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| Year 10 | | *Linear Relations* | Non Calculator |
| **Skills and Knowledge Assessed:**   * Sketch linear graphs using the coordinates of two points and solve linear equations (ACMNA215) * Solve problems involving parallel and perpendicular lines (ACMNA238) | | | Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| **Section 1** Short Answer Section | | | |
| Write all working and answers in the spaces provided on this test paper. | | | |
|  | What is the gradient of the line shown below?  ………………………………………………  ……………………………………………....    ………………………………………………  ………………………………………………. | | |
|  | |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | 1 | 2 | 3 | 4 | |  |  | 9 |  | 6 | | | |
|  | What is the equation of the line shown?  …………………………………………  ………………………………………….  ………………………………………… | | |
|  | ………………………………………………………………………………………………………  ……………………………………………………………………………………………………… | | |
|  | A line on the number plane has a gradient of 6 and crosses the *y* axis at *y* = 7.  What is the equation of the line?  ………………………………………………………………………………………………………  ……………………………………………………………………………………………………… | | |
|  | What is the equation of the line shown?  .....................................................................  .....................................................................  ..................................................................... | | |
|  | The points (0, 2) and (-2, 4) lie on a line *l*.  What is the equation of the line *l* ?  .....................................................................  .....................................................................  .....................................................................  ..................................................................... | | |
|  | On a number plane, a straight line has a gradient of  and passes through the point (-3, -6).  What is the equation of the line?  ……………………………………………………………………………………………….  ………………………………………………………………………………………………. | | |
|  | The line *p* is shown on the number plane to the right.  The equation of the line *p*, is:  …………………………………………  ………………………………………….  ………………………………………… | | |
|  | A line on the number plane crosses the *x* axis at  and crosses the *y* axis at  What is the equation of the line?  ………………………………………………………………………………………………………  ……………………………………………………………………………………………………… | | |
|  | The points  and (3, 3) lie on a line *q*.  What is the equation of the line *q*?  .....................................................................  .....................................................................  .....................................................................  ..................................................................... | | |
|  | A straight line on a number plane has an equation of  What is the gradient of the line?  ……………………………………………………………………………………………….  ………………………………………………………………………………………………. | | |
|  | A line on the Cartesian plane is parallel to the line  and passes through the point  What is the equation of the line?  ……………………………………………………………………………………………….  ………………………………………………………………………………………………. | | |
|  | A straight line on a number plane is parallel to the line  and passes through (2, 12).  What is the equation of the line?  ……………………………………………………………………………………………….  ………………………………………………………………………………………………. | | |
|  | are perpendicular and intersect at the point (-2, -4).  Find the equation of the line *j*.  ……………………………………………………………………………………………….  ………………………………………………………………………………………………. | | |

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| Year 10 | | *Linear Relations* | 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. | | | |
|  | A line on the number plane has an equation: .  What is its gradient?  A.  B.  C.  D. 4 | | |
|  | |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | 0 | 1 | 2 | 3 | |  | 3 | 7 | 10 | 15 |   A. 3 B. 7 C. 10 D. 15 | | |
|  | A line has a gradient of  and passes through the point  on the *y* axis.  What is its equation?  A.  B.  C.  D. | | |
|  | The equation of the line shown is:  A.  B.  C.  D. | | |
|  | A. B.  C. D. | | |
|  | The line *k* is shown on the number plane to the right.  The equation of the line *k*, is:  A.  B.  C.  D. | | |
|  | A line has a gradient of 4 and passes through the point  . What is its equation?  A.  B.  C.  D. | | |
|  | A line has an equation .  Which point lies on the line?  A. (-2, -7) B. (-2, -14) C. (-1, -8) D. (-1, -10) | | |
|  | Which is the graph of the line  ?    A. B.  C. D. | | |
|  | A line has a gradient of  and passes through the point .  What is its equation?  A.  B.  C.  D. | | |
|  | A line has equation  Which statement is true?  A. Its gradient is  and its  intercept is .  B. Its gradient is  and its  intercept is .  C. Its gradient is  and its  intercept is .  D. Its gradient is  and its  intercept is | | |
|  | The points *P*  and *Q*  lie on a line *l*.  The equation of the line *l* , is:  A.  B.  C.  D. | | |
|  | Line *n* has a gradient of  Line *p* has a gradient of .  Line *q* has a gradient of  Which statement is true?   1. Line *n* is perpendicular to line *q*. 2. Line *p* is perpendicular to line *q*. 3. Line *p* is perpendicular to line *n*. 4. Line *p* is parallel to line *n*. | | |
|  | Which line is perpendicular to  A.  B.  C.  D. | | |
|  | The line *l* passes through the point (5, 16) and is parallel to the line .  What is the equation of the line *l* ?  A.  B.  C.  D. | | |

*Multiple Choice Answer Sheet*

*Linear Relations*

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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| Year 10 | | *Linear Relations* | Non Calculator |
| **Section 1** Short Answer Section | | | |
| ANSWERS | | | |
| No. | WORKING | | ANSWER |
|  |  | | 3 |
|  | |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | 1 | 2 | 3 | 4 | |  | **12** | 9 | **6** | 6 | | | See table |
|  |  | |  |
|  |  | | Explanation why point is not on the line is needed for a mark. |
|  | Gradient *m* = 6 and *y* intercept *b* = 7. | |  |
|  | Gradient *m* =  *y* intercept *b* = -5 | |  |
|  |  | |  |
|  |  | |  |
|  |  | |  |
|  | Crosses the *x* axis at  and crosses the *y* axis at | |  |
|  |  | |  |
|  |  | | 2 |
|  | parallel to the line  through the point | |  |
|  | Parallel to the line  through (2, 12). | |  |
|  |  | |  |

|  |  |  |  |  |
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| Year 10 | | *Linear Relations* | Calculator Allowed | |
| **Section 2** Multiple Choice Section | | | | |
| ANSWERS | | | | |
| No. | WORKING | | | ANSWER |
|  |  | | | **D** |
|  | |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | 0 | 1 | 2 | 3 | |  | 3 | 7 | **11** | 15 |   So 10 is incorrect, should be 11. | | | **C** |
|  | Gradient of  through 7 on the *y* axis. | | | **B** |
|  |  | | | **B** |
|  |  | | | **C** |
|  |  | | | **A** |
|  | Gradient of 4 and passes through the point | | | **D** |
|  | (-2, -7)  (-2, -14)    (-1, -8)  (-1, -10) | | | **B** |
|  |  | | | **C** |
|  | OR | | | **A** |
|  |  | | | **C** |
|  | For the points *P*  and *Q* | | | **B** |
|  | No gradients are equal, so none parallel.    So line n is perpendicular to line q. | | | **A** |
|  |  | | | **D** |
|  |  | | | **D** |

*Multiple Choice Answer Sheet*

*Linear Relations*

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

13. A B C D

14. A B C D

15. A B C D