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| Year 9 | | *Surds* | Non Calculator |
| **Skills and Knowledge Assessed:**   * Define rational and irrational numbers and perform operations with surds and fractional indices  (ACMNA264) | | | Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Section 1Short Answer Section | | | |
| Write all working and answers in the spaces provided on this test paper. | | | |
|  | Circle the irrational numbers in the list below. | | |
|  | Simplify :  …………………………………………………………………………………………………………… | | |
|  | Simplify :  …………………………………………………………………………………………………………… | | |
|  | Simplify :  …………………………………………………………………………………………………………… | | |
|  | Simplify :  …………………………………………………………………………………………………………… | | |
|  | Simplify :  …………………………………………………………………………………………………………… | | |
|  | Simplify :  …………………………………………………………………………………………………………… | | |
|  | Simplify :  …………………………………………………………………………………………………………… | | |
|  | Simplify :  …………………………………………………………………………………………………………… | | |
|  | Simplify :  ……………………………………………………………………………………………………………  …………………………………………………………………………………………………………… | | |
|  | Express with a rational denominator :  …………………………………………………………………………………………………………… | | |
|  | Express in simplest form, with a rational denominator :  …………………………………………………………………………………………………………… | | |
|  | Expand and simplify :  …………………………………………………………………………………………………………… | | |
|  | Expand and simplify :  ……………………………………………………………………………………………………………  …………………………………………………………………………………………………………… | | |
|  | Expand and simplify :  ……………………………………………………………………………………………………………  …………………………………………………………………………………………………………… | | |
|  | Expand and simplify :  ……………………………………………………………………………………………………………  …………………………………………………………………………………………………………… | | |
|  | If  what are the values of *p* and *q*?  ……………………………………………………………………………………………………………  …………………………………………………………………………………………………………… | | |
|  | Arrange the numbers in ascending order.  ……………………………………………………………………………………………………………  …………………………………………………………………………………………………………… | | |

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| Year 9 | | *Surds* | Calculator Allowed |
| Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Section 2Multiple 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.  B.  C.  D. | | |
|  | Which of the numbers below is an irrational number?  A. 5 B.  C.  D. | | |
|  | Simplify  A.  B.  C.  D. | | |
|  | A.  B.  C.  D. | | |
|  | A.  B.  C.  D. | | |
|  | Completely simplify  A.  B.  C.  D. | | |
|  | A.  B.  C.  D. | | |
|  | A. 13 B. 42 C. 252 D. 294 | | |
|  | Which of the following has the largest value?  A.  B.  C.  D. | | |
|  | A.  B.  C.  D. | | |
|  | Expand and simplify  A.  B.  C.  D. | | |
|  | A.  B.  C.  D. | | |
|  | Expand and simplify  A.  B.  C.  D. | | |
|  | A.  B.  C.  D. | | |
|  | Express  with a rational denominator.  A.  B.  C.  D. | | |

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

|  | | **Marks** |
| --- | --- | --- |
|  | 1. Express  with a rational denominator.   ……………………………………………………………………………………………….  ……………………………………………………………………………………………….  ……………………………………………………………………………………………….  ………………………………………………………………………………………………. | **2** |
|  | 1. Simplify the following, giving your answer as a single fraction in simplest form.     ……………………………………………………………………………………………….  ……………………………………………………………………………………………….  ……………………………………………………………………………………………….  ………………………………………………………………………………………………. | **3** |

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# Surds

# Multiple Choice Answer Sheet

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

*Surds*

# ANSWERS

|  |  |
| --- | --- |
| Section 1 ( 1 mark each) | |
|  | Working and Answers |
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| Section 2 (1 mark each) | | |
|  | Working | Answers |
|  |  | B |
|  | is irrational. | D |
|  |  | C |
|  |  | D |
|  |  | A |
|  |  | B |
|  |  | D |
|  |  | C |
|  | A.  A is the largest.  B.  C.  D. | A |
|  |  | C |
|  |  | A |
|  |  | D |
|  |  | B |
|  |  | C |
|  |  | A |

|  |  |  |
| --- | --- | --- |
| Section 3 Answers | | |
| 1  (a) |  | 2 marks for correct answer  1 mark for some correct working heading toward an incorrect answer |
| 1  (b) |  | 3 marks for correct answer  2 marks for mostly correct working heading toward an incorrect answer  1 mark for some correct working. |

# Surds

# Multiple Choice Answer Sheet

Name \_\_\_ Marking Sheet

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