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|  | | | Province of the **EASTERN CAPE** EDUCATION | | | |
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| **SENIOR PHASE** | | | | | | |
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|  | | | | **GRADE 9** |  | |
|  | | | | | | |
| **NOVEMBER 2011** | | | | | | |
|  | | | | | | |
| **MATHEMATICS**  **MARKING GUIDELINE** | | | | | | |
|  | | | | | | |
| **MARKS:** | | **100** | | | | |
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|  | This marking guideline consists of 12 pages. | | | | |  |

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| **QUESTION 1** | | | | |  |
|  |  | | | |  |
| 1.1 | A √ | | | | 1 |
| 1.2 | B √ | | | | 1 |
| 1.3 | B √ | | | | 1 |
| 1.4 | A √ | | | | 1 |
| 1.5 | C √ | | | | 1 |
| 1.6 | C √ | | | | 1 |
| 1.7 | C √ | | | | 1 |
| 1.8 | D √ | | | | 1 |
| 1.9 | B √ | | | | 1 |
| 1.10 | D √ | | | | 1 |
|  |  | | | | **[10]** |
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| **QUESTION 2** | | | | | |
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| 2.1 | 2.1.1 | C I = ?  Principal for the 1st year : R 12 000  Interest for the 1st year (8,8% of R12 000) :  R 1056,00 √  Principal for the 2nd year : R 13 056,00  Interest for the 2nd year (8,8% of R13 056) :  R 1148,93 √  Amount Ceolo will pay for Compound Interest after 2  Years is R12 000+ R1 056 + R1 148,93  =R 14204,93  S I = ?  For 2 years  SI = P . r . t  = 12 000 x 9% x 2  = R 2 160,00  The amount Ceolo will pay for SI is R2 160 + R12 000  = R 14 160,00 √  The best option Ceolo should choose is Simple Interest  √ | (4) | Correct calculation of interest  Correct amount after 2 years  Correct SI amount  Correct choice | |
|  |  |  |  |  | |
|  | 2.1.2 | Amount to be paid by Ceolo’s friend in rand is  R12 000    Dollars($ ) to be sent by friend =    = $ 1 685, 39 √ | (1) | Correct answer | |
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| 2.2 |  | 150 litres : 1 min  81 000 litres : x mins.  =  150 x = 81 000  x =  = 540 mins.  1 hr. : 60 mins    x hrs. : 540 mins. √  =  60x = 540  x =    = 9 hrs. √  Therefore it will take 9 hrs to fill the tank with a  volume of 81 000 litres | (2) | Time taken in mins.  Answer in hours |
|  |  |  | **[7]** |  |
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|  |  | **QUESTION 3** |  |  |
|  |  |  |  |  |
| 3.1 | 3.1.1 | =  √  =  √  =  √ | (3) | Changing of division sign  Simplification  Answer |
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|  |  | (4 – 3x)(3x + 2) + 7x - (1 – 2x)    = 12x + 8 – 9x - 6x + 7x - 1 + 2x √ √  = – 9x + 7x+ 2x+ 12x - 6x + 8 - 1 √  = 6x + 7 √ | (4) | Removing of the  brackets  Grouping of like  terms  Answer |
|  |  |  |  |  |
| 3.2 | 3.2.1 | 36abc + 16ab - 4abc  = 4ab (9abc + 4b - c ) √√ | (2) | Answer |
|  |  |  |  |  |
|  | 3.2.2 | 25a - 49b  = (5a – 7b)(5a + 7b) √√ | (2) | Answer |
|  |  |  |  |  |
| 3.3 |  | 5 - 3 = (5 – 3)(5 + 3) √  = 2 x 8  = 16 √ | (2) | Factorisation  Answer |
|  |  |  |  |  |
| 3.4 | 3.4.1 | 5 =  5 = 5 √  x = - 3 √ | (2) | Changing to exponential form  Answer |
|  |  |  |  |  |
|  | 3.4.2 | √  4(x +3) – 2(x- 2 ) = x + 4  4x + 12 – 2x + 4 = x + 4 √  2x + 16 = x + 4  2x - x = - 16 + 4 √  x = - 12 √  **OR** | (4) | Multiplying by LCM  Removing the  brackets  Grouping like terms  Answer |
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|  |  | **OR**          = |  |  |
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| 3.5 | 3.5.1 | 0 = - 1  3 = 2- 1  8 = 3- 1  the rule is, the square of the input number  minus 1 i.e. x - 1 √√ | (2) | Answer |
|  |  |  |  |  |
|  | 3.5.2 | y = x - 1  = (17) - 1  = 289 – 1 = 288  A i.e. y = 288 when x = 17 √ | (1) | Answer |
|  |  |  |  |  |
|  | 3.5.3 | x - 1 = y  x - 1 = 528  x = 529 √    x =    = 23  B i.e. x = 23 when y = 528 √ | (2) | Simplification  Answer |
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| 3.6 | 3.6.1 | |  | | | | | |  | |  | |
| For 2x + 3y = 6  If x = -3 x = 0 x = 3  2(-3) + 3y =6 2(0) + 3y = 6 2(3) + 3y = 6  -6 + 3y = 6 3y = 6 6 + 3y = 6  3y = 12 y = 2 3y = 0  y = 4 y = 0  pt (-3; 4) pt (0;2) pt (3;0)  for y = x + 2  if x = - 3 x = 0 x = 3  y = -3 + 2 y = 0 + 2 y = 3 + 2  y = -1 y = 2 y = 5  pt (-3;-1) pt (0;2) pt (3;5) | | | | | | | | | | | | |
|  | | | | | | | | | | | | |
| **OR**  2x + 3y = 6 ……… equation 1    3y = -2x + 6  y =  √ correct standard form for equation 1    y = x + 2 ………equation 2 | | | | | | | | | | | | |
|  | | | | | | | | | | | | |
| x | | -3 | | -2 | -1 | 0 | 1 | 2 | | 3 | | Correct table for equation 1  √ |
| y = | | 4 | | 3 | 2 | 2 | 1 |  | | 0 | |
|  |  | | | | | | | | | | |  |
| x | | - 3 | | -2 | -1 | 0 | 1 | 2 | | 3 | | Correct table for equation 2  √ |
| y = x + 2 | | -1 | | 0 | 1 | 2 | 3 | 4 | | 5 | |
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| cont. 3.6.1 6\_ y = x + 2  5 \_  √√ correct drawing  4\_ of graphs    3\_    2    1\_ √ correct labelling  both graphs    | | | | | | | | | | | X  -5 -4 -3 -2 -1 0 1 2 3 4 5 6  -1\_  2x + 3y = 6  -2\_    (6) | | | | |
|  |  |  |  |  |
|  | 3.6.2 | (0;2) √ | (1) |  |
|  |  |  | **[31]** |  |
|  | | | | |
|  |  | **QUESTION 4** |  |  |
|  |  |  |  |  |
|  |  | i.e.  √  10p = 180    p = 18 cm √ | (2) | Cross multiplication  Answer |
|  |  |  |  |  |
|  | 4.1.2 | The corresponding sides of the two triangles are  proportional. √ | (1) |  |
|  |  |  |  |  |
| 4.2 | 4.2.1 | LM = LO + OM  = 6 cm + 3 cm √  LM = 9cm  Similarly QO= QM + MO  = 6cm + 3 cm √  QO = 9 cm    LM = QO | (2) | Length of LM  Length of QO |
|  |  |  |  |  |

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|  | 4.2.2 | In  POQ and  NML  POQ =  NML = 90° (PO LQ &  MN  LQ ) √  PQ = LN (given) √    OQ = ML proved in 4.2.1  POQ   NML (RHS) √ | (3) | Statement  Statement  Conclusion |
|  |  |  |  |  |
| 4.3 | Reflected image 10\_  9 \_ enlarged image  8 Y'(0;8)  √√ 7 \_ √ √  6 \_  5 \_  **.** **.** 4 Y(0;4) **.** **.**  *Z''(-6;4)* *X''(-2;4)* 3 \_ X'(2;4) Z'(6;4)  2 \_ **. .**  1 \_ x(1;2) z(3;2)  | | | | | | | | | | | | | | | | | | |  -8 -6 -4 -2 -1 \_ 2 4 6 8 10  -2 \_  -3 \_ | | | |
|  | 4.3.1 | See enlarged image in diagram above √√ | (2) | Correct enlargement |
|  |  |  |  |  |
|  | 4.3.2 | Refer to reflected image in diagram above √√ |  | Correct reflection |
|  |  |  |  |  |
|  | 4.3.3 | X(-2; 4) Y(0; 8) & Z (-6 ; 4) √√ | (2) | All points to be 2/2 |
|  |  |  |  |  |
| 4.4 | 4.4.1 | KMN = 3x (alt. s LK// MN ) √  2x + 3x + x = 180 (s on straight line)√  6x = 180    x = 30 √ | (3) | Statement/reason  Statement/reason  Answer |
|  |  |  |  |  |
|  | 4.4.2 | LKM = 3x  = 3(30)  = 90 √ | (1) | Answer |
|  |  |  |  |  |
|  | 4.4.3 | Triangle MKL is a right-angled triangle √ | (1) | Answer |
|  |  |  | **[19]** |  |
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|  |  | **QUESTION 5** |  |  |
|  |  |  |  |  |
| 5.1 | 5.1.1 | 2 (l + b ) = 48  2 (l + b ) = 48  2 2  l + b = 24  But l = (48)  l = 16 m √  l + b = 24  16 + b = 24  b = 24 – 16  b = 8m √ | (2) | Correct calculation  of length  Correct calculation  of breadth |
|  |  |  |  |  |
|  | 5.1.2 | 2(l +  b) = P [P is perimeter of Unshaded portion]  2 (x16 +  8) = P √  2(12 + 4 ) = P  2 (16) = P  32 = P √  The Perimeter of the unshaded portion is 32 m | (2) | Substitution  Answer |
|  |  |  |  |  |
| 5.2 |  | (VA) = (VO)+(OA)(Pythagoras Theorem) √  (VA) = (12) + (5)    = 144 + 25  = 169  VA =  = 13 cm √ | (2) | Statement/reason  Answer |
|  |  |  | **[6]** |  |
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|  |  | **QUESTION 6** | | |  |  |
|  |  |  | | |  |  |
| 6.1 | 6.1.1 | School A received 44% of R94 000  =  x  = R 413 600 √ | | | (1) | Answer |
|  |  |  | | |  |  |
|  | 6.1.2 | º =  x  √  = 79,2 √ | | | (2) | Knowing that a full circle has 360º  Answer |
|  |  |  | | |  |  |
|  | 6.1.3 | School C had 12% of R94 000  = x R94 000  = R11 280 √  School C received R11 280 + R 5 300    = R 16 580,00 √ | | | (2) | Amount received by School C  Answer |
|  |  |  | | |  |  |
| 6.2 | 6.2.1 | Range = 73 – 17  = 56 √ | | | (1) | Answer |
|  |  |  | | |  |  |
|  | 6.2.2 | Median =  =  = 43,5 √ | | | (1) | Answer |
|  |  |  | | |  |  |
|  | 6.2.3 | Frequency table of 50 parents who attended parents meeting | | |  |  |
|  |  |  | | |  |  |
|  |  | Interval √ | Tally √ | Frequency√ |  | Interval  1 mark  Tally  1 mark  Frequency  1 mark |
| 0 - 10 | - | 0 |
| 11 - 20 | / / / / | 4 |
| 21 - 30 | / / / / / | 6 |
| 31 - 40 | / / / / / / / / | 10 |
| 41 - 50 | / / / / / / / / / | 11 |
| 51 - 60 | / / / / / / / / | 10 |
| 61 - 70 | / / / / / | 6 |
| 71 - 80 | / / / | 3 |
|  |  |  | Total | 50 | (3) |  |
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| 6.3 |  | The total body mass of 5 parents is  51 + 56 + 54 + 59 + 53 = 273 √  The average body mass of 6 parents is 56 kg  The total body mass of 6 parents is 6 x 56 = 336 kg √  The body mass of the 6th parent = 336 – 273  = 63 kg √ | (3) | Total body mass  of 5 parents  Total body mass  of 6 parents  Answer |
|  |  |  |  |  |
|  | 6.4.1 | **% Marks obtained by Alive in 6 Tests**  Y  24\_  22\_ x √ Heading    20\_ x  M  A 18\_ √ Correct scale on each  R x axis  K 16\_ x  √ Labelling axes  14\_  I x  N 12\_ √ correct graph    10\_  P  E 8\_ (4)  R  C 6\_  E  N 4\_ x  T  2\_  | | | | | | | | |  0 1 2 3 4 5 6 7 8 9 X  TEST NUMBER | | |
|  |  |  |  |  |
|  | 6.4.2 | Average % of test marks  =  √  =  = 15,33 % √ | (2) | Calculating sum  Answer |
|  |  |  |  |  |

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| 6.5 | 1st Choice 2nd Choice Outcomes    G GG  G GG    G W GW  B GB  G GG  √  S  G G GG  W GW  B GB  √  G WG  W G WG  W WW  B WB √ √  B G BG  G BG  W BW  B BB | | (4) | 1st Choice  2nd Choice  All correct possible  Outcomes  Missing one outcome 1,  Missing more than 1 no mark |
|  |  |  |  |  |
| 6.5 | 6.5.1 | P (White counter ) =  √ | (1) | Answer |
|  |  |  |  |  |
|  | 6.5.2 | P (White and Black counters) =  =  √ | (1) | Answer |
|  |  |  |  |  |
|  | 6.5.3 | P (at least one Black counter ) =  √ √ | (2) | Answer |
|  |  |  | **[27]** |  |
|  | | | | |
|  |  | **TOTAL:** | **100** |  |