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| *School Name*  *Mathematics Test 2017* | | | |
| Year 9 | | *Linear Equations* | Non Calculator |
| **Skills and Knowledge Assessed:**   * 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  ……………………………………………………………………………………………....  ………………………………………………………………………………………………. | | |
|  | Solve  ……………………………………………………………………………………………....  ………………………………………………………………………………………………. | | |
|  | Find the value of *m* for which  ……………………………………………………………………………………………....  ………………………………………………………………………………………………. | | |
|  | Solve .  ……………………………………………………………………………………………....  ………………………………………………………………………………………………. | | |
|  | Given the formula , find the value of *m* when *a* = 3 and *b* = 15.  ……………………………………………………………………………………………....  ………………………………………………………………………………………………. | | |
|  | Solve  ……………………………………………………………………………………………....  ………………………………………………………………………………………………. | | |
|  | Sketch the inequality  on the number line below. | | |
|  | Using the formula  find the value of *m*, when *w* = 25, *a* = 3 and *t* =19.  ……………………………………………………………………………………………....  ……………………………………………………………………………………………....  ………………………………………………………………………………………………. | | |
|  | Determine whether  is a solution to the equation .  Show the working that you use to decide on your answer.  ……………………………………………………………………………………………....  ………………………………………………………………………………………………. | | |
|  | Solve .  ……………………………………………………………………………………………....  ……………………………………………………………………………………………….  ……………………………………………………………………………………………….  ………………………………………………………………………………………………. | | |
|  | Solve  .  ……………………………………………………………………………………………....  ……………………………………………………………………………………………....  ……………………………………………………………………………………………....  ………………………………………………………………………………………………. | | |
|  | Solve .  ……………………………………………………………………………………………....  ……………………………………………………………………………………………….  ……………………………………………………………………………………………….  ………………………………………………………………………………………………. | | |
|  | Given the formula , find the value of *u* when *s* = 24, *t* = 5 and *v* = 6.  ……………………………………………………………………………………………….  ……………………………………………………………………………………………….  ……………………………………………………………………………………………....  ………………………………………………………………………………………………. | | |
|  | Solve the inequality  ……………………………………………………………………………………………....  ……………………………………………………………………………………………....  ……………………………………………………………………………………………....  ………………………………………………………………………………………………. | | |
|  | Solve  ……………………………………………………………………………………………....  ……………………………………………………………………………………………….  ……………………………………………………………………………………………....  ………………………………………………………………………………………………. | | |

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| *School Name*  *Mathematics Test 2017* | | | |
| 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. *c* = –8 B. *c* = – ½ C. *c* = 2 D. *c* = 32 | | |
|  | For what value of *k* is ?  A. *k* = –11 B. *k* = –5 C. *k* = –1 D. *k* = 5 | | |
|  | Which is the first incorrect line in the following solution?    A. Line 1 B. Line 2 C. Line 3 D. Line 4 | | |
|  | Use the formula  to find the value of *s* when *u* = 6, *a* = 10 and *t* = 5.  A. 95 B. 155 C. 185 D. 655 | | |
|  | A.  B.  C.  D. | | |
|  | Solve .  A.  B. *w* = 3 C.  D. *w* = 5 | | |
|  | Solve .  A.  B.  C.  D. | | |
|  | To test if *z* =6 is the correct solution to the equation , Jason completes the following 4 steps.    In which step did he first make an error?  A.  B.  C.  D. | | |
|  | Which number line graph gives the solution to ?    A.    B.    C.    D. | | |
|  | Use the formula  to find the value of *b*, when *A* = 228, *h* = 6 and *a* = 20.  A. *b* = 28 B. *b* = 42 C. *b* = 56 D. *b* = 112 | | |
|  | Use the formula  to find the value of *B* when *J* = 3020, , *E* = 6.4 and *v*= 12.  A. *B* = 4.5 B. *B* = 9 C. *B* = 112.5 D. *B* = 225 | | |
|  | Solve  A.  B.  C.  D. | | |
|  | Using the formula  find the value of *u* when *v* = –6, *a* = 3 and *s* = 6.  A.  B. 0 C. 6 D. | | |
|  | Solve  A.  B.  C.  D. | | |
|  | Solve  A.  B.  C.  D. | | |

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| *School Name*  *Mathematics Test 2017* | | |
| 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  = 3.14, *R* = 13 and *r* = 6.  …………………………………………….……………………………………………  ……………………………………………….…………………………………………  ……………………………………………….………………………………………… | **2** |
| 2. | (a) Solve:  ……………………………………………………………………………………………....  ……………………………………………………………………………………………….  ……………………………………………………………………………………………....  ………………………………………………………………………………………………. | **3** |
|  | (b) Solve and graph the solution to  .  ……………………………………………………………………………………………....  ……………………………………………………………………………………………....  ……………………………………………………………………………………………....  ………………………………………………………………………………………………. | **3** |
|  | (c) Solve :    …………………………………………….……………………………………………  …………………………………………….……………………………………………  …………………………………………….……………………………………………  ……………………………………………….………………………………………… | **3** |
|  | (d) Use the formula  to find the value of *b*, when *A* = 190, *h* = 6, *a* = 10 and *c* = 25.  …………………………………………….……………………………………………  …………………………………………….……………………………………………  …………………………………………….……………………………………………  ……………………………………………….………………………………………… | **3** |
| 3. | (a) Solve : .  ……………………………………………………………………………………………....  ……………………………………………………………………………………………....  ……………………………………………………………………………………………....  ……………………………………………………………………………………………....  ………………………………………………………………………………………………. | **3** |
|  | (b) Owen has two pieces of cable. The longer piece is 3 metres less than 4 times the length of the shorter. The sum of their lengths is 150 m.  (i) If *s* is the length of the shorter cable, write an expression for the length of the longer.    ……………………………………………………………………………………………....  ……………………………………………………………………………………………....  (ii) Write an equation and solve it to find the lengths of the two cables.  ……………………………………………………………………………………………....  ……………………………………………………………………………………………....  ……………………………………………………………………………………………....  ……………………………………………………………………………………………....  ………………………………………………………………………………………………. | **1**  **2** |
|  | (c) Solve :  .  ……………………………………………………………………………………………....  ……………………………………………………………………………………………....  ……………………………………………………………………………………………....  ……………………………………………………………………………………………....  ………………………………………………………………………………………………. | **3** |
|  | (d) Solve :  ……………………………………………………………………………………………....  ……………………………………………………………………………………………....  ……………………………………………………………………………………………....  ……………………………………………………………………………………………....  ………………………………………………………………………………………………. | **3** |

*School Name*

*Mathematics 2017*

*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

13. A B C D

14. A B C D

15. A B C D

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| *School Name*  *Mathematics Test 2017* | | |
| Year 9 | *Linear Equations* | Non Calculator Section |

ANSWERS

| Question | Working and Answer |
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| *School Name*  *Mathematics Test 2017* | | |
| Year 9 | *Linear Equations* | Calculator Allowed  Multiple Choice  Section |

ANSWERS

|  |  |  |
| --- | --- | --- |
| Question | Working | M C Answer |
|  |  | **D** |
|  | . | **A** |
|  | Line 2 should read 7*m* = *–*35 + 14  Which leads to a correct answer of m = *–*-3 | **B** |
|  |  | **B** |
|  | Arrow to left indicates less than, and shaded circle indicates it can also be equal to, so . | **C** |
|  |  | **A** |
|  |  | **D** |
|  |  | **C** |
|  |  | **B** |
|  |  | **C** |
|  |  | **A** |
|  |  | **C** |
|  |  | **B** |
|  |  | **A** |
|  |  | **D** |

*School Name*

*Mathematics 2017*

*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

13. A B C D

14. A B C D

15. A B C D

|  |  |  |
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| *School Name*  *Mathematics Test 2017* | | |
| Year 9 | *Linear Equations* | Calculator Allowed  Longer Answer  Section |

ANSWERS

| Question | Working and Answer | 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) | **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)  . | **3 marks for correct answer with working and correct graph.**  **2 marks for working with a single error in logic or calculation or for correct answer with error in graph**  **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.** |
| 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) (i)  (ii) | **(i) 1 mark for correct answer**  **(ii) 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.** |