Grade 08
Unit 02

Maths

Course Outline

Formative 1

- **Rational numbers**
- **Linear equations**
- **Understanding quadrilaterals**

MAT

(Monthly Achievement Tests)

Short Code: 447309

Test ID: NMM08U020

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 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. $\left\{\frac{7}{5}\times\left(\frac{-3}{12}\right)\right\}+\left\{\frac{7}{5}\times\frac{5}{12}\right\}$

T – 1 min
S – Rational number

(a) $\frac{7}{30}$ (b) $\frac{7}{12}$

(c) $\frac{7}{45}$ (d) None of these

Ans.

2. Find a rational number between 3 and 4.

T – 1 min
S – Rational number

(a) $\frac{7}{2}$ (b) $\frac{12}{2}$

(c) $\frac{3}{4}$ (d) $\frac{4}{3}$

Ans.

3. Find x in $\frac{2x+3}{5}=\frac{2}{3}(x+1)$.

T – 1 min
S – Rational number

(a) $\frac{3}{4}$ (b) $\frac{1}{4}$

(c) $\frac{-1}{4}$ (d) $\frac{1}{2}$

Ans.

4. Sum of parallel sides of trapezium $=40$ cm, area $=140$ cm^2. Find the distance between sides.

T – 1 min
S – Understanding Quadrilateral

(a) 7 cm (b) 14 cm

(c) 15 cm (d) none of these

Ans.

5. Multiplicative inverse of $\frac{3}{10}$ is

T – 1 min
S – Rational numbers

(a) 1 (b) 0
(c) $\frac{10}{3}$ (d) $\frac{-10}{3}$

Ans.

6. Polygons forming a polyhedron are called

T – 1 min
S – Understanding Quadrilateral

(a) edges (b) faces
(c) vertices (d) lines

Ans.

7. What must be added to the ratio term 5 : 6 to make it equal to 1 : 2?

T – 1 min
S – Linear equations

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

Ans.

8. The sum of adjacent angle of a parallelogram is

T – 1 min
S – Understanding Quadrilateral

(a) 180° (b) 120°
(c) 360° (d) 90°

Ans.

9. A quadrilateral whose opposite sides and all the angles are equal

T – 1 min
S – Understanding Quadrilateral

(a) square (b) rectangle
(c) rhombus (d) parallelogram

Ans.

10. A quadrilateral whose all the side, diagonals and angles are equal is a

T – 1 min
S – Understanding Quadrilateral

(a) square (b) rhombus
(c) trapizium (d) rectangle

Ans.

Fill in the blanks :

11. When a rational number is divided by a rational number, the result is always a rational number.

T – 1 min
S – Rational numbers

Ans.

12. We can divide zero by any rational number.

T – 1 min
S – Rational numbers

Ans.

13. When a rational number is multiplied by a rational number, the result is always a rational number.

T – 1 min
S – Rational numbers

Ans.

14. Rational numbers are commutative under division.

T – 1 min
S – Rational numbers

Ans.

15. Every trapezium is a parallelogram.

T – 1 min
S – Understanding Quadrilateral

Ans.

16. Every parallelogram is a square.

T – 1 min
S – Understanding Quadrilateral

Ans.

17. The diagonals bisect the parallelogram in two equal parts.

T – 1 min
S – Understanding Quadrilateral

Ans.

18. Diagonals of a rectangle are equal.

T – 1 min
S – Understanding Quadrilateral

Ans.

19. Diagonals of rectangle are equal, perpendicular and bisect each other.

T – 1 min
S – Understanding Quadrilateral

Ans.

20. The diagonals of a rectangle area not equal.

T – 1 min
S – Understanding Quadrilateral

Ans.

Fill in the blanks

T – 4 min
S – Rational numbers

Numbers	Associative for			
	Addition	subtraction	Multiplication	Division
21. Rational numbers	_____	_____	_____	No
22. Integers	_____	_____	Yes	_____
23. Whole numbers	Yes	_____	_____	_____
24. Natural numbers	_____	Yes	_____	_____

25. Zero has _____ reciprocal.

T – 1 min
S – Rational numbers

Ans.

26. (a) $n + 4n + 2n + n =$ _____
(b) $12c + 9c + 11c + 5c =$ _____

T – 1 min
S – Rational numbers

Ans.

27. Additive inverse of 0 is _____.

T – 1 min
S – Linear equations

Ans.

28. $\frac{-1}{9}$ or 0, which is smaller _____?

T – 1 min
S – Rational numbers

Ans.

29. $3x + 4x =$ _____.

T – 1 min
S – Linear equations

Ans.

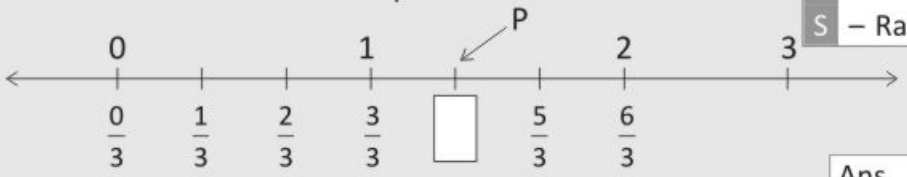
30. Sum of the angles of a quadrilateral is _____.

T – 1 min
S – Understanding Quadrilateral

Ans.

31. Write the rational number point labeled with a letter.

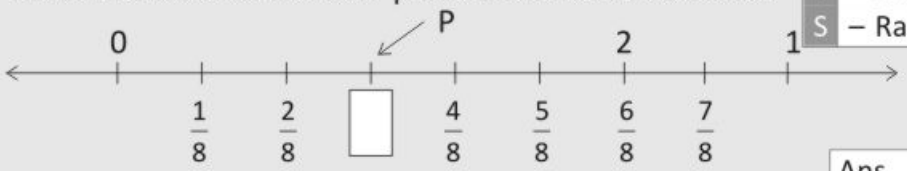
T – 1 min
S – Rational numbers



Ans.

32. Write the rational number point labeled with a letter.

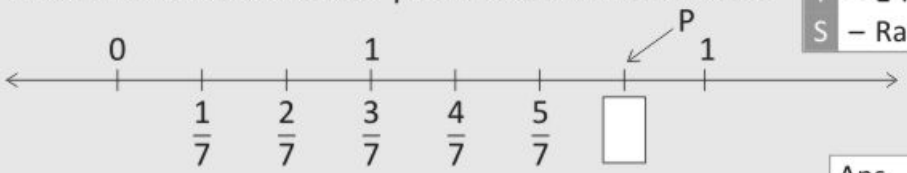
T – 1 min
S – Rational numbers



Ans.

33. Write the rational number point labeled with a letter.

T – 1 min
S – Rational numbers



Ans.

34. Is $\frac{8}{9}$ the multiplicative inverse of $-1\frac{1}{8}$?

T – 1 min
S – Rational numbers

Ans.

35. Tell what property allows you to complete $\frac{1}{3} \times \left(6 \times \frac{4}{3}\right)$ as $\left(\frac{1}{3} \times 6\right) \times \frac{4}{3}$

T – 1 min
S – Rational numbers

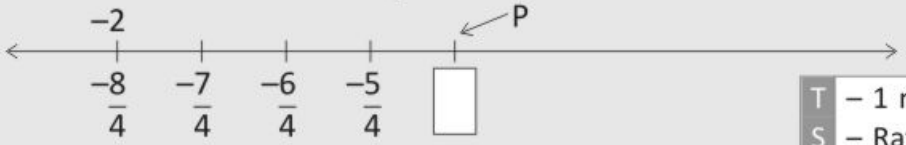
Ans.

36. Write the additive inverse of $\frac{2}{8}$.

T – 1 min
S – Rational numbers

Ans.

37. Write the rational number point labeled with a letter.



T – 1 min
S – Rational numbers

Ans.

38. Write the number which is 3 less then y.

T – 1 min
S – Rational numbers

Ans.

39. Write the number which is 5 more than $\frac{1}{3}$ of number y.

T – 1 min
S – Rational numbers

Ans.

40. Solve the equation and check your result.
(a) $8x + 4 = 3(x-1) + 7$

T – 1 min
S – Rational numbers

Ans.

Simple Questions

41. $\frac{-3}{16} \times \frac{8}{15}$

T – 1 min
S – Rational numbers

Ans.

42. The value $\frac{a}{b}$ will be in $\frac{27}{16} \div \left(\frac{a}{b}\right) = \frac{-15}{8}$.

T – 1 min
S – Rational numbers

Ans.

43. Solve the equation and check your result.

(a) $x = \frac{4}{5}(x+10)$

T – 1 min
S – Linear equations

Ans.

44. Solve the following linear equation : $\frac{x}{2} - \frac{1}{5} = \frac{x}{3} + \frac{1}{4}$

T – 1 min
S – Linear equations

Ans.

45. Repeat question $\frac{3}{5}x - \frac{2}{3}x = 4$.

T – 1 min
S – Linear equations

Ans.

46. Two parallel sides of a trapezium are of lengths 27 cm and 19 cm respectively, and the distance between them is 14 cm. Find the area of the trapezium.

T – 1 min
S – Understanding Quadrilateral

Ans.

47. The point of intersection of the diagonals of a quadrilateral divides one diagonal in the ratio 2 : 3, Can it be a parallelogram. Why?

T	– 1 min
S	– Understanding Quadrilateral

Ans.

48. Calculate the perimeter of a square whose side measures 22.5.

T	– 1 min
S	– Understanding Quadrilateral

Ans.

49. One of the diagonal of a rhombus in equal 10 ore of its sides,. Find the angle of rhombus.

T	– 1 min
S	– Understanding Quadrilateral

Ans.

50. If $x = 4$ find the value of $\frac{3x}{5} + 4x$.

T	– 2 min
S	– Square root

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. Fill in the blank:

$\frac{7}{8} + \frac{-8}{12} = \frac{-8}{12} + \square$

T – 1 min
S – Rational numbers

Ans.

52. The sum of two rational numbers is $\frac{-3}{7}$. If one of them is $\frac{-9}{14}$, find the other rational number.

T – 1 min
S – Rational numbers

Ans.

53. What should be subtracted from $-3\frac{1}{4}$ so as to get $2\frac{1}{6}$?

T – 1 min
S – Rational numbers

Ans.

54. Multiply $\frac{3}{5}$ by $\frac{5}{9}$.

T – 1 min
S – Rational numbers

Ans.

55. Simplify:
$\left(\frac{11}{8} \times \frac{12}{11}\right) + \left(\frac{-5}{9} \times \frac{3}{-10}\right)$

T – 1 min
S – Rational numbers

Ans.

56. Divide: $\frac{8}{15}$ by $\frac{-4}{25}$.

T – 1 min
S – Rational numbers

Ans.

57. Product of two rational numbers is 18. If one number is $\frac{-6}{7}$, find the other.

T – 1 min
S – Rational numbers

Ans.

58. By what rational number should we multiply $\frac{-4}{39}$ to get $\frac{16}{65}$?

T – 1 min
S – Rational numbers

Ans.

59. Simplify: $\left(-\frac{1}{5} \div \frac{6}{5}\right) \div \frac{1}{15}$

T – 1 min
S – Rational numbers

Ans.

60. Arrange the following rational numbers in ascending order.
$\frac{3}{5}, \frac{5}{12}, \frac{8}{9}$

T – 1 min
S – Rational numbers

To equalise their denominators we multiply :

Ans.

61. Name the property under multiplication used in the following:
$\frac{-19}{29} \times \frac{29}{-19} = 1$

T – 1 min
S – Rational numbers

Ans.

62. Simplify the expressions:

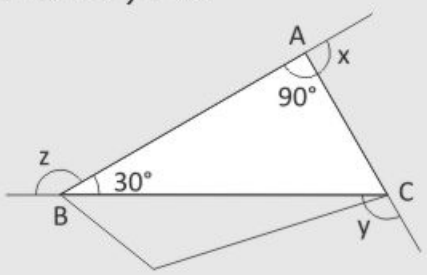
(a) n + 4n + 2n + n = _____

(b) 12c + 9c + 11c + 5c = _____

T – 1 min
S – Linear equations

Ans.

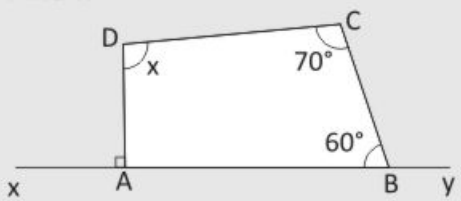
63. Find $x + y + z$?



T – 1 min
S – Understanding Quadrilateral

Ans.

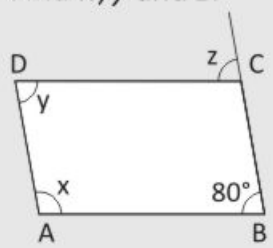
64. Find x



T – 1 min
S – Understanding Quadrilateral

Ans.

65. Find x, y and z.

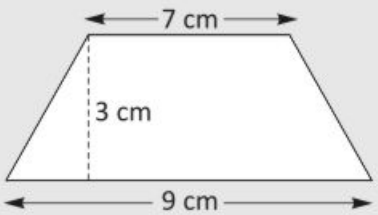


T	– 1 min
S	– Understanding Quadrilateral

Ans.

Questions 66-67, Find the area of the following trapezium:

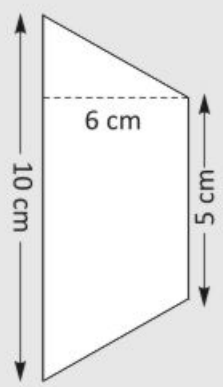
66.



T	– 1 min
S	– Understanding Quadrilateral

Ans.

67.



T	– 1 min
S	– Understanding Quadrilateral

Ans.

68. A quadrilateral has all four angles of the same measure. What is the measure of each?

T	– 2 min
S	– Understanding Quadrilateral

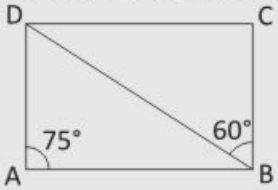
Ans.

69. Three angles of a quadrilateral are 54°, 80° and 116°. Find the measure of the fourth angle?

T	– 2 min
S	– Understanding Quadrilateral

Ans.

70. *ABCD* is a parallelogram. Find the following angles (i) ∠*CDB* and (ii) ∠*ADB*



T	– 2 min
S	– Understanding Quadrilateral

Ans.

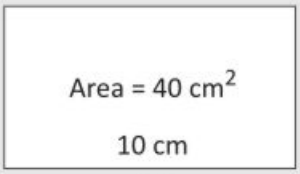
Write down in conditions of sides and Angles to form quadrilaterals.

T	– 10 min
S	– Understanding Quadrilateral

		Sides	***Angles***
71.	Parallelogram	_____	_____
72.	Rectangle	_____	_____
73.	Rhombus	_____	_____
74.	Square	_____	_____
75.	Trapizium	_____	_____
76.	Kite	_____	_____

77. Take a look at the following figures, if area of (a) & (b) are equal then given value of *h* is

(a)

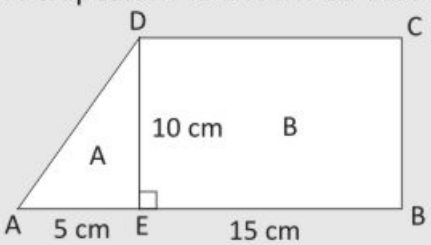


(b)

T	– 3 min
S	– Understanding Quadrilateral

Ans.

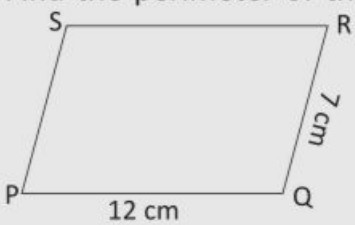
78. A trapezium is shown as below. What is ratio of area *A* and *B*?



T	– 3 min
S	– Understanding Quadrilateral

Ans.

79. Find the perimeter of the parallelogram *PQRS*.



T	– 3 min
S	– Understanding Quadrilateral

Ans.

80. Prove that any two adjacent angles of a parallelogram are supplementary.

T	– 3 min
S	– Understanding Quadrilateral

Ans.

20

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. A train travels $54\frac{1}{3}$ km/hr for $4\frac{1}{2}$ hours after leaving the station. After that it travels $60\frac{1}{2}$ km/h for the next $2\frac{1}{2}$ hours. What distance does the train travel during these 7 hours?

T – 2 min
S – Rational numbers

82. What should be subtracted from the sum of $2\frac{1}{3}$ and $-3\frac{2}{9}$, so as to get $\frac{5}{12}$?

T – 2 min
S – Rational numbers

Ans.

83. Insert a rational number between $(x-y)^{-1}$ and $x^{-1}-y^{-1}$ where $x=\frac{2}{3}$ and $y=\frac{3}{4}$.

T – 2 min
S – Linear equations

Ans.

84. For $x = \frac{-4}{9}$ and $y = \frac{5}{11}$; are (x – y) and (x) – (y) equal? If not, then insert two rational numbers between the two resulting numbers?

T – 2 min
S – Linear equations

Ans.

85. Find 10 rational numbers between $\frac{-3}{11}$ and $\frac{8}{11}$.

T – 2 min
S – Linear equations

Ans.

86. There are 120 adults and 10 fewer than h children at a party.
(a) Express in terms of h, the number of children at the party.
(b) How many people are at the party in all?

T – 2 min
S – Linear equations

Ans.

87. Zakir is 2 times as heavy as his sister. His sister is 3 times as heavy as their baby brother. Their baby brother weighs m kg.
(a) Express the total weight, in terms of m of the 3 children.
(b) If m = 8 kg, what is their total weight?

T – 2 min
S – Linear equations

Ans.

88. In a three digit number, sum of the digits is 9 and the unit $\frac{1}{3}$ digit is twice the tens digit. Adding 99 to the number, the digits are reversed. Find the number.

T	– 2 min
S	– Linear equations

Ans.

89. The difference between a two digit number and the number obtained by reversing the digits is 54. Find the difference between the digits of the digit number.

T	– 2 min
S	– Linear equations

Ans.

90. A number consists of two digit whose sum is 15. If 9 is subtracted from it, the digits are reversed. Find the number.

T	– 2 min
S	– Learner equation

Ans.

In Questions 91-93, find the value of the following variables and check your solutions:

91. $\frac{5x-7}{3x}=2$

T	– 2 min
S	– Linear equation

Ans.

92. $\frac{2k-5}{5k+2}=\frac{3}{22}$

T	– 2 min
S	– Linear equation

Ans.

93. $\dfrac{2x-\dfrac{3}{4}}{9x+\dfrac{4}{7}}=\dfrac{1}{4}$

T – 2 min
S – Linear equation

Ans.

94. Prove that the diagonals of a rhombus bisect each other at right angles.

T – 2 min
S – Rhombus

Ans.

95. 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 – 2 min
S – Linear equation

Ans.

96. The sum of two rational number is -5. If one of them is $\frac{-13}{6}$. Find the other.

T	– 3 min
S	– Rational numbers

Ans.

97. What number should be subtracted from $\frac{-2}{3}$ to get $\frac{-1}{6}$?

T	– 3 min
S	– Rational numbers

Ans.

98. Show that diagonals of a rhombus bisect each other at right angle.

T	– 3 min
S	– Understanding Quadrilateral

Ans.

99. The diagonals of a quadrilateral one 8 cm and 6 cm. If the diagonals bisect each other at right angles. Find the length of the sides of the quadrilateral.

T	– 3 min
S	– Understanding Quadrilateral

Ans.

100. Soled (i) $\frac{4}{5}x+3=\frac{6x}{11}-\frac{5}{2}$

(ii) $2x+4x+9-(-4x)=$ .....

T	– 3 min
S	– Linear equations

Ans.

06

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**

Questions 105-106, Find the quotient and remainder and verify the result Dividend = Divisor × Quotient + Remainder, for all the questions.

101. $10b^2 + 7b + 8,\ 5b - 3$

Ans.

102. $y^4 + y^2,\ y^2 - 2$

Ans.

103. If the division $N \div 2$ leaves a remainder of 1, what might be the one's digit of N?

Ans.

104. If the division $N \div 5$ leaves a remainder of 4. and the division $N \div 2$ leaves a remainder of 1. What must be the one's digit of N?

Ans.

105. Find the value of $8x^3 + 27y^3$, if $2x + 3y = 8$ and $xy = 2$.

Ans.

106. Factorise $2x^2 + y^2 + 8z^2 - 2\sqrt{2}xy - 4\sqrt{2yz} + 8xz$

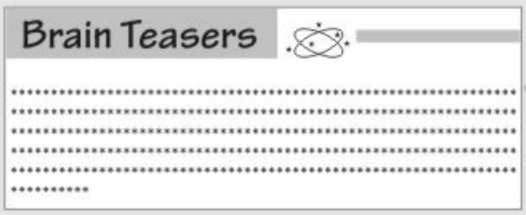
Ans.

Tools at a glance

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

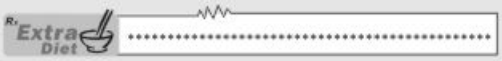
Let's Chat, the feature with suggestive topics for discussion so as to improve your capacity to debate on various topics.

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