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**ANNUAL NATIONAL ASSESSMENT**

**GRADE 9**

**MATHEMATICS**

**EXEMPLAR TEST 2012**

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| |  | | --- | | **Instructions to learners:**   1. Question **1** consists of 10 multiple choice questions. Learners must circle the letter of the correct answer (see example below). 2. Learners must provide answers to questions **2** to **9** in the spaces provided. 3. Approved scientific calculators (non-programmable and non-graphical) may be used. 4. The test duration is hours. |   **Example** Circle the letter of the correct answer. Which of the numbers below is a mixed number?  0 ; 0,2 ; ;   1. 0 2. 0,2   You have done it correctly if you have circled **B** as above. |  |

**The test starts on the next page.**

**QUESTION 1**

1. Answer the following questions.

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| 1.1 | Which of the following numbers is irrational?  A  B 0,5  C  D (1) |

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| 1.2 | Which of the following numbers lie between 0,07 and 0,08 on a number line?  A 0,00075  B 0,0075  C. 0,075  D 0,75 (1) |

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| 1.3 | =  A 3  B  C  D 16 (1) |
| 1.4 | =  A    B  C  D (1) |

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| 1.5 | A  B  C  D (1) |

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| 1.6 | A  B  C  D (1) |

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| 1.7 | Factorise  A  B  C  D (1) |

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| 1.8 | A painter is paid by the hour. If he is paid R360 for 12 hours work, how much will he be paid for 9 hours work?  A R120  B R180  C R270  D R480 (1) |

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| 1.9 | Which number is missing in the sequence ?  A  B  C  D (1) |

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| 1.10 | In , DF is produced to C. The size of  is |
|  | A  B  C  D (1) |
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|  | **[10]** |

**QUESTION 2**

1. Answer the following questions.

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| 2.1 | Write 0, 00000356 in scientific notation. |  |  |

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| 2.2 | Calculate the value of . |  |  |

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| 2.3 | Multiply 5²²+ 23 by 4 |  |  |

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| 2.4 | Simplify: |  |  |

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|  | 2.4.1 |  |  |  |

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|  | 2.4.2 |  |  |  |

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|  | 2.4.3 |  |  |  |

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|  | 2.4.4 |  |  |  |

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|  | 2.4.5 |  |  |  |

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|  | 2.4.6 |  |  |  |

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| 2.5 | Factorise fully: |  |  |

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|  | 2.5.1 |  |  |  |

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|  | 2.5.2 |  |  |  |

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| 2.6 | Solve for |  |  |

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|  | 2.6.1 |  |  |  |

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|  | 2.6.2 |  |  |  |

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|  | 2.6.3 |  |  |  |

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| **QUESTION 3** |  |  |

1. Answer the following questions.

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| 3.1 | Write the ratio 1 : 2 in the simplest form. |  |  |

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| 3.2 | 6 boys each contribute R155,50 towards the purchase of a tent. Calculate  how much each would contribute if there were 10 boys in the group. |  |  |

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| 3.3 | How long will it take for an investment of R3000 at 8% per annum simple  interest to earn R960 interest? |  |  |

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| 3.4 | Calculate what R10000 will amount to if it is invested at 10 % per annum  compound interest for 3 years. |  |  |

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| **QUESTION 4** |

1. Answer the following questions.

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| Matchsticks are arranged as shown in the following figures. |  |  |

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| Figure 1 Figure 2 Figure 3 |

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| 4.1 | Determine the number of matchsticks in the next figure if the pattern is continued. |

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| 4.2 | Write down the general term of the given sequence of the matchsticks in the form. |

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| 4.3 | Determine the number of matchsticks in the 20th figure. |  |  |

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| **QUESTION 5** |

1. Answer the following questions.

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| 5.1 | Determine the co-ordinates of P in the graph below. |  |  |

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| 5.2 | Write down the defining equation of each of the following straight line graphs. |

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| **Y3.png** |

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| 5.3 | What can you deduce about lines AD and BC?  Give a reason for your answer. |

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| **QUESTION 6** | | |  |  |

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| 1. Answer the following questions. |  |  |

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|  | A  N  H  E  W  S  C    1  1  2  2 |  |

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| 6.1 | In the above figure, CS || HN, , and . Determine the value of . |

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|  | F:\ZzZ2.png |  |  |
| 6.2 | In the above figure, AB = AC and BD = CD. |  |  |

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|  | 6.2.1 | Prove that |  |  |

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|  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  | (4) |

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|  | 6.2.2 | Prove that DA bisects |  |  |

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|  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  | (2) |

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| 6.3 | ABCD is a parallelogram .Calculate the size of . |  |  |

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|  | A  B A  C A  D A |  |  |

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|  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  | (4) |

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| 6.4 | In , PQ || ST , PR = 10 , ST = 3 and SR = 6 |  |  |
|  | P  R  S  Q  T |  |  |

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|  | 6.4.1 | Show that |  |  |

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|  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  | (4) |

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|  | 6.4.2 | Calculate length of PQ. |  |  |

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|  |  |  |  | **[21]** |

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| **QUESTION 7** |  |  |

1. Answer the following questions.

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| 7.1 | A ladder is standing against the wall. If the ladder reaches a height of 12 up the wall and has its foot 5 away from it, calculate the lengthof the ladder. |

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|  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  | (3) |

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| 7.2 | What is the height, correct to the nearest of a 5 cylindrical  oil container with a radius of 20? () |  |  |

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|  | F:\ZzZ1.png |

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| 7.3 | In the above triangular prism , AB = 3 AC = 4 , BC = 5 and CD 12. |

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|  | 7.3.1 | Show that ABC is a right- angled triangle . |  |  |
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|  | 7.3.2 | Hence, calculate the surface area of the prism. |  |  |

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|  |  |  |  | **[14]** |

**QUESTION 8**

1. Answer the following questions.

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|  | 8.1.1 | Use the sketch given above and write down the co-ordinates of A, B, C and D. |

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|  | 8.1.2 | If the figure is shifted 2 units vertically down and 2 units horizontally to the right, write down the co-ordinates of A', B' , C', and D'. |  |  |

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|  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  | (4) |

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|  | 8.1.3 | Write down the co-ordinates of C'' , the image of C , if the figure is reflected in the X-axis |

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|  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  | (2) |

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|  | 8.1.4 | Write down the co-ordinates of B'' , the image of B , if the figure is  reflected in the Y-axis. |  |  |

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|  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  | (2) |

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|  |  |  |  | **[12]** |

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| **QUESTION 9** |

1. Answer the following questions.

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| 9.1 | The data set contains the heights of a class of grade 9 learners.   |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | 140 | 149 | 152 | 159 | 153 | 143 | 161 | 152 | 145 | 162 | | 153 | 158 | 154 | 160 | 164 | 165 | 165 | 155 | 167 | 153 | | 148 | 166 | 144 | 160 | 150 | 155 | 141 | 162 | 161 | 151 | | 159 | 163 | 170 | 153 | 172 | 158 | 174 | 166 | 164 | 163 | |  |  |

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|  | 9.1.1 | Complete the table. |  |  |

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|  | |  |  |  | | --- | --- | --- | | Class-interval | Tally marks | Frequency | | 140---144 |  |  | | 145---149 |  |  | | 150---154 |  |  | | 155---159 |  |  | | 160---164 |  |  | | 165---169 |  |  | | 170---174 |  |  | |  | (14) |

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| 9.2 | Determine: |  |  |

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|  | 9.2.1 | the range of the heights. |  |  |

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|  | 9.2.2 | the modal class-interval. |  |  |

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|  | 9.2.3 | in which class-interval the median lies. |  |  |

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|  |  |  |  | **[20]** |

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|  |  | **TOTAL:** **140** |