Grade 08
Unit 07

Maths
Course Outline

- Algebraic Expressions
- Visulasing Solid Shapes

MAT
(Monthly Achievement Tests)

Short Code: 447309

Test ID: NMM08U070

SOUVENIR INFOTECH

Guide Lines

1. Each set consists of:

   50 | Warm-up/Foundation Questions

   30 | Regular Questions

   20 | Thinking Ability Questions

   06 | Non-routine 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 ▧▧▧▧ 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.

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. The sum of $3x - 4y + 53$ and $-2x + 2y - 43$ is :
   (a) $x + 2y + 2$ (b) $-x + 2y + 2$
   (c) $x - 2y - z$ (d) $x - 2y + 10$

   T – 1 min
   S – Algebraic expressions

   Ans.

2. $(4x - 3y)$ minus $(x + 5y)$ is equal to:
   (a) $3x + 8y$ (b) $3x - 8y$
   (c) $5x + 2y$ (d) $5x - 2y$

   T – 1 min
   S – Algebraic expressions

   Ans.

3. The product of $3x + 4$ and $4x - 5$ is:
   (a) $12x^2 - x + 20$ (b) $12x^2 + x + 20$
   (c) $12x^2 + x - 20$ (d) $12x^2 - x - 20$

   T – 1 min
   S – Algebraic expressions

   Ans.

4. The quotient and remainder when $x^2 - 4x + 6$ is divided by $x - 1$ are respectively:
   (a) $x - 3, 3$ (b) $x + 3, 3$
   (c) $x - 3, -3$ (d) $x + 3, -3$

   T – 1 min
   S – Algebraic expressions

   Ans.

5. The product of $2x - 3y$ and $2x + 3y$ is equal to:
   (a) $4x^2 + 6xy + 9y^2$ (b) $4x^2 - 6xy^2 + 9y^2$
   (c) $4x^2 - 12xy + 9y^2$ (d) $4x^2 - 9y^2$

   T – 1 min
   S – Algebraic expressions

   Ans.

6. If $x + \dfrac{1}{x} = \dfrac{5}{2}$ then $x^2 + \dfrac{1}{x^2}$ is equal to :

(a) $\dfrac{13}{4}$ (b) $\dfrac{15}{4}$

(c) $\dfrac{17}{4}$ (d) $\dfrac{19}{4}$

T	– 1 min
S	– Algebraic expressions

Ans.

7. If $x^2 + \dfrac{1}{x^2} = 51$, then $x^4 + \dfrac{1}{x^4}$ is equal to.

(a) 312   (b) 315

(c) 2599   (d) 322

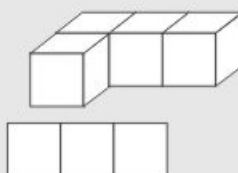| T	– 1 min
S	– Algebraic expressions

Ans.

8. Which of the following is the front view of the given figure :

(a)   (b)   (c)   (d) non of these
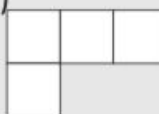
T	– 1 min
S	– Solid shapes

Ans.

9. A bowl is of _____ shape.

(a) Semicircular   (b) Hemispherical

(c) Half circle   (d) None of these.

T	– 1 min
S	– Solid shapes

Ans.

10. Sphere is a _____ figure.

(a) 2 dimensional   (b) 3 dimensional

(c) Closed   (d) None of these.

T	– 1 min
S	– Solid shapes

Ans.

True or False

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

T	– 1 min
S	– Algebraic expressions

Ans.

12. Cylinder in a three dimensionl figure.

T	– 1 min
S	– Visualising solid shapes

Ans.

13.	Top view of a bottle in a circle.	T – 1 min
		S – Visualising solid shapes
		Ans.

14.	Pentagon has five sides.	T – 1 min
		S – Pentagon
		Ans.

15.	Circle is not a simple closed curve.	T – 1 min
		S – Visualising solid shapes
		Ans.

16. $F + V - E = 2$ is called Euler's formula.

T – 1 min

S – Euler's formula

Ans.

17. Cube has 8 faces.

T – 1 min

S – Cube

Ans.

18. A simple closed curve made up of only line segment is called polygon.

T – 1 min

S – Polygon

Ans.

19. Paper is a model of plane surface.

T – 1 min

S – Plane surface

Ans.

20. Sum of angles of a quadrilateral is 180°.

T – 1 min

S – Angles of quadrilateral

Ans.

Fill in the blanks

For questions 11 to 16, complete the table of products.

	first monomial → ↓ second monomial	$2x$	$-5y$	$3x^2$	$-4xy$	$7x^2y$	$-9x^2y^2$
21.	$2x$	$4x^2$	_____	_____	_____	_____	_____
22.	$-5y$	_____	_____	$-15x^2y$	_____	_____	_____
23.	$3x^2$	_____	_____	_____	_____	_____	_____
24.	$-4xy$	_____	_____	_____	_____	_____	_____
25.	$7x^2y$	_____	_____	_____	_____	_____	_____
26.	$-9x^2y^2$	_____	_____	_____	_____	_____	_____

T – 1 min
S – Algebraic expressions

Ans.

27. The diagonals do not necessarily intersect at right angles in a _____ .

T – 1 min
S – Parallelogram

Ans.

28. The diagonals of a rectangle are _____ .

T – 1 min
S – Rectangle

Ans.

29. The point at which three faces of a figure meet is known as its _____ .

T – 1 min
S – Vertex

Ans.

30. The cube has _____ faces.

T – 1 min
S – Cube

Ans.

31. The diameter of a circle is twice its radius.

T	– 1 min
S	– Algebraic expressions

Ans.

32. The area of a rectangle is the product of its length and breadth.

T	– 1 min
S	– Algebraic expressions

Ans.

33. Write the number which is 5 less than the product of the numbers x and y.

T	– 1 min
S	– Algebraic expressions

Ans.

34. (a) n more than 13　　=　□ ○ □
    (b) 243 more than k is　=　_____

T	– 1 min
S	– Expressions

Ans.

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

T	– 1 min
S	– Expressions

Ans.

36. Hasmukh has 17 blue beads and 2 white beads. She has _____ beads together.

T	– 1 min
S	– Simple maths

Ans.

37. _____ × p = p

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

Ans.

38. (a) If r = 3, then r + 5 = _____
    (b) If k = 8, then k – 3 = _____

T	– 1 min
S	– Algebraic expressions

Ans.

39. (a) If p = 3 then 4p = _____
    (b) If m = a then 7m = _____

| T | – 1 min |
| S | – Algebraic expressions |

Ans.

40. (a) If p = 10, then $\frac{1}{2}$ p = _____

(b) If h = 15 then $\frac{h}{15}$ = _____

| T | – 1 min |
| S | – Algebraic expressions |

Ans.

Simple questions

41. Multiply $4x^2y^2$ and $-\frac{3}{2}x^2yz^2$.

| T | – 1 min |
| S | – Algebraic expressions |

Ans.

42. If a = 18, b = 10 and c = 6, find the value of *abc*.

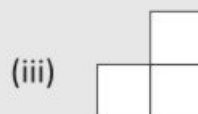| T | – 1 min |
| S | – Algebraic expressions |

Ans.

43. If x = 1 and y = 2, find the value of x + y.

| T | – 1 min |
| S | – Algebraic expressions |

Ans.

44. Identify the top view, front view and side view from the figure.

(i)   (ii)   (iii)

Ans.

Match the following:

45.   (i)   Polygon

46.   (ii)   Simple closed curve

47.   (iii) Concave polygon

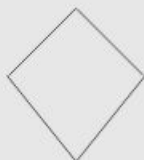**48.**   (iv)   Simple curve

49.   (v)   Not polygon

50.   (vi)   Convex polygons

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.

Questions 51-53, using Euler's formula, find the unknown

T – 1 min
S – Euler's formula

	Face (F)	Vertices (V)	Edges (E)
51.	1	?	12
52.	?	6	10
53.	12	10	?

Ans.

Questions 54-59, complete the following table:

T – 10 min
S – Visualising solid shapes

Name of solid	Number of aces	Number of vertices	Number of edges
Cuboid			
Cube			
Triangular prism			
Square pyramid			
Rectangular pyramid			
Triangular pyramid			

60. $\left(y^2 + \dfrac{5}{7}\right)\left(y^2 - \dfrac{14}{5}\right)$

T – 1 min
S – Algebraic identity

Ans.

Questions 61-70, Subtract the following

61. $18y^2$ from $3y^2$

Ans.

62. $6ab$ from $-12ab$

Ans.

63. $17a^2$ from $23a^2$

Ans.

64. $a + b - c$ from $-a - b - c$

Ans.

65. $x^2 - y^2x + 2$ from $y^2x - x^2 - z$
If $x = 1$, $y = 2$ and $z = -1$ find the value of each of the following expressions.

Ans.

66. $2xy^2$ from $-3x^2y + z^2$

Ans.

67. y^2 from $-z^2 + x^2$

Ans.

68. $(z+x)^2$ from $-2y$

Ans.

69. $(x^2 - y^2)$ from $(3y - 2z)$

Ans.

70. xy from $yz - 2$

Ans.

Evaluate each of the following:

71. If $r = 5$, $2r + 6 =$ _____

Ans.

72. If $m = 10$, $\dfrac{m+5}{3} =$ _____

Ans.

73. Subtract the sum of $2x - x^2 + 5$ and $-4x - 3 + 7x^2$ from 5.

Ans.

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

Ans.

75. Multiply:
$$\left(\frac{2}{3}xyz\right) \times \left(\frac{3}{4}x^2y^2z^2\right) \times \left(\frac{4}{5}x^3y^3z^3\right)$$

Ans.

76. Verify that the following relations are true by expressing each side as a monomial:

$$(5abc)\left(\frac{1}{-500}\right)a^5 b^{50} c^{500} = \left(\frac{1}{-500}\right)a^5 b^{50} c^{500}(5abc)$$

T – 2 min
S – Algebraic expressions

Ans.

77. Find the product of 74 − 3v and 4 u + 5v. Verify the result for u = 3, v = 2.

T – 2 min
S – Algebraic expressions

Ans.

78. Multiply 7a × 3b

T – 2 min
S – Algebraic expressions

Ans.

79. 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	– Algebraic expressions

Ans.

80. Evaluate by using suitable identity:
$(2x^3 - 9y^3)(2x^3 - 9y^3)$

T	– 2 min
S	– Algebraic expressions

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. Find the value of the expression $25x^2 + 9y^2 + 30xy$ when $x = 8$ and $y = 10$.

T	– 2 min
S	– Algebraic identities

Ans.

82. Find the value of the expression $9x^2 - 24xy + 16y^2$ when $x = \dfrac{2}{3}$ and $y = \dfrac{3}{4}$.

T	– 2 min
S	– Algebraic identities

Ans.

In questions 89-90, If $x + \dfrac{1}{x} = 5$, find the value of:

T	– 4 min
S	– Algebraic identities

83. $x^2 + \dfrac{1}{x^2}$

Ans.

84. $x^4 + \dfrac{1}{x^4}$

Ans.

In questions 85-86, divide by long division method. Verify your result by factor method:

85. $x^2 + 6x + 8$ by $x + 4$

T — 4 min
S — Polynomials

Ans.

86. $y^2 - 5y + 6$ by $y - 2$

Ans.

87. Find the continued product:

$$\left(x + \frac{1}{x}\right)\left(x - \frac{1}{x}\right)\left(x^2 + \frac{1}{x^2}\right)$$

Ans.

88. Find the continued product:

$$\left(\frac{2}{3}x - \frac{3}{5}y\right)\left(\frac{2}{3}x + \frac{3}{5}y\right)\left(\frac{4}{9}x^2 + \frac{9}{25}y^2\right)$$

Ans.

89. Find the value of x, if :

$$10\,x = \frac{6.83 \times 6.83 - 0.17 \times 0.17}{6.66}$$

Ans.

90. Find the value of x, if :

$$860\,x = \frac{100 \times 100 - 72 \times 72}{0.64 \times 0.64 - 0.36 \times 0.36}$$

Ans.

91. If $x^2 + \dfrac{4}{x^2} = 53$, than calculate $\left(x - \dfrac{2}{x}\right)$.

Ans.

In questions 93-95, divide the first polynomial by the second. Write the quotient and the remainder:

92. $3a^2 + 5a + 7$ by $a + 2$

Ans.

93. $8q^3 - 6q^2 + 4q - 1$ by $4q + 2$

Ans.

94. $y^4 + y^2$ by $y^2 - 2$

Ans.

95. Find the value of the expression $64x^2 + 81y^2 + 144xy$ when $x = \dfrac{3}{4}$ and $y = \dfrac{2}{3}$.

Ans.

96. If $x - \dfrac{1}{x} = 7$, find the value of $x^2 + \dfrac{1}{x^2}$.

Ans.

97. If $x + y = 12$ and $xy = 14$ find the value of $x^2 + y^2$?

T	– 3 min
S	– Algebraic identities

Ans.

98. Add $6x + 4y - z + 3$, $2y - 3z + 4$, $11y - 7x + 2z - 1$ and $2z - 5x - 6$.

T	– 3 min
S	– Algebraic identities

Ans.

99. The value of (10.2×9.8) is

T	– 3 min
S	– Algebraic identities

Ans.

100. The remainder obtained on dividing $x^3 + 3x^2 - 5x + 4$ by $x - 1$

T	– 3 min
S	– Polynomials

Ans.

Opening Window

These are not compulsory-type questions. But in favour of students, it is advised to solve these questions very carefully. No marks are allowed for this section.

Section D (10 questions)   Time given – 30 minutes + 5 minutes for revision

101. Find the product—

(a) $\left(1 + \dfrac{2}{3}x\right)\left(1 - \dfrac{2}{3}x\right)$

(b) $\left(\dfrac{x}{2} - \dfrac{y}{3}\right)\left(\dfrac{x}{2} + \dfrac{y}{3}\right)$

Ans.

102. Find the number such that when it is multiplied by 7 and 17 subtracted from it, the result is same as when it is multiplied by 3 and 19 added to it.

Ans.

103. Solve the following equations.

(a) $\dfrac{x-1}{2} - \dfrac{x-2}{3} = 1$

(b) $\dfrac{x+2}{6} - \dfrac{x-3}{3} = x$

Ans. [   ]

104. Fourteen added to thrice a whole number gives 56. Find the number.

Let the number be x.

Ans. [   ]

105. Rohan thought of a number, doubled it and subtracted 25 from it. The result was 49, find the number.

Ans. [   ]

106. Fill in the blanks :

(a) $(a - b)^2 = a^2 -$ _____ $+ b^2$

(b) $(x + \underline{\quad})^2 = x^2 + \dfrac{1}{y^2} + \dfrac{2x}{y}$

(c) $(a + 2b)(a + \underline{\quad}) = a^2 + 4b^2 + 4ab$

(d) $(a + b)^2 = a^2 + b^2 +$ _____

Ans. [   ]

Tools at a glance

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

Opening Window

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

T — ....
S — ....

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

Let's Chat
....
....

Brain Teasers

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.

Extra Diet

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