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| *School Name*  *Mathematics Test 2017* | | | |
| Year 7 | | *Introductory Algebra* | Non Calculator  Section |
| **Skills and Knowledge Assessed:**   * Introduce the concept of variables as a way of representing numbers using letters (ACMNA175) * Extend and apply the laws and properties of arithmetic to algebraic terms and expressions (ACMNA177) * Simplify algebraic expressions involving the four operations (ACMNA192) | | | Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Answer all questions in the spaces provided on this test paper by:  *Writing the answer in the box provided.*  or  *Shading in the bubble for the correct answer from the four choices provided.*  Show any working out on the test paper.Calculators are **not** allowed. | | | |
|  |  | | |
|  |  | | |
|  |  | | |
|  | Write an expression for the number of minutes in *h* hours. | | |
|  | Simplify | | |
|  | Simplify | | |
|  | –6 –4 –3 3 | | |
|  |  | | |
|  | Which of these does **not** simplify to  ? | | |
|  | Simplify | | |
|  |  | | |
|  | Simplify | | |
|  | Simplify | | |
|  |  | | |
|  |  | | |
|  | Angela’s teacher asked her to write an expression for :  “*The sum of the square of x and a third of x.*”  Which of these algebraic expressions could represent this? | | |
|  | Simplify | | |
|  | Complete the two missing values in the table below for the expression  ?   |  |  |  |  | | --- | --- | --- | --- | | *a* | –2 | –1 | 3 | |  |  | –3 |  | | | |
|  |  | | |
|  | A bus has *x* seats each of which holds 2 people and it can also take *y* people standing.  How many people can the bus take when full? | | |
|  | A rectangular paddock measures *a* metres long and *x* metres wide.  What is an expression for the perimeter of the paddock (distance around the outside). | | |
|  | Using *n* for the number, write an expression in algebraic symbols for the following.  “*Take any number, square it and subtract 4, then multiply the result by 6.”* | | |

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| *School Name*  *Mathematics Test 2017* | | | |
| Year 7 | | *Introductory Algebra* | Calculator Allowed  Short Answer  Section |
|  | | | Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Answer all questions in the spaces provided on this test paper by:  *Writing the answer in the box provided.*  or  *Shading in the bubble for the correct answer from the four choices provided.*  Show any working out on this test paper. Calculators are allowed. | | | |
|  | Simplify . | | |
|  | Simplify | | |
|  | If  what is the value of | | |
|  |  | | |
|  | Write  in a shortened form. | | |
|  | Simplify | | |
|  | Write an expression that means “*Take the sum of the squares of x and y.”* | | |
|  | The same number of dice are put into each of 8 cups, and there are 5 dice left over.  If c is the number of dice in each cup, which is an expression for the total number of dice? | | |
|  |  | | |
|  |  | | |
|  | Which of the following does **not** simplify to give  ? | | |
|  | –6.4 –3.2 0 3.2 | | |
|  | Simplify | | |
|  | When  ,  and  what is the value of  –84 –80 –76 –54 | | |
|  | Simplify | | |
|  | ` | | |
|  | –6 –2 1 2 | | |
|  |  | | |
|  | Which expression is not equal to | | |
|  |  | | |
|  | Which of these means the same as  .    Double the sum of *a* and *b* and divide the result by *c*.  Divide the sum of *a* and *b* by *c* and double the result.  Take the sum of *b* and twice *a* and divide the result by *c*.  Divide the *a* by *c,* add *b* and double the result. | | |
|  | Which of these is always true, regardless of the value of *a*? | | |

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| *School Name*  *Mathematics Test 2017* | | |
| Year 7 | *Introductory Algebra* | Non Calculator Section |

ANSWERS

| Question | Working and Answer |
| --- | --- |
|  | **3rd Answer** |
|  | **2nd Answer** |
|  | **1st Answer** |
|  |  |
|  |  |
|  |  |
|  | **3rd Answer** |
|  | **1st Answer** |
|  | **4th Answer** |
|  |  |
|  | **4th Answer** |
|  |  |
|  | **2nd Answer** |
|  |  |
|  | **3rd Answer** |
|  | **4th Answer** |
|  |  |
|  | |  |  |  |  | | --- | --- | --- | --- | | *a* | –2 | –1 | 3 | |  | 3 | –3 | 13 | |
|  | **2nd Answer** |
|  | **3rd Answer** |
|  |  |
|  | “*Take any number (n)*  *Square it gives n*2  *Subtract 4, gives n*2 – 4  *Multiply the result by 6 gives* |

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| *School Name*  *Mathematics Test 2017* | | |
| Year 7 | *Introductory Algebra* | Calculator Allowed  Short Answer  Section |

ANSWERS

|  |  |
| --- | --- |
| Question | Working and Answer |
|  |  |
|  |  |
|  |  |
|  | **2nd Answer** |
|  |  |
|  | **2nd Answer** |
|  | *The squares of x and y are x2 and y*2*.*  *Taking the sum of these is* ***x2* + *y*2** |
|  | The 8 cups hold 8 × *c* = 8*c* dice.  So altogether there were 8*c* + 5  **1st Answer** |
|  | **3rd Answer** |
|  |  |
|  | **4th Answer** |
|  | **4th Answer** |
|  | **1st Answer** |
|  | When  ,  and    **3rd Answer** |
|  |  |
|  | Greatest value is 100  **2nd Answer** |
|  | **2nd Answer** |
|  |  |
|  | **3rd Answer** |
|  |  |
|  | Double the sum of *a* and *b* and divide the result by *c*.  Divide the sum of *a* and *b* by *c* and double the result.  Take the sum of *b* and twice *a* and divide the result by *c*.  Divide the *a* by *c,* add *b* and double the result..  **1st Answer** |
|  | **2nd Answer** |