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| *School Name*  *Mathematics Test 2017* | | | |
| Year 9 | | *Indices* | Non Calculator |
| **Skills and Knowledge Assessed:**   * Apply index laws to numerical expressions with integer indices (ACMNA209) * Express numbers in scientific notation (ACMNA210) * Define rational and irrational numbers and perform operations with surds and fractional indices  (ACMNA264) | | | Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| **Section 1** Short Answer Section | | | |
| Write all working and answers in the spaces provided on this test paper. | | | |
|  | Write *a* × *a* × *a* × *a* × *a* × *a* × *a* × *a* × *a* in index notation.  ………………………………………………………………………………………………. | | |
|  | Write  as a repeated multiplication.  ………………………………………………………………………………………………. | | |
|  | Simplify  leaving your answer in index notation.  ………………………………………………………………………………………………. | | |
|  | Simplify  leaving your answer in index notation.  ………………………………………………………………………………………………. | | |
|  | Simplify  ………………………………………………………………………………………………. | | |
|  | Write  as a single numeral.  ………………………………………………………………………………………………. | | |
|  | Simplify  ………………………………………………………………………………………………. | | |
|  | Simplify  ………………………………………………………………………………………………. | | |
|  | Simplify  ………………………………………………………………………………………………. | | |
|  | Simplify  ……………………………………………………………………………………………....  ………………………………………………………………………………………………. | | |
|  | Write  as a single numeral without using indices.  ……………………………………………………………………………………………....  ………………………………………………………………………………………………. | | |
|  | Write 7 320 000 in scientific notation.  ………………………………………………………………………………………………. | | |
|  | What is the value of  ………………………………………………………………………………………………. | | |
|  | What is the value of  ……………………………………………………………………………………………....  ………………………………………………………………………………………………. | | |
|  | Write  in scientific notation.  …………………………………………………………………………………………….... | | |
|  | Simplify  ……………………………………………………………………………………………....  ………………………………………………………………………………………………. | | |
|  | Simplify    ……………………………………………………………………………………………....  ………………………………………………………………………………………………. | | |
|  | Simplify  ………………………………………………………………………………………………. | | |
|  | Simplify  writing your answer in scientific notation.  ……………………………………………………………………………………………....  ………………………………………………………………………………………………. | | |
|  | The mass of a single E coli bacteria is about g.  What would be the mass of 40 000 000 000 of these bacteria?  ……………………………………………    …………………………………………....  …………………………………………… | | |

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| *School Name*  *Mathematics Test 2017* | | | |
| Year 9 | | *Indices* | 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.  B.  C.  D. | | |
|  | A.  B.  C.  D. | | |
|  | A.  B.  C.  D. | | |
|  | A.  B.  C.  D. | | |
|  | A.  B.  C.  D. | | |
|  | A. 1 350 000 B. 13 500 000 C. 135 000 000 D. 1 350 000 000 | | |
|  | A.  B.  C.  D. | | |
|  | A.  B.  C.  D. | | |
|  | A.  B.  C.  D. | | |
|  | A.  B.  C.  D. | | |
|  | A.  B.  C.  D. | | |
|  | A.  B.  C.  D. | | |
|  | A.  B.  C.  D. | | |
|  | A. 0 B.  C. 1 D. 12 | | |
|  | A.  B.  C.  D. | | |
|  | A.  B.  C.  D. | | |
|  | A.  B.  C.  D. | | |
|  | What is the same as  A.  B.  C.  D. | | |
|  | A.  B.  C.  D. | | |
|  | Simplify  A.  B.  C.  D. | | |
|  | A. 0.000 003 48 B. 0.000 034 8 C. 0.000 348 D. 0.003 48 | | |
|  | A.  B.  C.  D. | | |

*School Name*

*Mathematics 2017*

*Multiple Choice Answer Sheet*

*Indices*

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

16. A B C D

17. A B C D

18. A B C D

19. A B C D

20. A B C D

21. A B C D

22. A B C D

|  |  |  |
| --- | --- | --- |
| *School Name*  *Mathematics Test 2017* | | |
| Year 9 | *Indices* | Non Calculator Section |

ANSWERS

| Question | Working and Answer |
| --- | --- |
|  | *a × a × a × a × a × a × a × a × a =* ***a*9** |
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| *School Name*  *Mathematics Test 2017* | | |
| Year 9 | *Indices* | Calculator Allowed  Multiple Choice  Section |

ANSWERS

|  |  |  |
| --- | --- | --- |
| Question | Working | M C Answer |
|  |  | **B** |
|  |  | **C** |
|  |  | **A** |
|  |  | **C** |
|  |  | **D** |
|  |  | **C** |
|  |  | **A** |
|  |  | **B** |
|  |  | **B** |
|  |  | **D** |
|  |  | **B** |
|  |  | **A** |
|  |  | **D** |
|  |  | **D** |
|  |  | **C** |
|  |  | **B** |
|  |  | **A** |
|  |  | **A** |
|  |  | **C** |
|  |  | **D** |
|  |  | **C** |
|  |  | **B** |

*School Name*

*Mathematics 2017*

*Multiple Choice Answer Sheet*

*Indices*

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

16. A B C D

17. A B C D

18. A B C D

19. A B C D

20. A B C D

21. A B C D

22. A B C D