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| --- | --- | --- | --- |
| Year  9 | | *Index Laws* | Non Calculator  Section |
| **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** Non Calculator Section | | | |
| Write all working and answers in the spaces provided on this test paper. | | | |
|  | Simplify  ………………………………………………………………………………………………. | | |
|  | Simplify  ………………………………………………………………………………………………. | | |
|  | Simplify  ………………………………………………………………………………………………. | | |
|  | Simplify  ………………………………………………………………………………………………. | | |
|  | What is the value of  ?  ………………………………………………………………………………………………. | | |
|  | Evaluate  .  ………………………………………………………………………………………………. | | |
|  | Evaluate  .  ………………………………………………………………………………………………. | | |
|  | Evaluate  ………………………………………………………………………………………………. | | |
|  | Write  as a normal numeral.  ………………………………………………………………………………………………. | | |
|  | Write  in standard notation.  ………………………………………………………………………………………………. | | |
|  | Write  in standard notation.  ……………………………………………………………………………………………….  ………………………………………………………………………………………………. | | |
|  | Zena is asked to estimate the number of grains of sand in a bucket. She counts the number of grains in a thimble and gets an answer of  . She then counts how many thimbles are needed to fill a cup and gets an answer of 100. She then counts how many cups are needed to fill the bucket and gets an answer of 1 000. What is her estimate of the number of grains in the bucket?  ……………………………………………………………………………………………….  ………………………………………………………………………………………………. | | |

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| Year | | *Index Laws* | Calculator Allowed  Section |
|  | 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. | | |
|  | in simplest form is:  A.  B.  C.  D. | | |
|  | A. 205 B. 206 C. 594 D. 595 | | |
|  | A.  B.  C.  D. | | |
|  | A.  B.  C.  D. | | |
|  | can be written as:  A.  B.  C.  D. | | |
|  | A.  B.  C.  D. | | |
|  | What is 0.0000258 when written in standard notation?  A.  B.  C.  D. | | |
|  | The distance to star A is quoted as being  and to Star B is  Which is true?   1. Star A is 300 times further away than Star B. 2. Star A is  times further away than Star B. 3. Star A is  times further away than Star B. 4. Star A is  times further away than Star B. | | |
|  | 1. B.  C.  D. | | |

*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

*Index Laws*

ANSWERS

|  |  |
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| Section 1 | |
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| Section 2 | |
|  | C |
|  | D |
|  | B |
|  | A |
|  | D |
|  | A |
|  | C |
|  | B |
|  | A |
|  | B |
|  | D |
|  | C |

*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