



Province of the  
**EASTERN CAPE**  
EDUCATION

**NATIONAL  
SENIOR CERTIFICATE**

**GRADE 12**

**JUNE 2016**

**MATHEMATICAL LITERACY P1  
MEMORANDUM**

**MARKS: 100**

<b>Symbol</b>	<b>Explanation</b>
M	Method
A	Accuracy
CA	Consistent accuracy
RT/RG/RM	Reading from a table/Reading from a graph/Read from map
SF	Substitution in a formula
P	Penalty, e.g. for no units, incorrect rounding off etc.
S	Simplification
R	Rounding/Reason

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This memorandum consists of 10 pages.

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QUESTION 1 (Answer only FULL marks)			
Quest	Solution	Explanation	Marks
1.1	<p>Total in Grades 8–9 = <math>(39 + 35) = 74</math>            Jan. fees = <math>74 \times 300 = R22\ 200</math> ✓MA</p> <p>Total paying learners in Grades 10–12            = <math>167 - (74 + 8) = 85</math> ✓</p> <p>Jan Fees = <math>85 \times 450 = R38\ 250</math> ✓MA            Total school fees for Jan = <math>22\ 200 + 38\ 250</math>            = <math>R60\ 450</math> ✓ CA</p>	<p>1MA amount            R22 200</p> <p>1 S</p> <p>1MA amount            R38 250            1CA amount</p>	(4)
1.2	<p>Boys: Girls = 1 : 3            Girls = <math>\frac{3}{4} \times 8 = 6</math> ✓M            Girls would have paid = <math>6 \times 450</math>            = <math>R2700</math> ✓CA</p>	<p>1M for 6            1CA amount</p>	(2)
1.3	<p>Gr 8 and 9 will pay = <math>1,05 \times 300</math> ✓MA            = <math>R315</math> ✓CA</p> <p>Grades 10 and 12 will pay = <math>0,975 \times 450</math> ✓M            = <math>R438,75</math> A ✓</p> <p><b>OR</b></p> <p><b>Increase</b> = <math>\frac{5}{100} \times 300 = R15</math> ✓ M            New fees = <math>300 + 15</math>            = <math>R315</math> ✓A</p> <p><b>Decrease</b> = <math>\frac{2,5}{100} \times 450 = R11,25</math> ✓ M</p> <p>New fees = <math>450 - 11,25 = R438,75</math> A ✓</p>	<p>1MA multiply by            1,05            1CA</p> <p>1M multiplying by            0,975            1A amount</p> <p>1MA 5% OF 300            1A amount</p> <p>1M 2,5% of 450</p> <p>1A</p>	(4)
1.4	<p>Fees for Jan–April = <math>60\ 450 \times 4</math>            = <math>R241\ 800</math> ✓ CA</p> <p>Fees for May–Nov</p> <p><math>7 \times 315 \times 74 + 7 \times 438,75 \times 85</math>            ✓CA ✓CA  <math>163\ 170 + 261\ 056,25 = 424\ 226,25</math></p> <p>Total for the year = <math>424\ 226,25 + 241\ 800</math>  <math>R666\ 026,25</math> ✓ CA</p>	<p>1CA from 1.1            Multiplying value            from 1.1 by 4            months</p> <p>1CA from 1.3 for  <math>7 \times 315 \times 74</math></p> <p>1CA            For <math>7 \times 438,75 \times</math>            85            1CA amount</p>	(4)

1.5	Amount after the year Jan–Dec 2016: $= 150\,000 \times 1.095 \times 1 = R164\,250 \checkmark A$ Interest = $164\,250 - 150\,000 = R14\,250 \checkmark A$ <b>OR</b> $\checkmark MA$ Interest for one year = $150\,000 \times \frac{9.5}{100} \times 1$ $= R14\,250 \checkmark A$	1A amount end of 2016 1A amount  1MA Multiplication with correct values 1A amount	(2)	
1.6	Number in Gr 11 $= 167 - (42 + 20 + 35 + 39)$ $= 31 \checkmark M$ (Value of B) No. of Boys = $31 - 19 = 12 \checkmark A$	1M  1A	(2)	
1.7	P(learner in gr 11) = $\frac{32}{167} \checkmark MA$  $= 0,19 \checkmark CA$	CA from 1.6 1MA 1 CA	(2)	
			<b>[20]</b>	
<b>QUESTION 2 (Answer only FULL marks)</b>				
2.1	2.1.1	Cardboard package to make the cylinder Surface area SF $= 2 \times 3,142 \times \left(\frac{90}{2}\right)^2 \checkmark + 2 \times 3,142 \times 270 \times 90$ $= 12\,725,10 + 76\,350,60 \checkmark S$ $= 89\,075,7 \checkmark mm^2 \checkmark CA$	1SF  1S 1CA 1 A unit	(4)
	2.1.2	Area of the cardboard $= 120 \times 60 \checkmark MX100 \checkmark C$  $= 720\,000 \text{ mm}^2 \checkmark A$  <b>OR</b> Area of Cardboard = $1\,200 \times 600 \checkmark \checkmark M \& C$ $= 720\,000 \text{ mm}^2 \checkmark A$	1M 1C to $mm^2$ 1A in $mm^2$	(3)
	2.1.3	No. of the cylindrical containers $= \frac{720\,000}{89\,075,7} \checkmark M$ $= 8,08 \checkmark$ $\therefore = 8 \checkmark CA$ <b>No mark for rounding if answer is a whole.</b>	1M Division 1CA from 2.1.1 and 2.1.2 1CA whole number rounding down	(3)

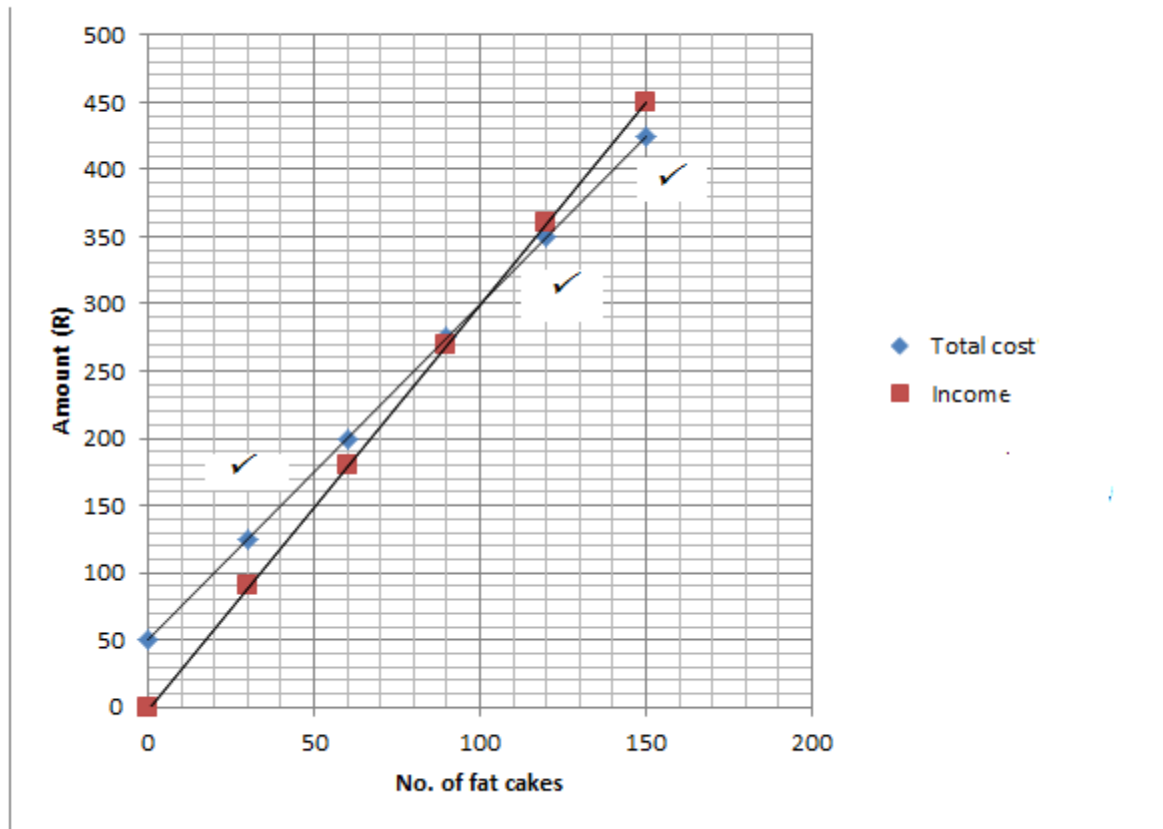
2.2	2.2.1	No. of drops = $\frac{60 \times 60 \times 4}{2} \checkmark MA = 7200 \text{ drops} \checkmark A$	1MA Substitution 1A	(2)
	2.2.2	7200 drops = 1000 000 microlitres = 1l One drop = $\frac{1000000 \checkmark}{7200 \checkmark} M$ = 138,89 microlitres $\checkmark CA$	2M Division 1CA	(3)
	2.2.3	Water wasted = 152 days $\checkmark M \times \frac{24}{4} \checkmark M$ = 912 l $\checkmark CA$	2M Multiplication Values 152 and 6 1 1CA in litres	(3)
				<b>[18]</b>
<b>QUESTION 3 (Answer only FULL marks)</b>				
3.1	3.1.1	$\checkmark \checkmark A$ 18 (this number excludes wardrobe doors) Accept 21 doors (this number includes wardrobe doors) 1 mark Accept 26 doors for learners that see a double door as two doors 1 mark)	2A for 18 doors  1A for 21  1AS for 26	(2)
	3.1.2	North West $\checkmark \checkmark A$	2A	(2)
	3.1.3	11' $\times$ 30.48 cm = 335,28 cm $\checkmark MA$ Length = 335.28 = 3.3528 m $\checkmark CA$  10' = 10 $\times$ 30.48 cm = 304,8 cm 8'' = 8 $\times$ 2,54 = 20,32 cm $\checkmark MA$  Total length = 20,32 + 304,8 = 325,12 cm = 3,2512 m $\checkmark A$ Dimensions are: 3,3528 m by 3,2512 m	1MA multiplying by 30,48 1CA  1MA Multiplying by 2,54 cm  1CA	(4)
	3.1.4	1,5cm diagram represents 3.375m on the building 1,5: 3,375 $\times$ 100 $\checkmark M$ 1: $\frac{3,375 \times 100}{1,5} \checkmark M$ Scale 1:225 $\checkmark A$  <b>OR</b> $\frac{1,5cm}{100} : 3,375m \checkmark M$ 0.015: 3,375 1: $\frac{3,375}{0,015} \checkmark M$ 1: 225 $\checkmark A$	1M for same units 1M dividing 1,5  1A  1M for same units 1M dividing 0,015  1A	(3)

3.2	3.2.1	East London 09:00 ✓ A OR 9 in the morning ✓ OR 9 am ✓  Johannesburg 05:00 ✓ A OR 5 in the morning ✓ OR 5 am ✓	1A  1A	(2)
	3.2.2	Burgersdorp: ✓ ✓ A	2A	(2)
	3.2.3	Average speed = $\frac{\text{total distance}}{\text{total time}}$  Total time = (24:00-9:00 +5:00)-3hrs 33min = 20h – 3h 33min = 16h 27min ✓ A ✓ A ✓ SF $= \frac{992\text{km}}{16\text{hr } 27} = \frac{992\text{km}}{16.45} = 60,30 \text{ Km/h } \checkmark$	1A value for time 16h 27 min  1A Value for distance – numerator 1SF 1 CA	(4)
				<b>[19]</b>
<b>QUESTION 4 (Answer only FULL marks)</b>				
4.1	4.1.1	This means that 15% of the babies weigh more than the baby and 85% weigh less than the baby. ✓ ✓	2A Explanation	(2)
	4.1.2	9,4 kg. ✓ ✓ RD Accept (9,3–9,5) kg	2A RD	(2)
	4.1.3	(a) 50 <sup>th</sup> Percentile ✓ ✓ RD	2A RD	(2)
		(b) <b>BMI</b> = $\frac{\text{Weight (in kilogram)}}{(\text{Height in metres})^2}$ ✓ SF $= \frac{11 \text{ kg}}{(0,8)^2} \checkmark \text{ SF}$ $= 17,19 \frac{\text{kg}}{\text{m}^2} \checkmark \text{ CA}$	2SF substitution 11 kg and 0,8 m  1CA	(3)
4.2	4.2.1	Learners achieved NSC In 2014 = learners achieved in 2015 – 117 798 ✓ M = 455 825 – 117 798 = 338 027 ✓ A	1M Subtraction 1A	(2)
	4.2.2	Total learners not achieving NSC = 644 536 – 455 825 ✓ M = 188 711 ✓ A	1M subtraction 1A	(2)

	4.2.3	$\% \text{ achieved Bachelor} = \frac{166\,263}{644\,536} \times 100$ $= 25.8\%$	$\checkmark$ M 1M adding Bachelor passes 166 263 1CA	(2)
	4.2.4	NSC Diploma achievement for EC $\checkmark$ M $= \frac{20055}{87090} \times 100 = 23,03$ $= 23,0\%$	1M dividing 20 055 by the total 87 090 1CA  1A use of 1 decimal place within the context	(3)
	4.2.5	Ascending order of the % achievements 56,8%; 60,7%; 65,9%; 69,4%; 78,6%; 81,5%; 81,6%; 84,2%; 84,7%. $\checkmark\checkmark$ MA Median 78,6% and province: Mpumalanga $\checkmark$ CA	2MA correct arrangement If descending order only 1 Mark  1CA Province not %	(3)
	4.2.6	P( Learner achieved NSC in Gauteng in 2015) = 84,2% $\checkmark$ M = 0.842 $\checkmark$ A <b>OR</b> $\frac{91327}{108442} \times 100 = 0,84217\%$ $= 0,842$	1M Value of 84,2% 1A decimal form to 3 decimal places	(2)
				<b>[23]</b>

<b>QUESTION 5 (Answer only FULL marks)</b>			
5.1	5.1.1	Variable cost = $0.70 + 0.75 + 0,05 + 0,20 + 0.05 + 0,50 + 0,25$ ✓MA = R2,50 ✓A	1MA adding cost of ingredients and labour 1A amount  (2)
	5.1.2		

**INCOME AND EXPENDITURE FOR JANES'S FAT CAKE SALES**



		Plotting 3 points correctly 1 Mark $\times 2 = 2$ . Drawing the line ✓A	2MA Plotting correctly 1CA Straight line Through the points  (3)
	5.1.3	100 fat cakes to be sold to break even (form graph) ✓✓RD <b>OR</b> $50 + 2,5n = 3n$ ✓M $50 = 3n - 2,5n$ $50 = 0,5n$ $500 = 5n$ $\therefore n = 100$ ✓A	2RD From the point of intersection.  1M equating the cost = production 1A for 100 fat cakes  (2)

5.2	<p>1 Yen ¥ = R0,13          ?? = R925          ✓M  <math>?? = \frac{925}{0.13} = 7115.384</math>          ∴ amount of Yens (¥) = 7115 ✓A</p>	<p>1M Division of the values          1A amount (7115)          smallest coin ¥ 1</p>	(2)
5.3	<p>5.3.1          Monthly repayment = <math>\frac{748\,000}{1000} \times 10,53 =</math>  <math>R7\,876,44</math> ✓</p>	<p>1SF Substitution          1CA amount</p>	(2)
	<p>5.3.2 Price for the house in 2015  <math>\frac{880\,000}{1,057} = R832\,544,94</math> ✓A          ✓M</p> <p><b>OR</b>          Inflation = <math>\frac{5,7}{105,7} \times 880\,000 = 47\,455,06</math> ✓A          ✓M          2015 Price = 880 000 - 47 455,06          = R832 544,94 ✓A</p> <p><b>OR</b>          2015 Price + 5,7% of 2015 price          = 880 000</p> <p>2015 Price (1+ 5,7%) = 880 000          ✓ M          2015 Price = <math>\frac{880\,000}{1,057} = R832\,544,94</math> ✓</p> <p><b>OR</b>          Price in 2015 = <math>x</math>          Price in 2016 = <math>+ x \frac{5,7}{100}</math> of <math>x</math>  <math>880\,000 = x + \frac{5,7}{100} \times x</math>  <math>880\,000 \times 100 = 100x + 5,7x</math>  <math>= 105,7x</math>  <math>x = \frac{880\,000 \times 100}{105,7} = R832\,544,94</math> ✓A          ✓MA</p>	<p>1M Division          1A Value 1,057          1CA amount</p> <p><b>OR</b>          1A for inflation value          1M Subtraction          1CA amount</p> <p>1MA numerator          1A denominator          1A amount</p>	(3)



5.4	5.4.1	Mode mark = 54 ✓✓ A	2A	(2)
	5.4.2	The range $98 - 5 = 93$ ✓✓ A	2A	(2)
	5.4.3	P(learner obtained Substantial) $= \frac{6}{30} = \frac{1}{5} = 0,2$ ✓✓ A $= 20\%$	2A (allow fraction or decimal or %)	(2)
				<b>[20]</b>
<b>TOTAL:</b>				<b>100</b>