Grade 08
Unit 03

Maths
Course Outline

- ⊙ **Data handling**
- ⊙ **Square & Square roots**

MAT
(Monthly Achievement Tests)

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.

Short Code: 447309

Test ID: NMM08U030

We from ～souvenir～ 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 square of x is an odd number. Than x can be

    (a) 2248   (b) 1392

    (c) 2223   (d) 28

    T – 1 min
    S – Square

    Ans.

2. If $(625)^2 = m$, then $m =$

    (a) 390625   (b) 309625

    (c) 390265   (d) 309526

    T – 1 min
    S – Square

    Ans.

3. Which of the following numbers are perfect squares?

    (a) 16   (b) 10

    (c) 61   (d) 34

    T – 1 min
    S – Square

    Ans.

4. Which of the following numbers are perfect squares?

    (a) 100   (b) 121

    (c) 784   (d) all the above

    T – 1 min
    S – Square

    Ans.

5. Which of the following are not perfect squares?

    (a) 784   (b) 1296

    (c) 16000   (d) 289

    T – 1 min
    S – Square

    Ans.

6. The square root of 1296 is:

(a) 16   (b) 24

(c) 36   (d) 42

T – 1 min
S – Square root

Ans.

7. The square root of 5184 is:

(a) 70   (b) 71

(c) 72   (d) 73

T – 1 min
S – Square root

Ans.

8. The square of 527 is

(a) 27729   (b) 277729

(c) 277279   (d) none of these

T – 1 min
S – Ratio

Ans.

Following marks were obtained by 12 students in a G.K. Test.

20, 21, 25, 15, 10, 5, 7, 12, 30, 16, 9, 22

9. the range of mark is

(a) 20   (b) 25

(c) 21   (d) 7

T – 1 min
S – Data handing

Ans.

10. the mean of the mark is

(a) 16   (b) 20

(c) 15   (d) 30

T – 1 min
S – Data handling

Ans.

True or False

11. There is no square number between 50 and 60.

T – 1 min
S – Square

Ans.

12. The square root of a prime number may be obtained approximately, but never exactly.

T – 1 min
S – Sqaure root

Ans.

13. If a natural number m can be expressed as n2, where n is also a natural number, then m is a perfect square.

T – 1 min
S – Square number

Ans.

14. Square root is the inverse operation of square.

T – 1 min
S – Square root

Ans.

15. Square numbers can only have odd numbers at the end.

T – 1 min
S – Squares

Ans.

16. If $m^2 = n$, m is called the square of n.

T – 1 min
S – Squares

Ans.

17. If all the equal prime factors of a natural number are forming pairs, then natural number is a perfect square.

T – 1 min
S – Squares

Ans.

18. One or more outcomes of an experiment make an event.

T – 1 min
S – Data handling

Ans.

19. Data in an unorganised form is called raw.

T – 1 min
S – Data handling

Ans.

20. Class mark is the mid point of a class interval.

T – 1 min
S – Data handling

Ans.

21. Find the square of 86.

T – 1 min
S – Squares

Ans.

22. Find the pythagorean triplet, one of Those number is 10.

T – 1 min
S – Squares

Ans.

23. Find the square root of 9801.

Ans.

24. Find the square root of 4096.

Ans.

25. Find the square root of 0.000324.

Ans.

26. $(101)^2 - (100)^2 =$ _____

Ans.

27. $(205)^2 - (204)^2 =$ _____

Ans.

For questions 28-30, find the square root of the following numbers:

28. 44100

Ans.

29. 27225

Ans.

30. 193600

Ans. _____

For questions 31-33, find the square root of the following numbers by finding their units in tens digits:

31. 2304

T	– 3 min
S	– Square

Ans. _____

32. 529

Ans. _____

33. 4489

Ans. _____

Frequency distribution data for the marks obtained by 30 students of a clorst dert

Marks	0-10	10-20	20-30	30-40	40-50
No. of students	4	5	7	4	10

34. What is the class mark

T	– 5 min
S	– Data handling

Ans. _____

35. What is the lower limit of class 20-30 ?

Ans.

36. What is the upper limit of class 40-50?

Ans.

37. What is the class mark of the class 10-20?

Ans.

38. What are the frequencyes of the class interval 30-40
and 40-50?

Ans.

Define the following terms :

39. Statistics

T	– 1 min
S	– Data handling

Ans.

40. Data

T	– 1 min
S	– Data handling

Ans.

41. Frequency

T	– 1 min
S	– Data handling

42. Range

| T | – 1 min |
| S | – Data handling |

Ans.

43. Arithmetic mean

| T | – 1 min |
| S | – Data handling |

Ans.

44. If squares of a number ends with 5, then its cube ends with 25.

| T | – 1 min |
| S | – Squares |

Ans.

45-50 Marks obtained by 25 students in Mathematics.

18, 5, 18, 2, 16. 13, 17, 8, 18, 13, 17, 16, 18, 5, 8, 13, 20, 16, 8, 8, 5, 18, 2, 13, 19

45. the maximum marks obtained

| T | – 6 min |
| S | – Data handling |

Ans.

46. the minimum marks obtained

Ans.

47. the mean of marks obtained

Ans.

48. the range marks obtained

Ans.

49. Frequency distribution table.

Ans.

50. Define graphic of data.

Ans.

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 51-57, Find the square root of the following :

51. $\dfrac{2116}{15129}$

T	– 7 min
S	– Square root

Ans.

52. $\dfrac{16641}{4489}$

Ans.

53. $21\dfrac{51}{169}$

Ans.

54. $56\dfrac{569}{1225}$

Ans. [_____]

55. 9.3025

Ans. [_____]

56. 84.8241

Ans. [_____]

57. .008281

Ans. [_____]

58. Find the square roots of the following numbers, correct to two places of decimal : 1.7
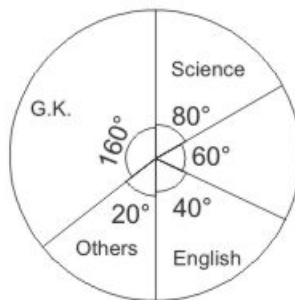
T – 1 min
S – Square root

59. Find the square roots of the following numbers, correct to three places of decimal : .00064

T	– 1 min
S	– Square root

Ans.

60-64 The given pie chart shows the sales of books of different subjects. If the total sale of books in _____. Answer the following

T	– 5 min
S	– Data handling

60. No. of students purchased Gk Books.

Ans.

61. No. of students purchased Science Books.

Ans.

62. No. of students purchased others Books.

Ans.

63. No. of students purchased English Books.

Ans.

64. No. of students purchased Mathes Books.

Ans.

Find the square roots of the following.

65. 8

T – 1 min
S – Square

Ans.

66. 9.3

Ans.

67. $4\dfrac{5}{7}$

Ans.

68. Given that $\sqrt{545049} = 1243$. Find the value of $\sqrt{154.5049} + \sqrt{1.545049}$

Ans.

69. Find the square of (3 + 5) and (2 + 9).

Ans.

70. Find the square of 27.

T	– 2 min
S	– Square

Ans.

71. Find the square of 12.

T	– 2 min
S	– Square

Ans.

72. Find the square root of 6.21 upto two digits.

T	– 2 min
S	– Square

Ans.

73. Find the square root of 7 upto two digits.

T	– 2 min
S	– Square

Ans.

74. Find the square root of 9.31.

Ans.

75. Find the square root of 121.

Ans.

76. Find the square root of 0.000081

Ans.

77. Find the square root of 1.21.

78. Find the smallest number that must be added to 4931 to get a perfect square.

| T | – 3 min |
| S | – Square root |

Ans.

For questions 79–80, the prime factorisation of the following numbers and hence find their square roots.

| T | – 4 min |
| S | – Square root |

79. 9604

Ans.

80. 7056

Ans.

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. 3025 students are sitting in an auditorium in such a manner that there are as many students in a row as there are rows in the auditorium. How many rows are there in the auditorium?

T	– 2 min
S	– Square root

Ans.

82. The product of two numbers is 180 and their quotient is $\frac{4}{5}$. Find the numbers.

T	– 2 min
S	– Square root

Ans.

83. A General wishing to arrange his men, who were 335250 in numbers in the form of a square. Found that there were a men left over. How many were there in each row?

T	– 2 min
S	– Square

Ans.

84. Find the perimeter of a square field whose area is 36 hectare.

T	– 2 min
S	– Square

Ans.

85. The area of a square field is 60025 Km^2. A man cycles, along its boundary at 18 km/h. In how much time will he return at the starting point?

T	– 2 min
S	– Square

Ans.

86. The area of a triangle is given by $\sqrt{s(s-a)(s-b)(s-c)}$. If a = 17 cm, b = 8 cm, c = 15 cm and s = 20 cm, find the area of the triangle.
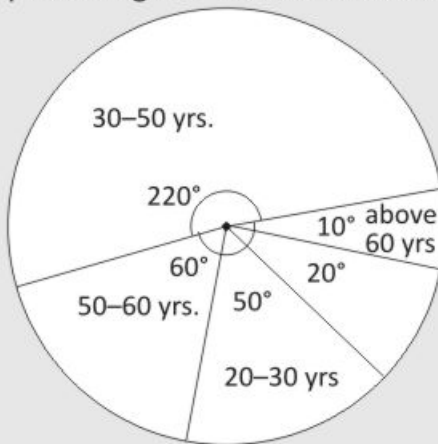
T	– 2 min
S	– Square

Ans.

87. Find the length of each side of a square whose area is equal to the area of a rectangle of length 9 m and breadth 4 m.

T	– 2 min
S	– Square

Ans.

88. The percentage of a family (age wise) is shown in the chart. Find the percentage of the members who are above 60 years.

Ans.

Questions 89-92, Given below is a graph showing the number of electric bulbs sold in a shop during a week.

Read the bar graph carefully and answer the questions given below:

89. On which day of the week was the sale minimum?

Ans.

90. On which day of the week was the sale maximum?

Ans.

91. What was the total sale during the week?

92. What is the ratio between the minimum sale and the maximum sale?

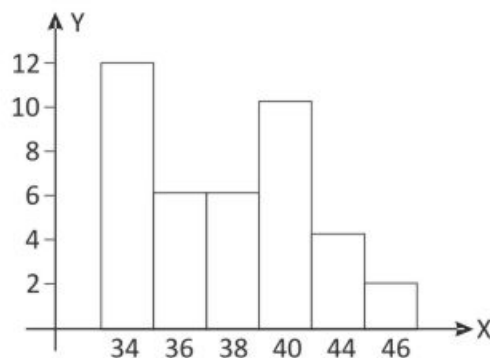| T	– 2 min
S	– Data handling

Ans.

93. A PT teacher wants to arrange maximum possible number of 6000 students in a field such that the number of rows is equal to the number of columns. Find the number of rows if 71 Students were left out after the arrangement.

T	– 2 min
S	– Square root

Ans.

Given below in he bar graph answer the following questions.

94. What is on class size ?

T	– 2 min
S	– Data handling

		Ans.

95. What is an class interval 40-42?

T – 2 min
S – Data handling

		Ans.

96. How many students in all over observed ?

T – 2 min
S – Data handling

		Ans.

97. How many students weights 40 kg or more than 40 kg.

T – 3 min
S – Data handling

		Ans.

98. How many students weight less from 40 kg.

T – 2 min
S – Data handling

99. Find the mean of the first six prime numbers.

T – 3 min
S – Data handling

100. Fill in the blanks in the following table

Weight (in kg)	40-50	50-60	60-70	70-80	80-90
Class Marks	—	—	—	—	—

T – 3 min
S – Data handling

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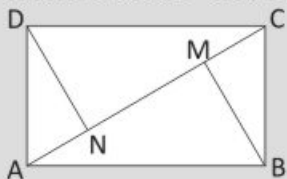
Section D (10 questions)   **Time given – 30 minutes + 5 minutes for revision**

101. In the adjacent figure, *ABCD* is a parallelogram and line segments *AE* and *CF* bisect the angles *A* and *C* respectively. Show that *AE* ∥ *CF*.
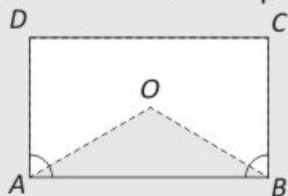
Ans. [   ]

102. In the adjacent figure, *ABCD* is a rectangle. If *BM* and *DN* are perpendiculars from *B* and *D* on *AC*. Prove that $\triangle BMC \cong DNA$. Is it true that *BM = DN*?

Ans. [   ]

103. In the adjoining figure, *ABCD* is a parallelogram, *AO* and *BO* are the bisectors of $\angle A$ and $\angle B$ respectively. Prove that $\angle AOB = 90°$.

Ans.

104. Observe the square pattern.

$$7^2 = 49$$
$$67^2 = 4489$$
$$667^2 = 444889$$
$$6667^2 = 44448889$$
$$66667^2 = 4444488889$$
$$666667^2 = 444444888889$$

Can you find the square of the following numbers.

(a) 6666667^2

(b) 66666667^2

Ans.

105. Observe the following pattern and find the missing digits.

$$11^2 = 121$$
$$101^2 = 10201$$
$$1001^2 = 1002001$$
$$100001^2 = 1 \underline{\hspace{2cm}} 2 \underline{\hspace{2cm}} 1$$
$$10000001^2 = \underline{\hspace{3cm}}$$

Ans.

106. Observe the following pattern and supply the missing numbers.

$$11^2 = 121$$
$$101^2 = 10201$$
$$10101^2 = 102030201$$
$$1010101^2 = \underline{\hspace{2cm}}$$
$$\underline{\hspace{2cm}}^2 = 10203040504030201$$

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