



eduresourcza.com



Province of the
EASTERN CAPE
EDUCATION

testpapers.co.za

SENIOR PHASE

GRADE 9

NOVEMBER 2013

**MATHEMATICS
MEMORANDUM**

MARKS: 100

This marking guideline consists of 12 pages.

QUESTION 1				
1.1	D ✓			(1)
1.2	D ✓			(1)
1.3	B ✓			(1)
1.4	D ✓			(1)
1.5	C ✓			(1)
1.6	D ✓			(1)
1.7	D ✓			(1)
1.8	C ✓			(1)
1.9	D ✓			(1)
1.10	C ✓			(1)
				[10]
QUESTION 2				
2.1	2.1.1	Initial Price (Value for the first year) of a car = R315 000,00 Depreciation@ 7% = $\frac{7}{100} \times 315\,000 = \text{R}22\,050,00$ Value of car for the second year = R292 950,00 ✓ Depreciation @ 7% = $\frac{7}{100} \times 292\,000 = \text{R}20\,506,50$ Value of car for the third year = R272 443,50 ✓ Depreciation @ 7% = $\frac{7}{100} \times 272\,443,50 = \text{R}19\,071,05$ Value of car at end of third year = R253 372,45 ✓	(3)	1 mark for the value for second year 1 mark for the value for the third year 1 mark for Answer
	2.1.2	$SI = \frac{P \cdot r \cdot t}{100}$ $r = \frac{I \cdot 100}{P \cdot t} = \frac{39\,500 \times 100}{315\,000 \times 3} \checkmark$ $= \frac{3950\,000}{945\,000}$ $\therefore r = 4,18 \% \checkmark$	(3)	1 mark for the formula 1 mark for correct substitution 1 mark for answer

2.2	No. of pupils = 720 Ratio of senior pupils to junior pupils = 4 : 5 Sum of ratio = 4 + 5 = 9 No. of junior pupils in the school = $\frac{5}{9} \times \frac{720}{1} \checkmark$ = $\frac{5}{1} \times \frac{80}{1}$ = 400 $\checkmark$ Hence there are 400 junior pupils in the school	(2)	1 mark for calculation 1 mark for answer												
2.3	Let amount for worker C be represented by x If C gets x Then B gets $100 + x$ And A gets $200 + (100 + x)$ Thus $x + (100 + x) + 200 + (100 + x) = 1\,300 \checkmark$ $3x + 400 = 1\,300$ $3x = 1\,300 - 400$ $3x = 900$ $\frac{3x}{3} = \frac{900}{3}$ $x = 300$ Hence Worker C will get R300,00 $\checkmark$	(2)	1 mark for calculation 1 mark for the answer												
		[10]													
QUESTION 3															
3.1	<table><tr><td>°C</td><td>0</td><td>20</td><td>40</td><td>60</td><td>80</td></tr><tr><td>°F = $\frac{5}{9}$°C + 32</td><td>32</td><td>68</td><td>104</td><td>140</td><td>176</td></tr></table> ✓✓	°C	0	20	40	60	80	°F = $\frac{5}{9}$ °C + 32	32	68	104	140	176	(2)	2 marks for correctly completing the table 1 mark for a wrong value in table
°C	0	20	40	60	80										
°F = $\frac{5}{9}$ °C + 32	32	68	104	140	176										

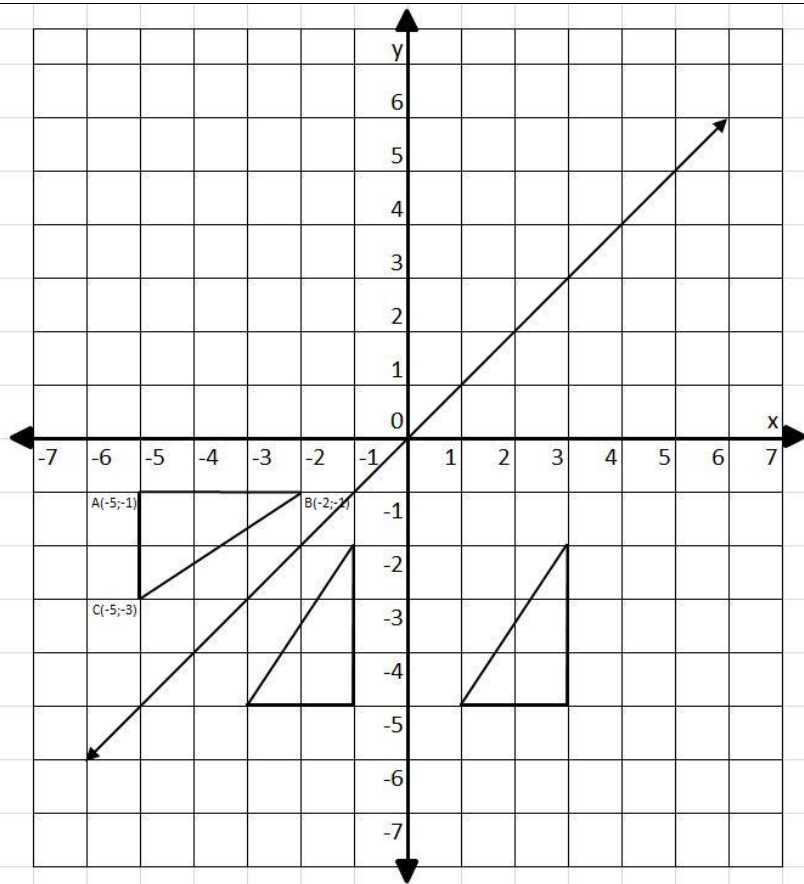
3.2				2 marks plotting all points correctly
				1 mark for at least a wrong point
3.3	3.3.1	The first term : $5(1) + 1 = 6$ The second term : $5(2) + 1 = 11$ The third term : $5(3) + 1 = 16$ and so on The rule is the product of 5 and the rack number plus 1 i.e. $5n + 1$ ✓✓	(2)	2 marks for getting rule correct
	3.3.2	$5n + 1 = 46$ ✓ $5n + 1 - 1 = 46 - 1$ $5n = 45$ $\frac{5n}{5} = \frac{45}{5}$ $n = 9$ Teddy can develop rack number 9 with 46 pieces ✓	(2)	1 mark for the equation 1 mark for the answer
3.4	The graph intersects y-axis at point $(0, -2) \therefore C = -2$ If $x = 1 ; y = 0$ $mx + C = 0$ $(m \times 1) - 2 = 0$ $m - 2 = 0$ $2 = 0 + 2$ $m = 2$ ✓ the equation is $y = 2x - 2$ ✓			1 mark for finding the value of m 1 mark for the correct equation
			[10]	

QUESTION 4				
4.1	4.1.1	$24x^3y^2 - 8x^2y - 16x^2y^2$ $= 8x^2y(3xy - 1 - 2y) \quad \checkmark\checkmark$	(2)	Answer
	4.1.2	$m^2(m-2) - 4(m-2)$ $= (m-2)(m^2 - 4) \checkmark$ $= (m-2)[(m-2)(m+2)] \quad \checkmark\checkmark$	(3)	1 mark for taking out correct factor 2 marks Factorising to get difference of 2 squares
4.2	4.2.1	$4x - (3x - 7) - (2x - 3) = 8(x - 1)$ $4x - 3x + 7 - 2x + 3 = 8x - 8 \checkmark$ $-x + 10 = 8x - 8$ $-x - 8x = -8 - 10$ $-9x = -18 \checkmark$ $\frac{-9x}{-9} = \frac{-18}{-9}$ hence $x = 2 \checkmark$	(3)	1 mark for removing the brackets 1 mark for simplifying and finding the like terms Answer
	4.2.2	$\frac{x^2}{x^2 - 3x} = \frac{x - 3}{x - 5}$ $\frac{x^2}{x(x-3)} = \frac{x - 3}{x - 5} \quad \checkmark$ $\frac{x}{x-3} = \frac{x - 3}{x - 5}$ $(x - 3)(x - 3) = x(x - 5)$ $x^2 - 6x + 9 = x^2 - 5x \quad \checkmark$ $x^2 - x^2 - 6x + 5x = -9 \quad \checkmark$ $-x = -9$ $\therefore x = 9 \quad \checkmark$	(4)	1 mark for factorising left side 1 mark for cross multiplication 1 mark for simplifying like terms Answer
	4.2.3	$2^{4x} = 2^8 \quad \checkmark$ $4x = 8$ $x = 2 \quad \checkmark$	(2)	1 mark for writing 256 in exponential form Answer

4.3	4.3.1	$3^{2n+3} \cdot 3^{-n-5}$ $= 3^{2n+3+(-n-5)}$ $= 3^{2n+3-n-5} \quad \checkmark$ $= 3^{n-2} \quad \checkmark$	(2)	1 mark for simplification 1 mark for answer
	4.3.2	$\frac{15a(ab)^2}{7c^5} \div \frac{5ab}{21c^3}$ $= \frac{15a^3b^2}{7c^5} \div \frac{21c^3}{5ab} \quad \checkmark$ $= \frac{3a^2b}{7c^2} \times \frac{3}{1} \quad \checkmark$ $= \frac{9a^2b}{7c^2} \quad \checkmark$	(3)	1 mark for changing division to multiplication and inverting fraction on the right 1 mark for simplification of numerical coefficients Answer
	4.3.3	Let 54 321 = x Then 54 323 = $x + 2$ 54 319 = $x - 2$ And $54\,321^2 - (54\,323)(54\,319) = x^2 - (x+2)(x-2) \quad \checkmark$ $= x^2 - (x^2 - 4)$ $= x^2 - x^2 + 4$ $= 4 \quad \checkmark$	(2)	1 mark for equation Answer
			[21]	

QUESTION 5

5.1



1 mark for reflected image

1 mark for correct shape and size of image

5.1.1 Refer to reflected image in diagram above ✓✓

(2)

5.1.2 $(x, y) \longrightarrow (y, x)$ ✓

(1)

5.1.3 See the translated image in the diagram above. ✓

(1)

5.2

Let the required length be x

$$\frac{18}{10} = \frac{x}{8} \checkmark$$

$$10x = 146 \checkmark$$

$$\frac{10x}{10} = \frac{146}{10}$$

$$x = 14,6$$

 $\therefore$ 18 m ladder is 14,6 m up the wall. ✓

1 mark for setting the corresponding sides

1 mark for cross multiplication

(3)

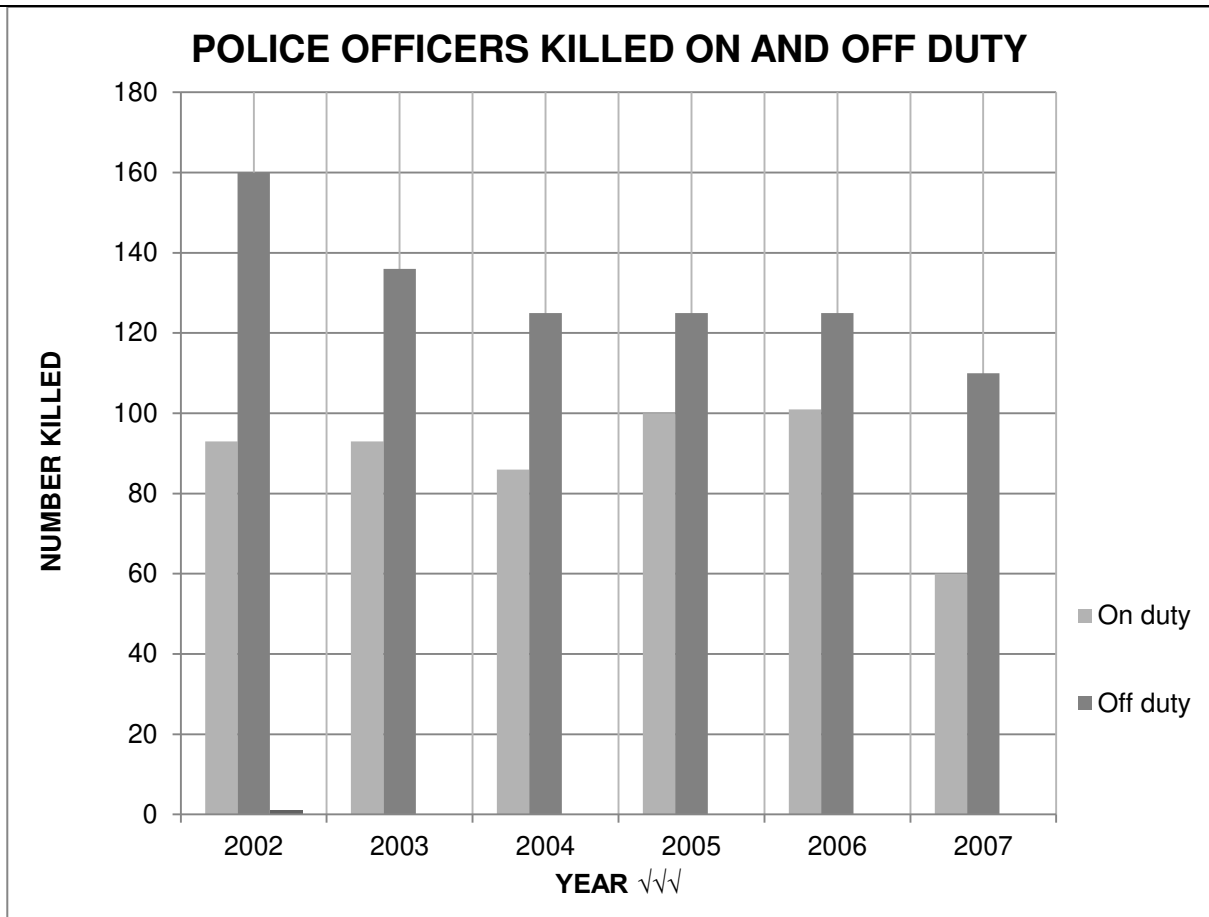
Answer

Downloaded from eduresourcza.com

QUESTION 6				
6.1	6.1.1	Volume of prism = base area x height $\checkmark$ $= l \times b \times h$ $= 9 \text{ m} \times 7 \text{ m} \times 5 \text{ m}$ $= 315 \text{ m}^3 \quad \checkmark$	(2)	Formula Answer
	6.1.2	$1 \text{ m} = 100 \text{ cm}$ $1 \text{ m}^3 = 1\,000\,000 \text{ cm}^3$ $315 \text{ m}^3 = 315 \times 1\,000\,000 \text{ cm}^3$ $315 \text{ m}^3 = 315\,000\,000 \text{ cm}^3 \quad \checkmark$	(1)	Correct conversion units Answer
6.2	6.2.1	Let the number of yards be represented by k $1 \text{ metre} = 1,094 \text{ yards}$ $5 \text{ metres} = k \text{ yards}$ $k = 5 \times 1,094 \quad \checkmark$ $k = 5,47 \text{ yards}$ $\therefore$ The sister must buy <i>5,47 yards</i> of cloth material. $\checkmark$	(2)	Cross multiplication Answer
	6.2.2	Let length in metres be p $1 \text{ metre} = 1,094 \text{ yards}$ $p \text{ metres} = 8 \text{ yards}$ $1,094 p = 8$ $p = \frac{8}{1,094} = 7,31 \text{ metres} \quad \checkmark$ The extra length = $7,31 - 5$ $= 2,31 \text{ metres} \quad \checkmark$ Hence 2,31 metres of the cloth material will be left over after making Andiswa's dress.	(2)	Converted units Answer

6.3	6.3.1	$BF^2 = (15\text{ cm})^2 + (8\text{ cm})^2$ Pythagoras Theorem $\checkmark$ $= 225\text{ cm}^2 + 64\text{ cm}^2$ $BF = \sqrt{289\text{ cm}^2}$ $BF = 19\text{ cm}$ $\checkmark$	(2)	1 mark for stating theorem 1 mark for correct answer								
	6.3.2	In $\triangle DFE$ and $\triangle BAC$ $DF = BA$ opposite sides of rect. ABDF $\checkmark$ $FE = AC$ opposite sides of rect. ACEF $\checkmark$ $DE = BC$ opposite sides of rect. BCED $\checkmark$ $\triangle DFE \equiv \triangle BAC$ SSS $\checkmark$	(4)	1 mark for each reason								
			[13]									
QUESTION 7												
7.1	7.1.1	Fraction allocated to defence $= \frac{43,2^\circ}{360^\circ}$ $= \frac{3}{25}$ $\checkmark$	(1)	Answer simplified								
	7.1.2	Welfare $- \frac{79,2}{360} \times 100 = 22\%$ $\checkmark$ Education $- \frac{97,2}{360} \times 100 = 27\%$ $\checkmark$	(2)	1 mark for each correct answer								
	7.1.3	Percentages are 6; 12; 15; 18; 22 and 27 <table border="1"><tr><td>Stem</td><td>Leaf</td></tr><tr><td>0</td><td>6</td></tr><tr><td>1</td><td>2 5 8</td></tr><tr><td>2</td><td>2 7</td></tr></table> $\checkmark\checkmark$	Stem	Leaf	0	6	1	2 5 8	2	2 7	(2)	1 mark for Stem-Leaf Diagram 1 mark for correct order Do not penalise for using wrong percentages from QUESTION 7.1.2
Stem	Leaf											
0	6											
1	2 5 8											
2	2 7											
	7.1.4	Mean $= \left(\frac{15 + 6 + 12 + 18 + 22 + 27}{6} \right) \%$ $= \frac{100}{6} \% \checkmark$ $= 16,7\% \checkmark$	(2)	Sum of percentages Answer Do not penalise for using wrong percentages from QUESTION 7.1.2								

7.2



			(3)	3 marks for getting all bars correct, a missing set gets 1 mark																		
7.3	7.3.1	Median = $\frac{57 + 59}{2} = \frac{116}{2}$ = 58 ✓	(2)	1 mark for identifying middle 2 values Answer																		
	7.3.2	Range = 90 – 30 = 60 ✓																				
7.4	<table border="1"><thead><tr><th>Class</th><th>Tally</th><th>Frequency</th></tr></thead><tbody><tr><td>21 – 35</td><td>I</td><td>1</td></tr><tr><td>36 – 50</td><td> I</td><td>6</td></tr><tr><td>51 – 65</td><td> </td><td>5</td></tr><tr><td>66 – 80</td><td> </td><td>5</td></tr><tr><td>81 – 95</td><td> </td><td>3</td></tr></tbody></table> ✓✓✓		Class	Tally	Frequency	21 – 35	I	1	36 – 50	I	6	51 – 65		5	66 – 80		5	81 – 95		3	(3)	1 mark for getting 5 classes correct 1 mark for Tallies 1 mark for frequency
Class	Tally	Frequency																				
21 – 35	I	1																				
36 – 50	I	6																				
51 – 65		5																				
66 – 80		5																				
81 – 95		3																				

7.5	7.5.1	$P(\text{blue socks or yellow socks}) = \frac{2}{14} + \frac{3}{14}$ $= \frac{5}{14} \checkmark$	(1)	1 mark for correct answer
	7.5.2	$P(\text{no white socks}) = \frac{14}{14} - \frac{5}{14}$ $= \frac{9}{14} \checkmark$	(1)	1 mark for correct answer
	7.5.3	$P(\text{odd numbered pairs of socks}) = \frac{3}{14} + \frac{5}{14}$ $= \frac{8}{14}$ $= \frac{4}{7} \checkmark$	(1)	1 mark for correct answer
			[19]	
		TOTAL:	100	