|  |  |  |  |
| --- | --- | --- | --- |
| 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  in index notation.  ………………………………………………………………………………………………. | | |
|  | Write  without using indices.  ………………………………………………………………………………………………. | | |
|  | 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 78 500 000 in scientific notation.  ………………………………………………………………………………………………. | | |
|  | What is the value of  ………………………………………………………………………………………………. | | |
|  | What is the value of  ……………………………………………………………………………………………....  ………………………………………………………………………………………………. | | |
|  | Simplify  ……………………………………………………………………………………………....  ………………………………………………………………………………………………. | | |
|  | Write  in scientific notation.  ……………………………………………………………………………………………....  ………………………………………………………………………………………………. | | |
|  | Simplify  writing your answer in scientific notation.  ……………………………………………………………………………………………....  ………………………………………………………………………………………………. | | |
|  | The mass of the Sun is  The mass of Jupiter is .  How many times the mass of Jupiter is the mass of the Sun?  ……………………………………………    …………………………………………....  …………………………………………… | | |

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| 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. 2400 B. 24 000 C. 240 000 D. 2 400 000 | | |
|  | 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. 5 | | |
|  | A.  B.  C.  D. | | |
|  | A.  B.  C.  D. | | |
|  | A.  B.  C.  D. | | |
|  | A.  B.  C.  D. | | |
|  | A.  B.  C.  D. 1 | | |
|  | What is the value of  A.  B.  C.  D. | | |
|  | A. 0.000 000 0425 B. 0.000 000 425 C. 0.000 004 25 D. 0.000 042 5 | | |
|  | A.  B.  C.  D. | | |

*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

|  |  |  |  |
| --- | --- | --- | --- |
| Year 9 | | *Indices* | Non Calculator |
| **Section 1** Short Answer Section | | | |
| ANSWERS | | | |
| No. | WORKING | | ANSWER |
|  |  | |  |
|  |  | | Either |
|  |  | |  |
|  |  | |  |
|  |  | |  |
|  |  | | 80 000 000 |
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|  |  | | 7 |
|  |  | | 16 |
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|  |  | |  |
|  |  | | 1000 times |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Year 9 | | *Indices* | Calculator Allowed | |
| **Section 2** Multiple Choice Section | | | | |
| ANSWERS | | | | |
| No. | WORKING | | | ANSWER |
|  |  | | | C |
|  |  | | | B |
|  |  | | | A |
|  |  | | | D |
|  |  | | | B |
|  |  | | | C |
|  |  | | | A |
|  |  | | | B |
|  |  | | | D |
|  |  | | | C |
|  |  | | | A |
|  |  | | | D |
|  |  | | | A |
|  |  | | | C |
|  |  | | | B |
|  |  | | | A |
|  |  | | | B |
|  |  | | | D |
|  |  | | | B |
|  |  | | | A |
|  |  | | | D |
|  |  | | | C |

*Multiple Choice Answer Sheet*

*Indices*

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

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