|  |  |  |  |
| --- | --- | --- | --- |
| Year 9 | | *Linear Equations* | Non Calculator |
| **Skills and Knowledge Assessed:**   * Sketch linear graphs using the coordinates of two points and solve linear equations (ACMNA215) * Substitute values into formulas to determine an unknown (ACMNA234) * Solve problems involving linear equations, including those derived from formulas (ACMNA235) * Solve linear inequalities and graph their solutions on a number line (ACMNA236) * Solve linear equations involving simple algebraic fractions (ACMNA240) | | | Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| **Section 1** Short Answer Section | | | |
| Write all working and answers in the spaces provided on this test paper. | | | |
|  | Solve  .  ……………………………………………………………………………………………....  ………………………………………………………………………………………………. | | |
|  | Find the value of *c* if  ……………………………………………………………………………………………....  ………………………………………………………………………………………………. | | |
|  | Solve the equation :  .  ……………………………………………………………………………………………....  ………………………………………………………………………………………………. | | |
|  | Solve : .  ……………………………………………………………………………………………....  ………………………………………………………………………………………………. | | |
|  | Use the formula  to find the value of *a* when *s* = 25, *u* = 7 and *t* = 4.  ……………………………………………………………………………………………....  ………………………………………………………………………………………………. | | |
|  | Solve .    ……………………………………………………………………………………………....  ………………………………………………………………………………………………. | | |
|  | Graph the inequality  on the number line below. | | |
|  | Show how you could check if  is the solution to  ……………………………………………………………………………………………....  ………………………………………………………………………………………………. | | |
|  | Solve  .  ……………………………………………………………………………………………....  ………………………………………………………………………………………………. | | |
|  | Solve  .  ……………………………………………………………………………………………....  ………………………………………………………………………………………………. | | |
|  | ……………………………………………………………………………………………....  ………………………………………………………………………………………………. | | |
|  | Graph the solution to  ……………………………………………………………………………………………....  ………………………………………………………………………………………………. | | |

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| Year 9 | | *Linear Equations* | Calculator Allowed |
| Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| **Section 2** Multiple Choice Section | | | |
| Mark all your answers on the accompanying multiple choice answer sheet, not on this test paper. You may do any working out on this test paper. Calculators are allowed for this section. | | | |
|  | Solve  A.  B.  C.  D. | | |
|  | A.  B.  C.  D. | | |
|  | A.  B.  C.  D. | | |
|  | Which is the first incorrect line in the following solution?     1. Line 1 B. Line 2 C. Line 3 D. Line 4. | | |
|  | Which is the correct solution to the equation:    A.  B.  C.  D. | | |
|  | The solution to  is:  A.  B.  C.  D. | | |
|  | Solve for  *w*:    A.  B.  C.  D. | | |
|  | Which number line graph gives the solution to  ?    A.  B.  C.  D. | | |
|  | The formula  is used in physics.  Poppy is asked to find the value of *u*, if  What equation should she solve?  A.  B.  C.  D. | | |
|  | The solution to  is:  A.  B.  C.  D. | | |
|  | Here are four attempts to solve the inequation  .  Which is correct?  A.  B.  C.  D. | | |
|  | Which of the following is the solution to the equation  A.  B.  C.  D. | | |

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| Year 9 | *Linear Equations* | Calculator Allowed |
| Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| **Section 3** Longer Answer Section | | |
| Write all working and answers in the spaces provided on this test paper. | | |

|  | | **Marks** |
| --- | --- | --- |
| 1. | (a) Solve :  …………………………………………….……………………………………………  ……………………………………………….………………………………………… | **2** |
|  | (b) Solve :    …………………………………………….……………………………………………  ……………………………………………….………………………………………… | **2** |
|  | (c) Solve :  …………………………………………….……………………………………………  …………………………………………….……………………………………………  ……………………………………………….………………………………………… | **2** |
|  | (d) Use the formula  to find the value of *A* when  = 3.1, *r* = 3 and *l* = 6.  …………………………………………….……………………………………………  ……………………………………………….…………………………………………  ……………………………………………….………………………………………… | **2** |
| 2. | (a) Solve :  ……………………………………………………………………………………..  ….……………………………………….…………………………………………  …………………………………………………………………………………….. | **2** |
|  | (b) Solve :  .  ……………………………………………………………………………………..  ….……………………………………….…………………………………………  …………………………………………………………………………………….. | **3** |
|  | (c) Solve and graph the solution to  .  ……………………………………………………………………………………..  ….……………………………………….…………………………………………  …………………………………………………………………………………….. | **3** |
|  | (d) Use the formula  to find the value of *s* when *v* = 4, *u* = 2 and *a* = 3  …………………………………………….……………………………………………  ……………………………………………….…………………………………………  ……………………………………………….………………………………………… | **3** |
| 3. | (a) Solve :  ……………………………………………………………………………………..  ….……………………………………….…………………………………………  …………………………………………………………………………………….. | **3** |
|  | (b) Mike is 4 years older than his brother Leo. The sum of their ages is 28.  Write an equation that describes this situation, using *m* for Mike’s age and solve it to find both of their ages.  ……………………………………………………………………………………..  ….……………………………………….…………………………………………  ……………………………………………………………………………………..  …………………………………………………………………………………… | **3** |
|  | (c) Solve :  .  ……………………………………………………………………………………..  ….……………………………………….…………………………………………  ……………………………………………………………………………………..  …………………………………………………………………………………….. | **3** |
|  | (d) Solve :  ……………………………………………………………………………………..  ….……………………………………….…………………………………………  ……………………………………………………………………………………..  …………………………………………………………………………………….. | **3** |

*Multiple Choice Answer Sheet*

*Linear Equations*

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Completely fill the response oval representing the most correct answer.

1. A B C D

2. A B C D

3. A B C D

4. A B C D

5. A B C D

6. A B C D

7. A B C D

8. A B C D

9. A B C D

10. A B C D

11. A B C D

12. A B C D

|  |  |  |  |
| --- | --- | --- | --- |
| Year 9 | | *Linear Equations* | Non Calculator |
| **Section 1** Short Answer Section | | | |
| ANSWERS | | | |
| No. | WORKING | | ANSWER |
|  |  | |  |
|  |  | |  |
|  |  | |  |
|  |  | |  |
|  | *s* = 25, *u* = 7 and *t* = 4. | |  |
|  |  | |  |
|  |  | | See graph |
|  | Sub | | It is a solution.  Need to show working of substitution, for the mark. |
|  |  | |  |
|  |  | |  |
|  |  | |  |
|  |  | | See graph |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Year 9 | | *Linear Equations* | Calculator Allowed | |
| **Section 2** Multiple Choice Section | | | | |
| ANSWERS | | | | |
| No. | WORKING | | | ANSWER |
|  |  | | | **D** |
|  |  | | | **B** |
|  | Open circle so not equal to -2, arrow to right, so greater than -2. | | | **A** |
|  | Line 2 should be | | | **B** |
|  |  | | | **C** |
|  |  | | | **D** |
|  |  | | | **A** |
|  |  | | | **A** |
|  |  | | | **B** |
|  |  | | | **C** |
|  |  | | | **D** |
|  |  | | | **C** |

*Multiple Choice Answer Sheet*

*Linear Equations*

Name \_\_\_\_\_\_\_ANSWERS\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Completely fill the response oval representing the most correct answer.

1. A B C D

2. A B C D

3. A B C D

4. A B C D

5. A B C D

6. A B C D

7. A B C D

8. A B C D

9. A B C D

10. A B C D

11. A B C D

12. A B C D

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Year 9 | | *Linear Equations* | Calculator Allowed | |
| **Section 3** Longer Answer Section | | | | |
| ANSWERS | | | | |
|  | | | | **Marks** | |
| 1. | (a) | | | **2 marks for correct answer with working.**  **1 mark for working with a single error.** |
|  | (b) | | | **2 marks for correct answer with working.**  **1 mark for working with a single error.** |
|  | (c) | | | **2 marks for correct answer with working.**  **1 mark for working with a single error.** |
|  | (d) | | | **2 marks for correct answer with working.**  **1 mark for working with a single error.** |
| 2. | (a) | | | **2 marks for correct answer with working.**  **1 mark for working with a single error.** |
|  | (b) | | | **3 marks for correct answer with working.**  **2 marks for working with a single error in logic or calculation**  **1 mark for working with some correct logic.** |
|  | (c) | | | **3 marks for correct answer with working.**  **2 marks for working with a single error in logic or calculation**  **1 mark for working with some correct logic.** |
|  | (d)  *v* = 4, *u* = 2 and *a* = 3 | | | **3 marks for correct answer with working.**  **2 marks for working with a single error in logic or calculation**  **1 mark for working with some correct logic.** |
| 3. | (a) | | | **3 marks for correct answer with working.**  **2 marks for working with a single error in logic or calculation**  **1 mark for working with some correct logic.** |
|  | (b) Is Mikes age = *m*, Leos age  Sum of ages = 28    Mike is 16 and Leo is 12. | | | **3 marks for correct answer with working.**  **2 marks for working with a single error in logic or calculation**  **1 mark for working with some correct logic.** |
|  | (c) | | | **3 marks for correct answer with working.**  **2 marks for working with a single error in logic or calculation**  **1 mark for working with some correct logic.** |
|  | (d) | | | **3 marks for correct answer with working.**  **2 marks for working with a single error in logic or calculation**  **1 mark for working with some correct logic.** |