**GAUTENG DEPARTMENT OF EDUCATION**

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| MATHEMATICS **GRADE 9**  **CONTROLLED TEST TERM 3** |

**Name of Learner: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Marks:** 50

**Date:** \_\_\_\_\_\_\_ 2021

**Duration:**  60 min

**Examiner:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_ **Moderator: \_\_\_\_\_\_\_\_**

Diagnosis Grid

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| **QUESTION** | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | **TOTAL** |
| **MARK ALLOCATED** | *10* | *3* | *6* | *4* | *5* | *6* | *4* | *12* | **50** |
| **LEARNERS’ MARK** |  |  |  |  |  |  |  |  |  |

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**INSTRUCTIONS AND INFORMATION**

Read the following instructions carefully before answering the questions.

1. Answer ALL the questions.
2. Number the answers correctly according to the numbering system used in this question paper
3. Clearly show ALL calculations which you have used in determining your answers where required.
4. Round off all final answers to two decimal places where it is required unless stated otherwise.
5. You may use an approved scientific calculator (non-programmable and non-graphical), unless stated otherwise.
6. Answers only will not necessarily be awarded full marks.
7. Note that diagrams are not necessarily drawn to scale.

8. Write neatly and legibly.

Question 1

Circle the correct answer.

1.1. In y = x + 3 the output value is\_\_\_\_\_\_

A. 3

B. x

C. y

D. x+3

1.2. Match the graph to the table that has the values of the graph

Y

X

. -1

A.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Input (x) | 2 | 4 | 5 | 8 | 15 | 50 |
| Output (y) | 8 | 12 | 14 | 20 | 34 | 104 |

B.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Input (x) | -3 | 0 | 2 | 9 | 11 | 20 |
| Output (y) | 8 | -1 | 3 | 80 | 120 | 399 |

C.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Input (x) | -3 | 0 | 3 | 6 | 9 | 12 |
| Output (y) | 4 | 2 | 0 | -2 | -4 | -6 |

D.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Input (x) | 1 | 2 | 3 | 4 | 6 | 12 |
| Output (y) | 12 | 6 | 4 | 3 | 2 | 1 |

1.3. On the diagram below; angle x and angle y are equal because they are \_\_\_\_\_\_\_\_\_\_

x

y

A. Corresponding angles.

B. Alternate angles.

C. Co-interior angles.

D. Complementary angles

1.4. These two lines meet at 90 angles.

A. Parallel lines.

B. Straight lines.

C. Vertical lines.

D. Perpendicular lines.

1.5 A function which has a constant difference per interval is \_\_\_\_\_\_\_\_\_\_

A. Exponential.

B. Linear.

C. Logarithm.

D. None of the above.

1.6 In y = 2x + 1

A.Y is the independent value

B. Y is the dependent value

C. Y is the input value

D.All of the above

1.7 The gradient is \_\_\_\_\_\_\_\_\_

A.

B.

C.

D.

1.8. One of the properties of an Isosceles triangle is that \_\_\_\_\_\_\_\_\_

A.All angles add up to 80 and all sides are not equal.

B. All angles add up to 360 and all sides are equal.

C. The sum of angles equals 180 and it has a right angle.

D.The base angles are equal and opposite sides are equal.

1.9. Complementary angles add up to \_\_\_\_\_\_\_\_\_

A.80

B. 360

C. 90

D.270

1.10. A graph that follows a curved pattern is a \_\_\_\_\_\_\_\_\_

A. Non-linear graph

B. Straight graph

C. Discrete graph

D.Increasing graph [10]

QUESTION 2.

Determine the missing input and output values in the following flow chart and fill in the table.

X Y

b)\_\_\_\_

7

c)\_\_\_\_

-2

a)\_\_\_

2

½ *X + 7*

[3]

Question 3

Identify the input values for **y = x – 1**; if the output values are the integers from -3 to 1 and answer this by filling the table below.

|  |  |  |  |  |  |
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[6]

Question 4

Describe the relationship between x and y from the table below.

|  |  |  |  |
| --- | --- | --- | --- |
| x | -2 | -1 | 0 |
| y | 9 | 5 | 1 |

4.1. Describe in words: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4.2. Describe algebraically : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ [4]

Question 5

Determine the rule that relates the input to the output values.

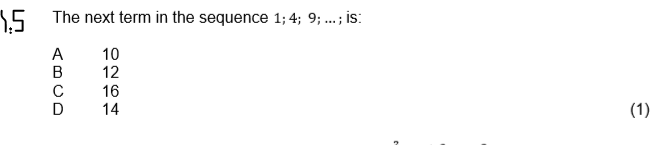
X Y

-2

- 2

\_\_\_

3

 5.1. Write the rule algebraically: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ [2]

5.2. Use the rule to calculate the missing value. Write in the space below to show calculations.

[3]

Question 6

WXYZ is a parallelogram with = 90. Calculate with reasons the size of ; and

W Z

Statement

Reason

²

¹

²

¹ Ꝫ

X Y V

[6]

Question 7

Prove that the following triangles are congruent.

Statement

A D

Reason

52cm 52cm

44ᵒ 44ᵒ

B 33cm C E 33cm F

[4]

Question 8.

Use the Cartesian plane to respond to the statements below.

8.1 Draw ABC with vertex coordinate of A (-4;5) , B(-6;3) C(-2;3).

8.2. Draw the image of ABC ; ie A¹B¹C¹ if ABC is reflected using the

rule (x;y) (x+3; y - 2).

Y

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X

[6]

8.3. Indicate the coordinates of A¹B¹ and C¹ show calculations below

Coordinates of A¹ : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Coordinates of B¹ : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Coordinates of C¹ : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ [6]