

**MATHEMATICS**

**GRADE 9**

**TERM 3 EXEMPLAR TEST**

**DATE: TERM 3 2021**

**TIME: 1 HOUR**

**TOTAL: 50**

**NAME OF LEARNER: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ GRADE 9: \_\_\_**

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| --- | --- | --- | --- | --- | --- | --- | --- |
| **Question number** | **1** | **2** | **3** | **4** | **5** | **6** | **Total** |
| **Total marks** | **5** | **9** | **9** | **9** | **9** | **9** | **50** |
| **Learner marks** |  |  |  |  |  |  |  |
| **Moderated marks** |  |  |  |  |  |  |  |

**INSTRUCTIONS:**

1. This paper consists of 13 pages and **6** questions based on the prescribed content framework in the CAPS document.
2. Section A has 5 multiple choice questions. Answer this section on the answer sheet provided.
3. Section B has 5 Questions, answer ALL questions in the space provided.
4. Clearly show all calculations.
5. An approved calculator (non-programmable and non-graphical) may be used.
6. Where necessary, round off answers to two decimal places unless otherwise stated.
7. Diagrams are not necessarily drawn to scale.
8. It is in your best interest to write neatly and legibly.
9. **ANSWERS ONLY will not necessarily be awarded full marks.**

**SECTION A: MULTIPLE CHOICE QUESTIONS**

**QUESTION 1:**

Choose the correct answer. Circle the letter of the correct answer on the **ANSWER SHEET** provided on **page 5**. If you want to change your choice, put a cross through the wrong letter and circle your new choice.

|  |  |  |
| --- | --- | --- |
| 1.1. | Study the flow diagram below:    The missing rule can be represented as:  A)  B)  C)  D) | (1) |
| 1.2. | The gradient of the straight line graph is?    A) 1  B) 2  C) 0  D) undefined | (1) |
| 1.3. | Which transformation is represented in the diagram?    A) Reflection in the  B) Translation  C) Reflection in the  D) Rotation | (1) |
| 1.4. | In the diagram below, lines *n* and *m* are cut by transversals *p* and *q*.    What value of *x* would make lines *n* and *m* parallel?  A) 110  B) 80  C) 70  D) 50 | (1) |
| 1.5. | In the following figure, ABCD and AEFG are two parallelograms. If = 60°, then is?    A) 30  B) 60  C) 90  D) 120 (1) | |

**[TOTAL: 5]**

**ANSWER SHEET**

**CIRCLE YOUR ANSWER FROM SECTION A IN THE GRID BELOW AS SHOWN IN THE EXAMPLE:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Example:** | **A** | **B** | **C** | **D** |
| **1.1.** | **A** | **B** | **C** | **D** |
| **1.2.** | **A** | **B** | **C** | **D** |
| **1.3.** | **A** | **B** | **C** | **D** |
| **1.4.** | **A** | **B** | **C** | **D** |
| **1.5.** | **A** | **B** | **C** | **D** |

**[51]**

**[TOTAL: 5]**

**SECTION B: QUESTIONS PER TOPIC**

|  |  |  |
| --- | --- | --- |
| **QUESTION 2: FUNCTIONS AND RELATIONSHIPS** | | |
| 2.1 | Match the representation of the function in column 1 with the representation of the same function in column 2. Write the answer in the answer column.   |  |  |  | | --- | --- | --- | | COLUMN 1 | COLUMN 2 | ANSWER | | 1. Subtract 1 from the input and then multiply by 4. | A. | 1. | |  | B. | 2. | |  | C. | 3. | | (3) |

|  |  |  |  |
| --- | --- | --- | --- |
| 2.2 |  | |  |
| 2.2.1 | If the rule for finding y in the table below is:  determine the output values (𝑦) for the given input values (𝑥). | (2) |
| |  |  |  | | --- | --- | --- | |  | -3 |  | |  |  |  | |

|  |  |
| --- | --- |
| 2.2.2 The following equation is given:  If the output values are determine the input values. | |
|  | (2) |
|  |
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| 2.2.3 | Determine the rule in the following table.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | -1 | 0 | 1 | 2 | |  | -3 | 2 | 7 | 12 |   Rule: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | (2) |

|  |  |  |
| --- | --- | --- |
| **[TOTAL : 9]** | | |
|  | | |
| **QUESTION 3: GRAPHS** | |  |
| 3.1 | Study the straight line graph below and then answer the questions that follow.     * + 1. Write down the equation of the straight line. | |
| Equation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (2) | |
|  | |
| 3.2. | The table below represents the relationship between the and values. | |
| |  |  |  |  |  | | --- | --- | --- | --- | --- | | *x* |  | 2 | 4 |  | | *y* | 5 | -1 |  | 8 | | | |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| |  |  |  | | --- | --- | --- | | 3.2.1 | Determine ***a*** and ***b*** by showing all calculations. | (3) | |  | |  | | 3.2.2 Use the grid below to plot the graph, make use of the table and answers from  Question 3.2.1.   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   (4) | | | |
| **[ TOTAL: 9]**  **QUESTION 4: TRANSFORMATION GEOMETRY** |

4.1 In the figure below, study the transformation of rectangle to and then

answer the questions.

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | |  |
| 4.1.1. | Describe the translation in words. |  |
|  |  | (2) |
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|  |  |  |
| 4.1.2. | Give the new coordinates of if is reflected about the . | |
|  |  |  |
|  |  | (2) |

4.1.3Use the grid below to draw triangle PQR with coordinates:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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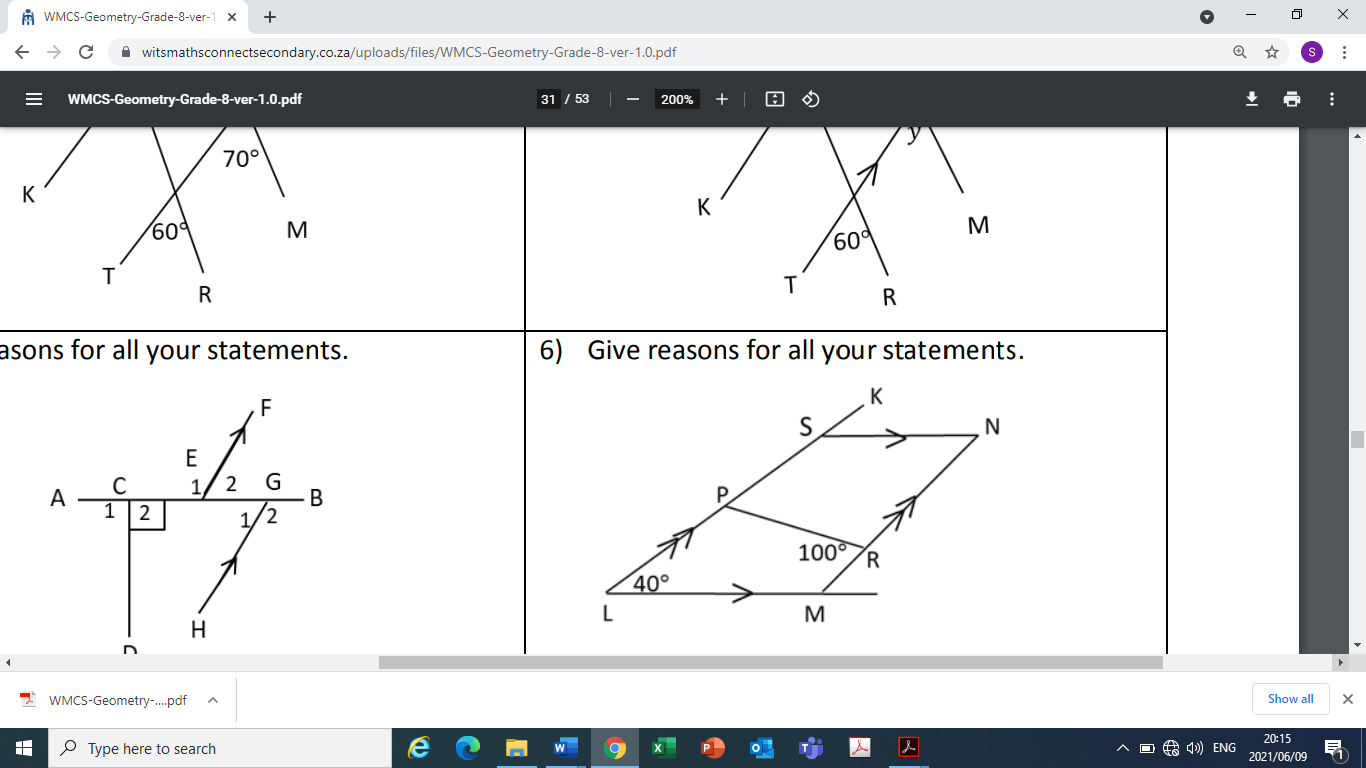
(2)

4.1.4Use the same grid to draw triangle . (the image of ) after translating units right and units down. (3)

**[ TOTAL: 9]**

**QUESTION 5: STRAIGHT LINE GEOMETRY**

5.1In the diagram below if = 100° and = 40°.

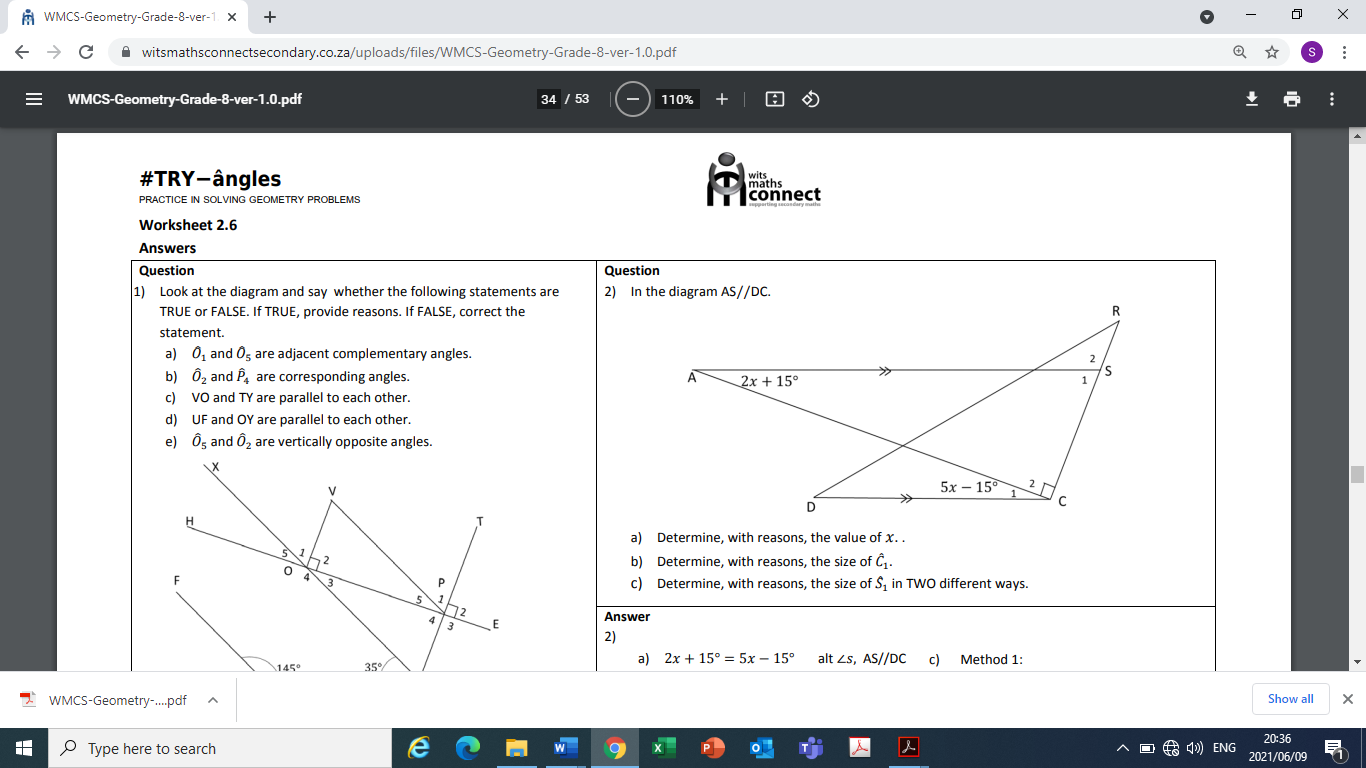


Provide reasons for each of the given statements.

|  |  |  |
| --- | --- | --- |
|  | Statement | Reason |
| 5.1.1 |  |  |
| 5.1.2 |  |  |
| 5.1.3 |  |  |

(3)

5.2 In the given diagram, AS *// DC.*



5.2.1 Determine with reasons the value of .

|  |  |
| --- | --- |
| Statement | Reason |
|  |  |
|  |  |
|  |  |

(3)

5.2.2 Determine with reasons the size of .

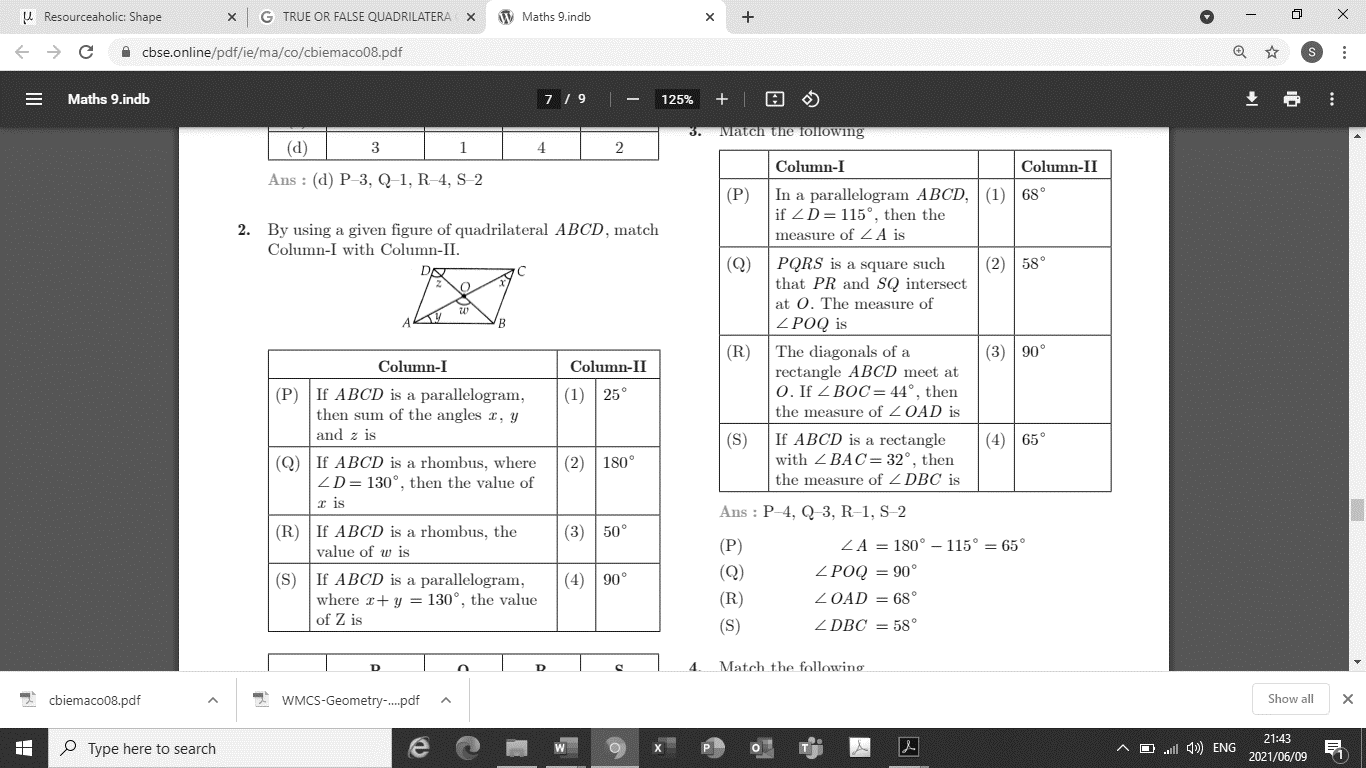
|  |  |
| --- | --- |
| Statement | Reason |
|  |  |
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|  |  |

(3)

**[ TOTAL: 9]**

**QUESTION 6: GEOMETRY OF 2D SHAPES**

6.1 Study quadrilateral ABCD below and then answer the questions that follow.

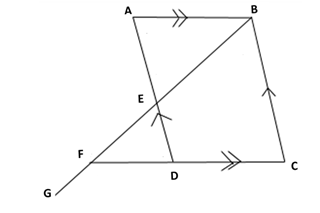


6.1.1 State whether each of these statements is true or false.

|  |  |
| --- | --- |
| STATEMENT | TRUE OR FALSE |
| 1. If ABCD is a parallelogram, then sum of the angles ***x* *, y*** and ***z*** is 1800. |  |
| 1. If ABCD is a rhombus, where = 1300, then the value of ***x*** is 250. |  |
| 1. If ABCD is a rhombus, the value of *w* is 1800. |  |
| 1. If ABCD is a parallelogram, where x + y = 1300, then the value of ***z*** is 500. |  |

(4)

6.2 In the diagram below, *AB // DC and AD // BC, = 600 and = 520.*



6.2.1 Classify quadrilateral ABCD**.**

|  |
| --- |
|  |

(1)

6.2.2 Determine with reasons the size of .

|  |  |
| --- | --- |
| Statement | Reason |
|  |  |
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(4)

**[ TOTAL: 9]**

**TOTAL [50]**