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| Year  8 | | Further Algebraic Techniques  Products and Factors | Non Calculator  Section |
| **Skills and Knowledge Assessed:**   * Create algebraic expressions and evaluate them by substituting a given value for each variable (ACMNA176) * Extend and apply the distributive law to the expansion of algebraic expressions (ACMNA190) * Factorise algebraic expressions by identifying numerical factors (ACMNA191) * Factorise algebraic expressions by identifying algebraic factors. * 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.** | | | |
|  | = | | |
|  | Simplify  completely. | | |
|  | Simplify | | |
|  | Which of the following is not a factor of  ?  8*x* 2*xy* 4*x2* 8*y* | | |
|  | When  and  what is the value of  ? | | |
|  | These are two incomplete entries in the table below, using the rule .  Complete the table.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | 1 | 2 | 3 | 5 | |  |  | 0 | 5 |  | | | |
|  | The table below was obtained using a rule  T*he value of the term in the pattern is one more than twice the term number.*   |  |  |  |  |  | | --- | --- | --- | --- | --- | | Term Number | 1 | 2 | 3 | 4 | | Term | 3 | 5 | 7 | 9 |     What is the value of term number 80? | | |
|  | Which algebraic statement could be used to describe the relationship  “To get the term *T*, you multiply the term number (n) by 5 and take away 1.” | | |
|  | Expand . | | |
|  | Expand | | |
|  | When  is expanded, the result is: | | |
|  | Expand | | |
|  | When  is factorised fully, the result is: | | |
|  | Factorise fully: . | | |
|  | Factorise fully: . | | |
|  | When  is factorised fully, the result is: | | |
|  | Factorise fully: . | | |
|  | Factorise fully: . | | |

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| Year  8 | | Further Algebraic Techniques  Products and Factors | 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 the test paper. Calculators are allowed.** | | | |
|  | The expression  when simplified completely is | | |
|  |  | | |
|  | Which product is not equal to  ? | | |
|  | When  and , what is the value of | | |
|  | Complete the table of values for the expression   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | 1 | 2 | 3 | 5 | 8 | |  | 5 | 8 | 11 |  |  | | | |
|  | The first 4 terms in a pattern obtained using the rule  are shown in the table.  What would be the 20th term if the table were continued?   |  |  |  |  |  | | --- | --- | --- | --- | --- | | *n* | 1 | 2 | 3 | 4 | |  | 48 | 46 | 44 | 42 | | | |
|  | A sailor’s rule of thumb for cutting the correct length of rope to wrap around a post is:  “*Allow 50 cm for each time you want to wrap the rope around and add another 20cm.*”  How could this be written using algebra using *l* for the length and *t* for the number of times you want to wrap the rope around the post? | | |
|  | Expand . | | |
|  | When  is expanded, the result is | | |
|  | Expand . | | |
|  | Expand . | | |
|  | When  is expanded, the result is | | |
|  | Expand . | | |
|  | When  is factorised fully, the result is: | | |
|  | Factorise fully: . | | |
|  | When  is factorised fully, the result is: | | |
|  | Factorise fully: . | | |
|  | Factorise fully: . | | |

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| Year  8 | Further Algebraic Techniques  Products and Factors | Calculator Allowed  Longer Answer  Section |
|  | | Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Write all working and answers in the spaces provided on this test paper. | | |

|  | | **Marks** |
| --- | --- | --- |
|  | Expand and simplify the following expressions |  |
|  | ……………………………………………………………………………………..  …………………………………………………………………………………….. | **2** |
|  | ……………………………………………………………………………………..  …………………………………………………………………………………….. | **2** |
|  | Simplify these expressions by first factorising: |  |
|  | ……………………………………………………………………………………..  …………………………………………………………………………………….. | **2** |
|  | ……………………………………………………………………………………..  …………………………………………………………………………………….. | **2** |

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| Year  8 | Further Algebraic Techniques  Products and Factors |

ANSWERS

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| Non Calculator Section |

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|  |  |
|  | 4*x2* |
|  |  |
|  | |  |  |  |  | | --- | --- | --- | --- | | 1 | 2 | 3 | 5 | |  | 0 | 5 |  |   ½ mark each. |
|  | 161 |
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| Calculator Allowed Section |

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|  | |  |  | | --- | --- | | 5 | 8 | | **17** | **26** |   ½ mark each |
|  | 10 |
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| Calculator Allowed  Longer Answer Section | | |
|  |  | 2 |
|  |  | 2 |
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