**GRADE 9 MATHEMATICS**

**TERM 2**

**FORMAL ASSESSMENT TASK 2.1**

**INVESTIGATION: Congruency & Similarity**

**MEMORANDUM**

**SECTION A: INVESTIGATION [50]**

**QUESTION 1**

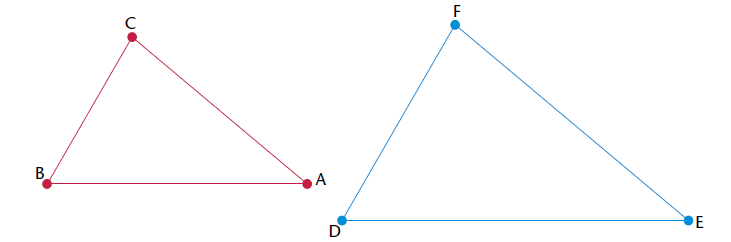
|  |  |  |  |
| --- | --- | --- | --- |
|  |  | **Answer** | **Mark descriptor** |
| 1.1 |  | Three sides given: side, side, side (SSS)  ΔDEF with DE = 7 cm, DF = 6 cm and EF = 5 cm.    **✓**  **✓**  **✓** | 1mark per side with correct length  (3)  1A completion of triangle  (1)  **[4]** |

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | **Answer** | **Mark descriptor** |
| 1.2 |  | Three angles given:angle, angle, angle (:  ΔABC with A = 80°, B = 60° and C = 40°.  **✓M**  **✓M**  **✓M**  **✓M**  **✓M**  **✓M**  **✓A** | 1M per correct angle  (3)    1A completion of triangle  (1) |
| 1.3 |  | One side and two angles are given: side, angle, angle (S):  ΔGHI with GH = 8 cm, G = 60° and H = 30°.  **✓A**  **✓M**  **✓M**  **✓M**  **✓A**  **✓A** | 1M per correct angle  (2)  1M per side with correct length  (1)  1A completion of triangle  (1) |

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| --- | --- | --- | --- | --- | --- |
|  |  | **Answer** | | | **Mark descriptor** |
| 1.4 |  | If two sides and an inclusive angle are given: side, angle, side (SS):  ΔJKL with JK = 9 cm, K = 130° and KL = 7 cm.  **✓A**  **✓M**  **✓M**  **✓M** | | | 1M per angle with correct angle size  (1)  1M per side with correct length  (2)  1A completion of triangle  (1) |
| 1.5 |  | If two sides and an angle that is not inclusive are given: side, side, angle (SS):  ΔMNP with MN = 10 cm, = 50° and PN = 8 cm.    **✓A**  **✓M**  **✓M**  **✓M** | | | 1M per angle with correct angle size  (1)  1M per side with correct length  (2)  1A completion of triangle  (1) |
| 1.6 |  | If a right angle, the hypotenuse and a side are given (90°HS): ΔTRS with TR ⊥ RS, RS = 7 cm and TS = 8 cm.    **✓A**  **✓M**  **✓M**  **✓M** | | | 1M for construction of right angle  (1)  1M per side with correct length  (2)  1A completion of triangle  (1) |
|  |  | | **Answer** | **Mark descriptor** | |
| 1.7 | 1.7.1 | | Congruent triangles are:  **✓✓A**  1.1/ 1.3/ 1.4 and 1.6 | 1A for each correct two answers  (2) | |
|  |  | |  |  | |
|  | 1.7.2 | | Triangles that are not congruent are:  1.2 en 1.5 **✓✓A** | 1A per answer  (2) | |
|  |  | |  |  | |
|  |  | |  | **[28]** | |

**QUESTION 2**

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | **Answer** | **Mark descriptor** |
| 2.1 |  | |  |  | | --- | --- | | **Conditions** | **Congruent**  **(YES /NO)** | | 3 sides (SSS) | **YES**  **✓A** | | 2 sides (SS) | **NO**  **✓A** | | 3 angles ( | **NO**  **✓A** | | 2 angles and a side (S) | **YES**  **✓A** | | 2 sides and an angle not situated between the two sides (S,S, ) | **NO**  **✓A** | | 2 sides and an angle situated between the two sides (S, S) | **YES**  **✓A** | | A right angle with a hypotenuse and another side (90°HS) or (90, hypotenuse, side ) | **YES**  **✓A** | |  |
|  |  |  | **[7]** |

**QUESTION 3**

**✓A**

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | **Answer** | **Mark descriptor** |
| 3.1 |  | |  |  |  | | --- | --- | --- | | **ANGLE** | **ANGLE** | **What do you observe?** | | = | = (both angles)  **✓A**  **✓A** | **✓A**  **✓A** | |  | **✓A** | =  **✓A** | |  |  |  | | 1A both angles  1A per observation  (6) |
|  |  | **✓A** |  |
| 3.2 |  | The corresponding angles are equal. | (1) |
|  |  |  |  |
| 3.3 |  | |  |  |  | | --- | --- | --- | | **Length in cm** | **Length in cm** | **Ratio**  *Ratio reminder: you read 2:1 as “two to one”* | | **= 6 cm** | **✓A**  **= 8 cm**  **✓A** | **✓A**  **= 6:8 of 1: 1,3** | | **3,9 cm** | **5,2 cm**  **✓A** | **✓A**  **= 3,9: 5,2 of 1: 1,3** | | **5,2 cm** | **7cm** | **✓A**  **= 5,25: 7 of 1: 1,3** | | 1A for both lengths of sides  1A per correct ratio  (6) |
|  |  |  |  |
| 3.4 |  | The corresponding sides are in the same relationship to each other.  **✓A**  In this case the sides of Δ DEF are 1 as long as the sides of ΔBAC. | 1A  (1) |
|  |  |  |  |
| 3.5 |  | The sequence in which we write the letters in the notation of similar triangles indicate which sides correspond with the sides in the other triangle and which angles correspond with which angles in the other triangle.  **ΔBAC /// ΔDEF indicates thus: , A = E and C = F which are correct.**  **✓A** | 1A Mark descriptor  (1) |
|  |  |  | **[15]** |

**SECTION B: ASSIGNMENT [30]**

**QUESTION 1**

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| --- | --- | --- | --- |
|  |  | **Answer** | **Mark descriptor** |
| 1 |  | **✓A**   * S,S,S   **✓A**   * SS   **✓A**   * S   **✓A**   * 90, Hypotenuse, S | 1A per Answer  (4) |
|  |  |  | **[4]** |

**QUESTION 2**

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| 2 |  | Similar  **✓A** | 1A  (1) |
|  |  |  | **[1]** |

**QUESTION 3**

**✓A**

**✓A**

|  |  |  |  |
| --- | --- | --- | --- |
| 3 | 3.1 | Triangle ABC is congruent to triangle XYZ  **✓A**  **✓A** | 1A naming of both triangles in correct order  1A term congruent  (2) |
|  | 3.2 | Triangle ABC is similar to triangle XYZ  **✓A** | 1A naming of both triangles in correct order  1A term similar  (2) |
|  | 3.3 | Line segment/ Line RM is parallel to line segment/ line EH  **✓A** | 1A correct naming of line segments  1A term parallel  (2) |
|  |  |  | **[6]** |

**QUESTION 4**

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | **Answer** | **Mark descriptor** |
| 4 | 4.1 | Prove that ABC DEF.  **A**  **B**  **F**  **E**  **D**  **C**  1  2  1  2   |  |  | | --- | --- | | Statement | Reason  **✓A** | | B = E=90 | Given  **✓A** | | C1 = F1 | Given  **✓A** | | AB = ED | Given | | ABC DEF  **✓A** | S  **✓A** | | 1A per reason  1A correct order of triangles  (5) |
|  |  | **Answer** | **Mark descriptor** |
|  | 4.2 | Prove that AF = CD.   |  |  | | --- | --- | | Statement | Reason | | AC = DF  **✓A**  **✓A** | ABC DEF. | | AC = AF + FC  **✓A** |  | | DF = CD + FC |  | | AF = CD | FC is common | | 1A statement  1A statement  1A statement  (3) |
|  |  |  | **[8]** |

**QUESTION 5**

|  |  |  |  |
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|  |  | **Answer** | **Mark descriptor** |
| 5 | 5.1 | In the figure below = 90 and .  2  1  2  1  **T**  **P**  **Q**  **R**  Prove that PQT||| RQP.   |  |  | | --- | --- | | **Statement**  **✓A** | **Reason**  **✓R** | | PQT = RQP  **✓A** | common angle  **✓R** | | T1 = QPR | Both angles = 900 | | P1 = R | Third angle of triangle  **✓R** | | PQT||| RQP |  | | 1A statement  1R Reason  1A statement  1R Reason  1R Reason  (5) |
|  |  |  |  |
|  | 5.2 | Calculate the length of PQ if QT = 4cm and TR = 12cm.   |  |  | | --- | --- | | **Statement**  **✓A** | **Reason**  **✓R** | | **✓S** | PQT||| RQP | | **✓S** |  | | PQ2 = 64  **✓CA**  **✓CA** |  | | PQ = = 8 |  | | 1A Statement  1R Reason  1S Substitution  1S Substitution  1CA operation 1CA operation with square root  (6) |
|  |  |  | **[11]** |
|  |  |  |  |

**TOTAL: 80**

**(Investigation: 50 + Assignment: 30)**