

Ans.

Questions 56-57, Find the area in square metres of the trapezium whose bases and altitude are:

56. bases = 12 dm and 20 dm, altitude = 10 dm

T – 1 min
S – Mensuration

Ans.

57. Bases = 8 m and 60 dm, altitude = 40 dm

T – 1 min
S – Mensuration

Ans.

58. Find the height of a trapezium, whose sum of the length of bases is 60 cm and area is 600 cm^2.

T	– 1 min
S	– Mensuration

Ans.

59. Find the sum of the length of the bases of a trapezium, whose area is 4.2 m^2 and height is 280 cm.

T	– 1 min
S	– Mensuration

Ans.

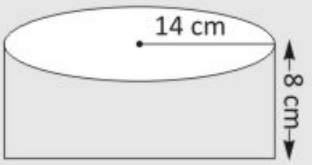
60. Find the area of a triangle with base 18 cm and the corresponding height 7 cm.

T	– 1 min
S	– Mensuration

Ans.

Questions 61-62, find the total surface area of the following cylinders:

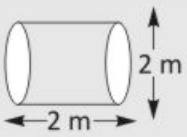
61.



T – 2 min
S – Mensuration

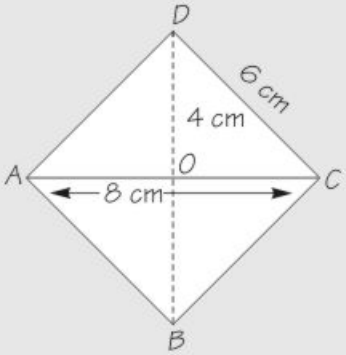
Ans.

62.



Ans.

63. Find the area of a rhombus, whose side is 6 cm and altitude is 4 cm. If one of its diagonals is 8 cm long. Find the length of the other diagonal.

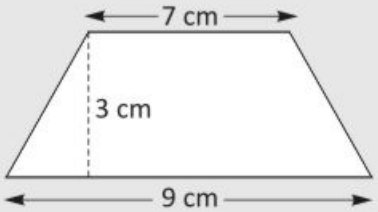


T – 1 min
S – Mensuration

Ans.

Questions 64-66, Find the area of the following trapezium:

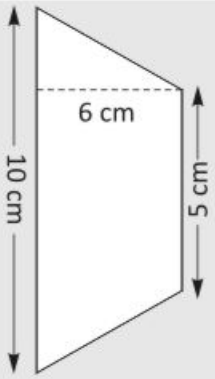
64.



T – 1 min
S – Mensuration

Ans.

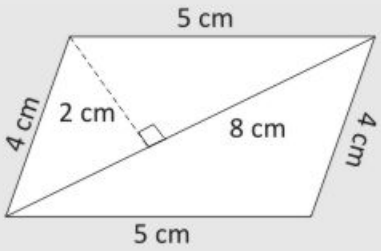
65.



T – 1 min
S – Mensuration

Ans.

66.



T – 2 min
S – Mensuration

Ans.

For questions 67–72, factorize each of the following expressions:

67. $x^2 + 10x + 9$

T – 12 min
S – Factorisation

Ans.

68. $y^2 - 2y - 8.$

Ans.

69. $p^2 + 3p - 4$

Ans.

70. $m^2 - 8m + 15$

Ans.

71. $9x^2 + y^2 + 25 + 6xy + 10y + 30x$

Ans.

72. $27q^3 - 125p^3 - 135q^2p + 225qp^2$

Ans.

73. Evaluate by using a suitable identity $(104)^3$.

T – 2 min
S – Factorisation

Ans.

74. $(x+y)^2 - (x-y)^2$

T – 2 min
S – Factorisation

Ans.

75. $10mn + 6m - 3x + 8$

T – 2 min
S – Factorisation

Ans.

Questions 76-78, factorise the following

76. $12x + 36$

T – 6 min
S – Factorisation

Ans.

77. $22y - 33z$

Ans.

78. $14pq + 35pqr$

Ans.

Questions 79-80, factorise the expression and divide them as directed.

79. $(y^2 + 7y + 10) \div y + 5$

T – 4 min
S – Factorisation

Ans.

80. $12xy\,(9x^2 - 16y^2) \div 4xy\,(3x + 4y)$

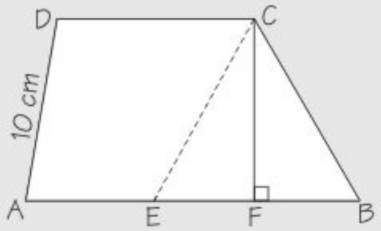
Ans.

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 parallel sides of a traprezium are 25 cm and 13 cm, while its non-parallel sides are equal. Find the area of the trapezium.

T – 2 min
S – Mensuration



Ans.

82. A road roller takes 750 complete revolution to level a road. Find the area of the road if the diameter of a road roller is 84 cm and length is 1 m.

T – 2 min
S – Mensuration

Ans.

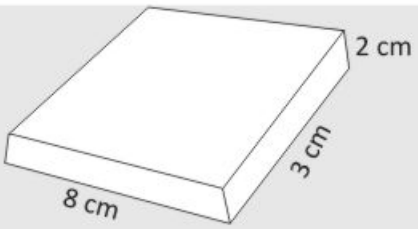
Questions 83-86, find the volume of the following figures:

83. Cube with a side 4 cm

T – 8 min
S – Mensuration

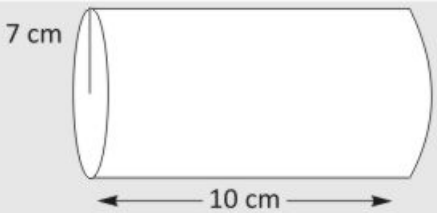
Ans.

84.

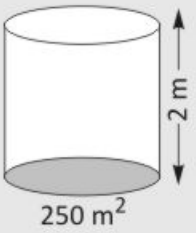


Ans.

85.



Ans.

86. 

Ans.

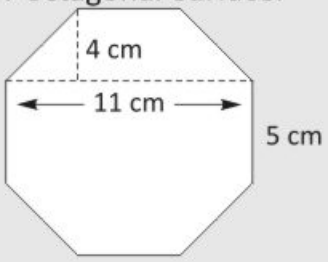
87. A school has 8 periods a day each of 45 minutes duration. How long would each period be, if the school has 9 periods a day, assuming the number of school hours to be same.

T – 1 min
S – Playing with numbers

Ans.

88. Top surface of a raised platform is in the shape of a regular octagon as shown in the figure. Find the area of octagonal surface.

T – 2 min
S – Mensuration



Ans.

89. Parikshit makes a cuboid of plasticine of sides 5 cm, 2 cm and 5 cm. How many such cuboides will he need to form a cube?

T	– 2 min
S	– Mensuration

Ans.

90. Given that the number 148101a095 is divisible by 11 where a is some digit. The value of a is

T	– 1 min
S	– Playing with number

Ans.

91. Simplify: $(x^2 - 3x + 5) - \frac{1}{2}(3x^2 - 5x + 7)$.

T – 2 min
S – Factorisation

Ans.

92. Simplify : $(8x^2 - 18x + 9)(4x^2 + 12x + 9)$

T – 2 min
S – Factorisation

Ans.

93. Simplify: $x(x + y^2 + z) + y^2(x + y + z) - z(x + y^2)$ and verify it for $x = 1$, $y = 1$ and $z = 2$.

T – 2 min
S – Factorisation

Ans.

For questions no. 94-97, Factorize the following expressions.

94. x^2+6x+8

T – 2 min
S – Factorisation

Ans.

95. $m^2+6m-16$

T – 2 min
S – Factorisation

Ans.

96. $a^4-(x-y)^4$

T – 3 min
S – Factorisation

Ans.

97. $(x^3 - a^3)(ax - x)$

T – 3 min
S – Mensuration

Ans.

98. Divide $32(a^2bc + ab^2c + abc^2)$ by 4 abc.

T – 3 min
S – Mensuration

Ans.

99. Divide $x(3x^2 - 75)$ by $3x(x + 5)$

T – 3 min
S – Mensuration

Ans.

100. The height of a cylinderical box is 2.5 m and it has a box radius 35 cm. If the metal costs Rs 180 per m^2. Find the cost of the metal used in making the box. Also find the capacity of the box in lines.

T	– 3 min
S	– Mensuration

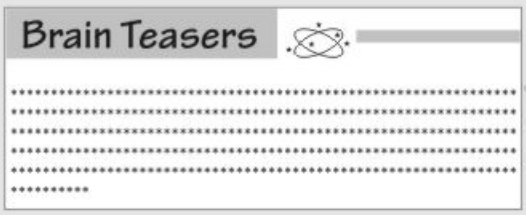
Ans.

Tools at a glance

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

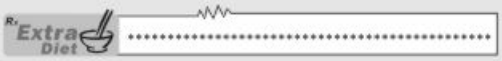
Let's Chat, the feature with suggestive topics for discussion so as to improve your capacity to debate on various topics.

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