Grade 09
Unit 07

Maths

Course Outline

- Linear Equation
- Quadric Equation
- Area of parallelogram

MAT

(Monthly Achievement Tests)

Short Code: 447310

Test ID: NMM09U070

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. Find two solutions of $x + y = 4$.

(a) (0, 4) (0, 4) (b) (0, 4) (4, 0)

(c) (4, 0) (4, 0) (d) (4, 4)

T – 1 min
S – Linear equation

Ans.

2. $y = x + 2$ has

(a) one solution (b) two solution

(c) infinite many solution (d) none of these

T – 1 min
S – Linear equation

Ans.

3. In a parallelogram *ABCD*, *E* and F are the midpoints of sides *AB* and *CD* respectively. The line segment *AF* and *EC*

(a) bisect the diagonal *BD*

(b) are perpendicular on *BD*

(c) trisect the diagonal *BD*

(d) are equal

T – 1 min
S – Parallelogram

Ans.

4. If the diagonal of a rectangle bisect the opposite angles then the rectangle is a

(a) rhombus (b) trapezium

(c) square (d) kite

T – 1 min
S – Square

Ans.

5. A linear equation in two variables has how many solutions ?

(a) one (b) two

(c) infinite (b) not possible

T – 1 min
S – Linear equation

Ans.

6. Which one of the following is not the solutions of $x+2y=6$

(a) (2, 2) (b) $(-4,1)$

(c) (6, 0) (b) (0, 3)

T – 1 min
S – Linear equation in two variable

Ans.

7. Is $\left(1,\frac{-2}{5}\right)$ is the solution of $2x+5y=0$?

(a) No (b) cannot be determined

(c) yes (b) none of these

T – 1 min
S – Linear equation in two variable

Ans.

8. Find the value of k, so that $x=2$ and $y=1$ is the solution of $x+2y+k=0$

(a) -4 (b) 4

(c) 2 (b) 1

T – 1 min
S – Linear equation in two variable

Ans.

9. Find the value of m so that $x=3, y=\frac{-3}{4}$ is the solution of $4y=-x+m$

(a) 1 (b) 0

(c) -4 (b) 3

T – 1 min
S – Linear equation in two variable

Ans.

10. Find the value of k, so that $y=-3$ and $x=4$ is the solution of $4x=k-3y$

(a) 7 (b) -3

(c) 1 (b) 11

T – 1 min
S – Linear equation

Ans.

11. In the equation $2x+y-11=0$, the value of x when $y=0$

(a) $\frac{-2}{11}$ (b) $\frac{-11}{2}$

(c) $\frac{2}{11}$ (d) $\frac{11}{2}$

T – 1 min
S – Linear equation

Ans.

12. Find the value of x when $y=6$ in the equation $y=2x+6$.

(a) 0 (b) 2

(c) 4 (d) 1

T – 1 min
S – Linear equation

Ans.

13. In the equation $13x - 12y = 25$, the co-ordinates of the point where the graph cuts the x-axis is

T – 1 min
S – Linear equation

(a) $\left(-\frac{25}{12}, 0\right)$ (b) $\left(0, \frac{25}{3}\right)$

(c) $\left(\frac{25}{13}, 0\right)$ (d) $\left(0, \frac{-25}{12}\right)$

Ans.

14. Root of the equation $7x + 5$ is:

T – 1 min
S – Linear equation

(a) –5/7 (b) 7/5

(c) –7/5 (d) 5/7

Ans.

15. If the angles of a quadrilateral are in the ratio of 1 : 4 : 5 : 6 then the angles are :

T – 1 min
S – Quadrilaterals

(a) 20.50, 90,135,110.50

(b) 22.50, 90, 112.50, 135

(c) 90,22.50, 135, 110.50

(d) 22.50,90,135,112.50

Ans.

16. If *ABCD* is a square, then the measure of *a* and *b* is

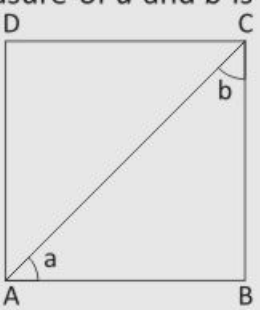
T – 1 min
S – Quadrilaterals

(a) 30°, 60°

(b) 45°, 30°

(c) 45°, 45°

(d) 60°, 30°



Ans.

17. In the parallelogram *PQRS*, *x* & *y* are :

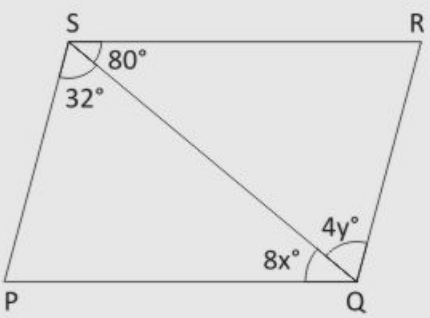
T – 1 min
S – Quadrilaterals

(a) 8° and 10°

(b) 6° and 4°

(c) 4° and 6°

(d) 10° and 8°



Ans.

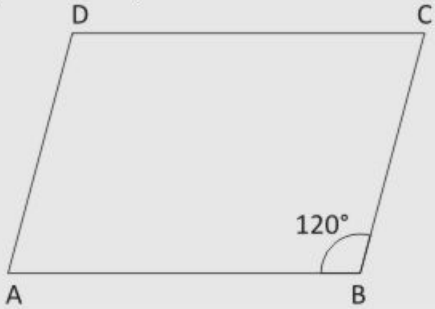
18. In a parallelogram $ABCD$, if $\angle B = 120°$ then $\angle A$ & $\angle D$ are

(a) 60°, 60°

(b) 60°, 120°

(c) 120°, 60°

(d) 70°, 30°



T – 1 min
S – Quadrilaterals

Ans.

19. A quadrilateral formed by joining the mid-point of a square is

(a) Rectangle (b) Rhombus

(c) Trapezium (d) Square

T – 1 min
S – Quadrilaterals

Ans.

20. Which of the given quadrilateral is not a parallelogram?

(a) Rectangle (b) Trapezium

(c) Square (d) Rhombus

T – 1 min
S – Quadrilaterals

Ans.

Fill in the blanks

21. An equation of the type $y = mx$ represents a line passing throughly _____ .

T – 1 min
S – Linear equation

Ans.

22. A linear equation in two variables has _____ solutions.

T – 1 min
S – Linear equation

Ans.

23. Line segment joining the mid-points of opposite sides of a quadrilateral _____ .

T – 1 min
S – Quadrilateral

Ans.

24. If a pair of opposite sides are equal and parallel then a quadrilateral is _____ .

T – 1 min
S – Parallelogram

Ans.

25. An angle which is greater than 180° and less than 360° is called _____ .

T – 1 min
S – Lines and equation

Ans.

26. A _____ has infinitely many solutions.

T – 1 min
S – Linear equation

Ans.

27. $ABCD$ is a quadrilateral with $AD = BC$ & $\angle DAB = \angle CBA$. Then ΔABD and ΔBAC are congruent by _____ congruence criterion.

T – 1 min
S – Quadrilaterals

Ans.

28. Bisectors of angles of parallelogram form a _____ .

T – 1 min
S – Quadrilaterals

Ans.

29. If the diagonals of a quadrilateral bisect each other at right angles, then it is a; _____ .

T – 1 min
S – Quadrilaterals

Ans.

30. Length × breadth = _____.

T – 1 min
S – Quadrilaterals

Ans.

True or False

31. Parallelograms on the same base and between the same parallels are not equal in area.

T – 1 min
S – Parallelogram

Ans.

32. Diagonals of a rectangle bisect each other and are equal and vice-versa.

T – 1 min
S – Rectangle

Ans.

33. The graph of $x = a$ is a straight line parallel to the x-axis.

T – 1 min
S – Linear equation

Ans.

34. $x^2 + y^2 + 2x + 4$ is a polynomial in one variable.

T – 1 min
S – Linear equation

Ans.

35. Roots of the equation $-2x + 1$ is 1/2

T – 1 min
S – Roots of the equations

Ans.

36. Every rhombus is a parallelogram.

T – 1 min
S – Quadrilaterals

Ans.

37. Diagonals of a parallelogram divide it into four triangles of equal area.

T – 1 min
S – Quadrilaterals

Ans.

38. Every rectangle is a square.

T – 1 min
S – Quadrilaterals

Ans.

39. A linear equation has always two solutions.

T – 1 min
S – Linear equations

Ans.

40. Roots of the equations $3x^2 + x = 0$ is zero.

T – 1 min
S – Linear equations

Ans.

Simple Questions

41. Final the value of p, so that $x = 1$ and $y = 6$ is the solution of $y = 2x + p$.

T	– 1 min
S	– Linear equation

Ans.

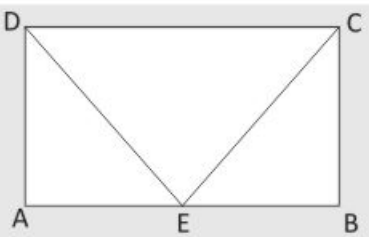
42. Find the value of y, when $x = 2$ in the equation $13x - 12y = 25$.

T	– 1 min
S	– Linear equation

Ans.

Questions 43-45, which of the following figures lie on the same base and between the same parallels. In such a case write the common base and the two parallels.

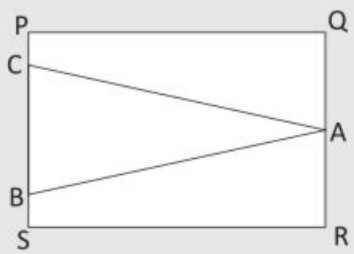
43.



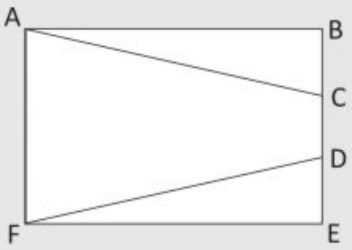
T	– 3 min
S	– Area of parallelograms and triangles

Ans.

44.



Ans.

45. 

Ans.

46. Show that parallelograms on the same base and between the same parallels are equal in area.

T	– 3 min
S	– Area of parallelograms and triangles

Ans.

47. The sum of two number is 45 and their ratio is 7 : 8. Find the numbers.

T	– 1 min
S	– Linear equation

Ans.

48. Find two different solutions of the equation $2x + 3y = 3$

T	– 1 min
S	– Linear equation in two variables

Ans.

49. Find the value of k when $x = -1, y = \frac{1}{2}$ in $2x + 6y = 8k$

T	– 1 min
S	– Linear equation

Ans.

50. Find the value of k so that $x = \frac{-1}{2}$ and $y = \frac{1}{2}$ is the solution of $x = -y + k$

T	– 1 min
S	– Linear equation

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.

Questions 51-53, Write the equation in the form of $ax + by + c = 0$ & find the indicated value, but the condition is coefficient of x should be positive.

51. Find b in $-7x = 0.43 - 0.083y$

T – 3 min
S – Linear equation

Ans.

52. Value of a in $0.048 = 0.467x - 7\sqrt{3}y$

Ans.

53. Value of c in $4 = 7x - 3y$.

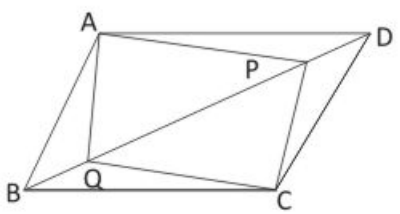
Ans.

Match the following

T – 10 min
S – Full syllabus

54.	Parallelogram	(i)	a plane closed figure formed by four line segment
55.	Diagonal	(ii)	both pair of opposite sides are parallel and equal
56.	Quadrilateral	(iii)	two sides of a quadrilateral have no common vector
57.	Trapezium	(iv)	two sides of a quadrilateral have common vertex
58.	Adjacent side	(v)	all its angles are right angle and diagonals are equal
59.	Square	(vi)	the line segment joining the opposite vertices of a quadrilateral
60.	Opposite side	(vii)	in which only one opposite sides are parallel but not equal
61.	Rectangle	(viii)	two angles of a quadrilateral having no common arm
62.	Opposite angle	(ix)	a quadrilateral in which all sides are equal and diagonal bisect each other at rigid angles
63.	Rhombus	(x)	a quadrilateral in which all four sides are equal and each angle is right angle.

Questions 64-66, In parallelogram ABCD, two points P and Q are taken on diagonal BD such that DP = BQ show that



64. $\Delta APD \cong \Delta CQBC$

T – 4 min
S – Parallelogram

Ans.

65. $AP = CQ$

Ans.

66. $\Delta AQB \cong \Delta CPD$

Ans.

67. Show that the diagonals of a parallelograms divide it in four triangles of equal area.

T – 2 min
S – Parallelogram

Ans.

Questions 68-70, check which of the following are solutions of the equation $x - 2y = 4$ and which are not.

T – 6 min
S – Linear equation

68. (2, 1)

Ans.

69. $(5\sqrt{2}, 2\sqrt{2})$

Ans.

70. (6, 1)

Ans.

Questions 71-73, write 4 solutions for each of the following equations

71. $x + y = 2$

T – 6 min
S – Linear equation

Ans.

72. $\pi x + y = 2$

Ans.

73. $x = 2y$

Ans.

74. Find 'k' when $y = -2$ in the equation $3x + 2y = k$

T – 2 min
S – Linear equation

Ans.

75. Find the value of y in $x^2 + 2y + 5 = 0$, when $x = 1$.

T – 2 min
S – Linear equation

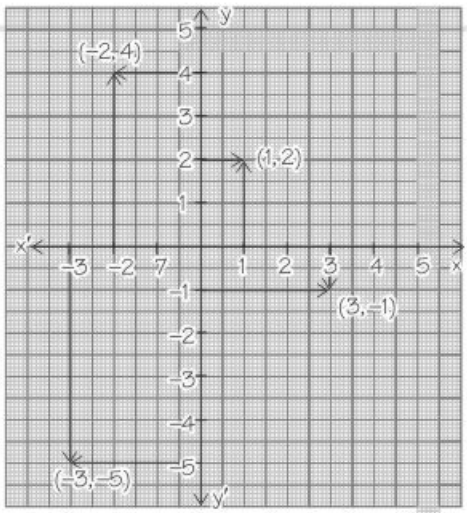
Ans.

76. Give the equation of two lines passing through (2, 8)?

T – 2 min
S – Linear equation

Ans.

Questions 77-80, From the graph in which quadrant or on which axis do each of the lie?



T – 4 min
S – Linear equation

77. (–2, 4)

Ans.

78. (3, –1)

Ans.

79. (–3, –5)

Ans.

80. (1, 2)

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. Kamala and Neena two students of class IX together contributed Rs. 450 towards the Prime Minister's Relief Fund to help the earthquake victims. The linear equation which satisfies this data will be.

T – 2 min
S – Linear equation

Ans.

82. In a fabric cotton & synthetic fibres are in the ratio 2 : 3 by weight. If the weight of the cotton fibre is 30 grams then find the weight of the Synthetic fibres?

T – 2 min
S – Linear equation

Ans.

83. In figure *ABCD* is a quadrilateral and $BE \| AC$ and also *BE* meets *DC* produced at *E*. Show that area of ΔADE is equal to the area of the quadrilateral *ABCD*.

T	– 2 min
S	– Quadrilateral

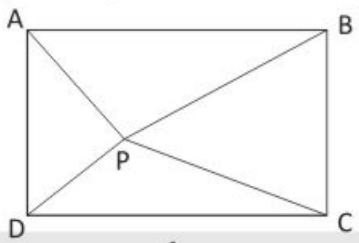
Ans.

84. If a triangle and a parallelogram are on the same base and between the same parallels, then prove that the area of the triangle is equal to half the area of the parallelogram.

T	– 2 min
S	– Area of parallelogram

Ans.

Questions 85-86, In the figure, P is a point in the interior of a parallelogram ABCD.



85. Show that $ar(\Delta APB) + ar(\Delta PCD) = \frac{1}{2} ar$ (parallelogram)

T	– 4 min
S	– Area of parallelogram

Ans.

86. Show that ar $(\Delta APD) + \text{ar}(\Delta PBC) = \text{ar}(\Delta APB) + \text{ar}(\Delta PCD)$

Ans.

87. Find the properties of parallelogram, when

T – 2 min
S – Parallelogram

(i) The opposite angles are equal.

(ii) The opposite sides are parallel and equal.

(iii) The diagonals bisects each other.

(iv) Each diagonal divide a parallelogram in two congruent triangles.

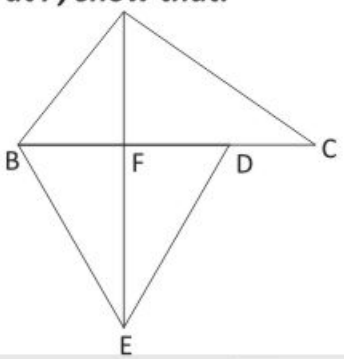
Ans.

88. *ABCD* is a trapezium on which $AB \| DC$, *BD* is a diagonal and *E* is the mid-point of *AD*. A line is drawn through *E* parallel to *AB* intersecting *BC* at *F*. Show that *F* is the mid-point of *BC*.

T – 2 min
S – Properties of parallelogram

Ans.

Questions 89-91, In the figure ABC and BDE are two equilateral triangles such that D is the mid-point of BC. If AE intersects BC at F, show that.



T	– 6 min
S	– Area of parallelograms and triangles

89. $ar(BDE) = \frac{1}{4} ar(ABC)$

Ans.

90. $ar(BDE) = \frac{1}{2} ar(BAE)$

Ans.

91. $ar(ABC) = 2ar(BEC)$

Ans.

92. Solve the question $x-2=0$ and represent the solution on the number line ?

T – 2 min
S – Linear equation

Ans.

Questions 93-95, express the following linear equations in the form $ax+by+c=0$ and indicate the values of a, b and c in each case.

93. $3x+4y=2.\overline{35}$

T – 6 min
S – Linear equation

Ans.

94. $\frac{3}{2}x+2=0$

Ans.

95. $2x=-3y$

Ans.

96. Find the value of x, when $y = 5$ in the equation $4x + 3y - 7 = 0$

T – 2 min
S – Linear equation

Ans.

97. Draw the graph of the linear equation $x + y = 2$

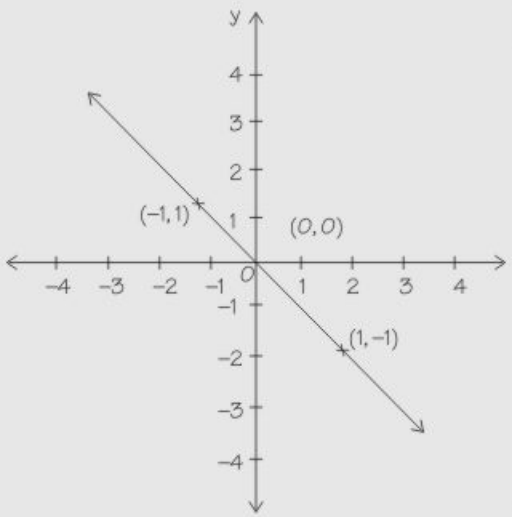
T – 2 min
S – Linear equation

x	0	2
y	2	0

Ans.

98. Find the linear equation of the given graph.

T – 2 min
S – Linear equation



Ans.

99. Draw the graph of the equation $x = 0$ and $y = 0$. Also find the point of intersection of these lines?

T – 2 min
S – Linear equation

Ans.

100. Write the equation in the form of $ax^2 + bx + c = 0$ and find the indicated: Value of a in $7\sqrt{3}x = -3\sqrt{3} + 4\sqrt{5}x^2$

T – 2 min
S – Linear equation

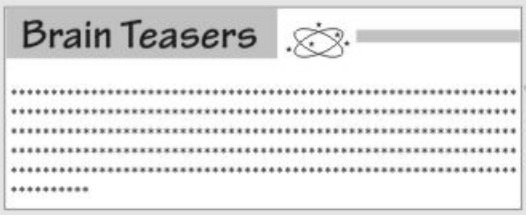
Ans.

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