Province of the
EASTERN CAPE
EDUCATION

SENIOR PHASE

GRADE 9

NOVEMBER 2012

MATHEMATICS
MARKING GUIDELINES

MARKS: 100

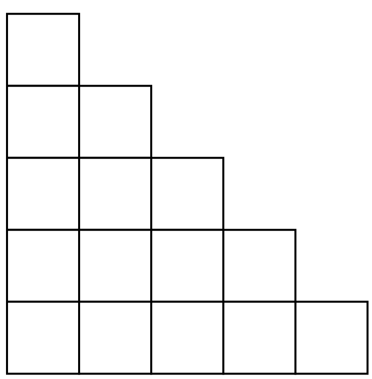
This marking guideline consists of 12 pages.

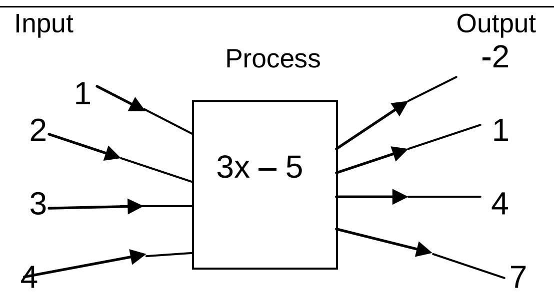
QUESTION 1

1.1	D √	(1)
1.2	D √	(1)
1.3	B √	(1)
1.4	D √	(1)
1.5	A √	(1)
1.6	C √	(1)
1.7	C √	(1)
1.8	D √	(1)
1.9	C √	(1)
1.10	C √	(1)
		[10]

QUESTION 2

2.1	Let the amount she had be = x Amount she spent = $\frac{2}{5}x$ Amount left = $\frac{3}{5}x$ = 30 √ $\frac{3}{5}x$ = 30 $\frac{3}{5}x\ (\frac{5}{1})$ = 30 $(\frac{5}{1})$ $3x$ = 150 x = 50 √ Hence Angela had R50 at first.	<u>OR</u> 3 : 5 = 30 : x √ 3/5 = 30/x 3x = 5 (30) x = 150/3 x = 50 √	(2)	Forming equation Answer
2.2	2.2.1 200 000 (0,08928) = 17 856 mm √		(1)	Answer

2.2	2.2.2	17 856 = $1,7856 \times 10^4$ √	(1)	Correct answer
2.3	2.3.1	Principal is R1 500 – R 150 = R1 350 √ S I = P x R x T √ $= R1\,350 \times \frac{18}{100} \times 3$ = R729 √ Amount paid = Principal + Interest + Deposit = R1 350 + R729 + R150 = R2 229 √	(4)	Calculating the principal Formula Interest Answer
	2.3.2	Monthly instalment = $\frac{\text{Principal + Interest}}{36}$ + insurance $= \frac{R2079}{36}$ + insurance = R57,75 + R10,50 = R68,25 √	(1)	Answer
			[9]	
QUESTION 3				
3.1	 √ Structure 5		(1)	Correct drawing

3.2	3.2.1	1^{st} term : $\frac{1(2)}{2}$ = 1 2^{nd} term : $\frac{2(3)}{2}$ = 3 3^{rd} term : $\frac{3(4)}{2}$ = 6 4^{th} term : $\frac{4(5)}{2}$ = 10 Therefore $\frac{n}{2}(n+1)$ √√	(2)	Answer
	3.2.2	b = $\frac{n}{2}(n+1)$ If n = 6 b = $\frac{6}{2}(6+1)$ = 3 x 7 b = 21 21 blocks can be used to form structure 6 √	(1)	Answer
3.3		 √ √ √	(3)	Minus 1 for any wrong output value
3.4	3.4.1	The y-intercept is 3 i.e. c Take points (0 ; 3) and (-2 ; 0) If x = -2 ; y = 0 mx + c = y -2m + 3 = 0 -2m = -3 m = $\frac{3}{2}$ √ Hence y = $\frac{3}{2}$x + 3 √	(2)	substituting into formula and calculating m Answer

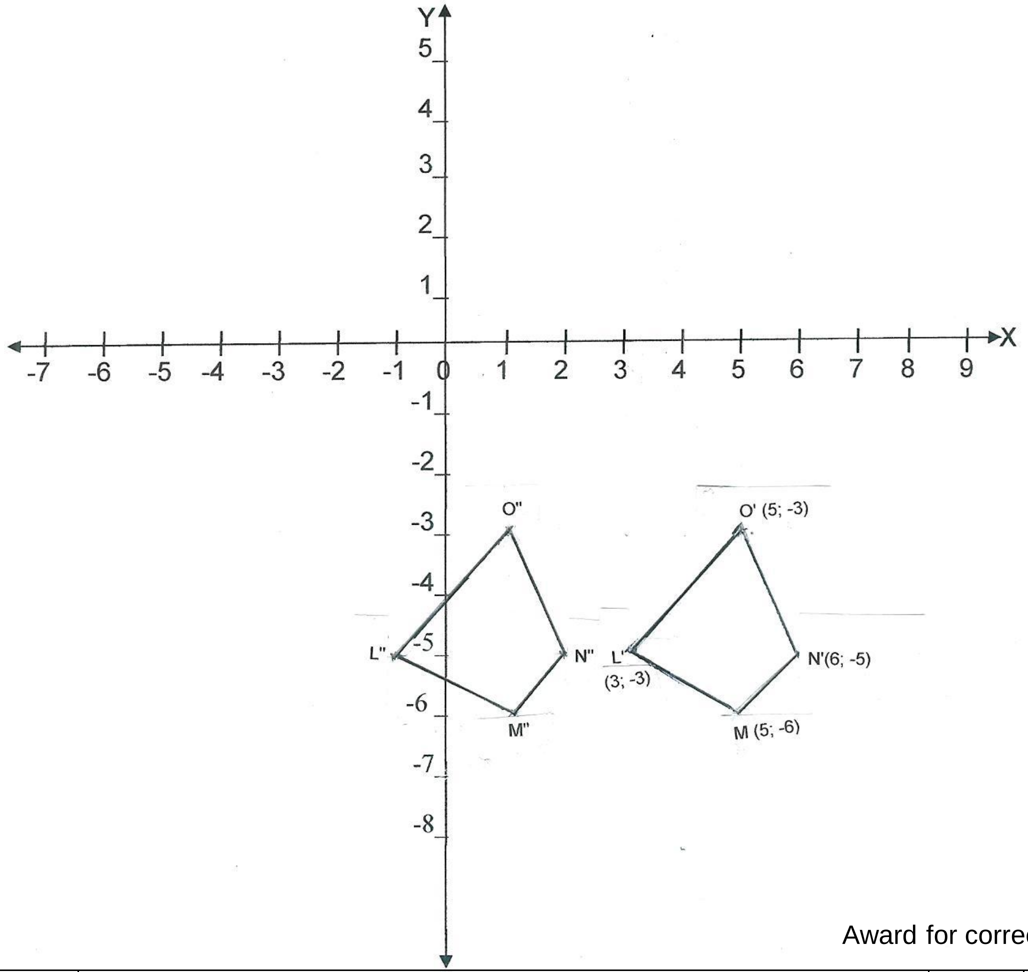
	3.4.2	If $x = 3$ $\frac{3}{2}x + 3 = y$ $\frac{3}{2}(3) + 3 = y$ $\frac{9}{2} + \frac{6}{2} = y$ $\frac{15}{2} = y$ $y = 7\frac{1}{2}$ √	(4)	Multiplying by LCM Removing the brackets Grouping like terms Answer
3.5	Let the first year's admission be represented by x (any letter can be used) √ $x + 2x + 4x + 8x = 1\,500$ √ $15x = 1\,500$ √ $x = 100$ √ Therefore 100 learners were admitted in the first year.		(4)	Representing the unknown Forming the equation Simplifying left hand side Answer
			[14]	
QUESTION 4				
4.1	$9p^2q - 81p^2q^3$ $= 9p^2q(1 - 9q^2)$ √√ $= 9p^2q[(1 - 3q)(1 + 3q)]$ √√		(4)	Common factor and difference of 2 squares Correct factors of difference of 2 squares
4.2	4.2.1	$(3x - 2)(5x + 1)$ $= 15x^2 + 3x - 10x - 2$ √ $= 15x^2 - 7x - 2$ √	(2)	Removing brackets Answer

	4.2.2	$\frac{12x^2y^3z^4}{8x^3y^2z^2} \times \frac{8x^2y^3}{16xy}$ $= \frac{96x^4y^6z^4}{128x^4y^3z^2}$ √√ $= \frac{3y^3z^2}{4}$ √√	(4)	Product of numerator and Product of denominator Answer
4.3	4.3.1	$\frac{x-6}{2} + \frac{3(x+8)}{4} = x + 3$ $\frac{4(x-6)}{2} + \frac{12(x+8)}{4} = 4(x+3)$ $2(x-6) + 3(x+8) = 4(x+3)$ √√ $2x - 12 + 3x + 24 = 4x + 12$ √ $5x + 12 = 4x + 12$ $5x - 4x = 12 - 12$ $x = 0$ √	(4)	Simplifying the left hand side and the right hand side Grouping like terms Answer
	4.3.2	$2^{2x} = 64$ $2^{2x} = 2^6$ √ $2x = 6$ √ $x = 3$ √	(3)	Converting 64 into power Equating exponents Answer
			[17]	
QUESTION 5				
5.1	$180°(n-2) = 1\ 260°$ $\frac{180(n-2)}{180} = \frac{1260}{180}$ $n - 2 = 7$ √ $n = 7 + 2$ √ $n = 9$ Hence, if the sum of the angles of a polygon is 1 260º, it has 9 sides.		(2)	Simplification Answer

5.2	In Δ SPQ and Δ QRS
	PQ = RS (opposite sides of a parm.) √
	$\angle$SQP = $\angle$QSR (alt $\angle$s, PQ // RS) √
	SQ = SQ (common) √
	Δ SPR = Δ QRS (S$\angle$S) √
	
	OR
	PQ = RS opposite sides of a parm. √
	SP = QR opposite sides of a parm. √
	SQ = SQ common √
	Hence Δ SPQ ≡ Δ QRS (SSS) √
			(4)	Statements with reason
				
				Answer

5.3	$\frac{6}{12} = \frac{10}{x}$ √ $6x = 120$ $\frac{6x}{6} = \frac{120}{6}$ $x = 20$ cm √ The length of the longest side is 20 cm.		(2)	Setting up the proportional sides Answer
5.4	5.4.1	L (3 ; -5) √ M (5 ; -6) N (6 ; -5) √ O (5 ; -3)	(2)	2 marks for 4 coordinates correct 1 mark for 1or 2 wrong coordinate No mark for 1 correct co-ordinate

5.4	5.4.2			



√√ (2)
Award for correct position of image.

	5.4.3	Answer on diagram above with the following coordinates L'' (-1; -5) M'' (1; -6) N''(2; -5) O'' (1; -3) √√	(2)	Correct gliding on ANNEXURE is to be awarded
			[14]	

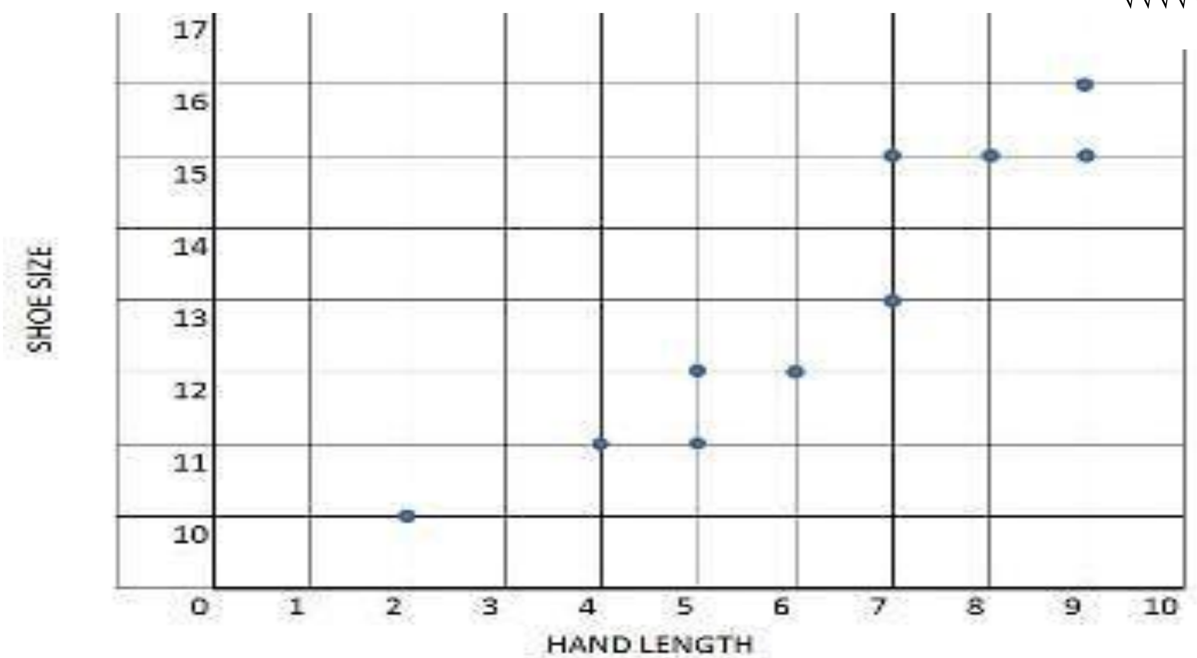
QUESTION 6				
6.1	$P\hat{Q}R + Q\hat{T}S = 180^\circ$ sum of angles on a straight. line Hence $Q\hat{T}S = 180^\circ - 95^\circ = 85^\circ$ √ but $P\hat{Q}R = Q\hat{T}S$ corresponding angles, PQ//ST √ Therefore $P\hat{Q}R = 85^\circ$ √		(3)	Obtaining angle QTS Equating with reason angles PQR and QTS Answer
6.2	6.2.1	x_1 √	(1)	Answer
	6.2.2	x_4 √	(1)	Answer
			[5]	
QUESTION 7				
7.1	7.1.1	$S = \frac{D}{t} = \frac{20km}{1,25}$ = 16 km/h √ Speed of train B is 16 km/h	(1)	Answer
	7.1.2	Speed of train A $\frac{D}{t} = \frac{30}{0,75}$ = 40 km/ h √ Therefore Train A is faster than Train B because it runs at a speed of 40km /h whilst Train B runs at a speed of 16 km/h. √	(2)	Answer Reason
7.2	7.2.1	In Δ ADB OR ΔADC DB = DC = 2,1 cm $AD^2 = AB^2 - DB^2$ Pythagoras Theorem √ $= (3\text{ cm})^2 - (2,1\text{ cm})^2$ = 9 – 4,41 = 4,59 $AD = \sqrt{4,59}$ = 2,14 cm √	(2)	Theorem Answer

	7.2.2	Total Surface Area = 2(triangular base area) + area rectangle +2(Area of other rectangular face) $= 2(\frac{1}{2}$ b x h) + (l x b) + 2 (l x b) √ $= 2(\frac{1}{2}$ x 4,2 x 2,14) + (4,2 x 15) + 2(3 x 15) √√ = 8,99 + 63 + 90 = 161,99 cm^2 √	(4)	Formula Correct substitution Answer
			[9]	
QUESTION 8				
8.1	No. of learners that will fail = 3 + 5 + 2 + 9 = 19 √		(1)	Addition and correct answer
8.2	Minimum total marks she can obtain = 80 x 8 = 640 √		(1)	Multiplication and answer
			[2]	

QUESTION 9				
9.1	9.1.1			

Hand length and Shoe Size Correlation Graph

√√√√√



Labelling x-axis 1 mark;
Labelling y-axis 1 mark;
Title of graph 1 mark
Plotting points 2 marks

			(5)	
	9.1.2	The bigger the shoe size the longer the length of the hand and vice versa. √	(1)	Correct reason for relation.

<table>
<tr><td></td><td>9.1.3</td><td>2; 4; 5; 5; <u>6; 7</u>; 7; 8; 9; 9

Median $= \frac{6+7}{2}$ √
$= \frac{13}{2}$
$= 6\frac{1}{2}$ √</td><td>(2)</td><td>Identifying middle numbers and dividing

Answer</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>9.1.4</td><td>Mode is 15 √</td><td>(1)</td><td>Answer</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>9.1.5</td><td>Mean $= \frac{\text{sum of the hand length}}{\text{No. of hand length}}$

= 130 / 10 = 13 √
Therefore the mean is 13. √</td><td>(2)</td><td>1 mark for correct sum
Answer</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>9.1.6</td><td>Range = 9 – 2 = 7 √</td><td>(1)</td><td>Answer</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>9.2</td><td colspan="2"><table><tr><td></td><td>Win (W)</td><td>Draw (D)</td><td>Loss (L)</td></tr><tr><td>Win (W)</td><td>WW</td><td>WD</td><td>WL</td></tr><tr><td>Draw (D)</td><td>DW</td><td>DD</td><td>DL</td></tr><tr><td>Loss (L)</td><td>LW</td><td>LD</td><td>LL</td></tr></table>√√√</td><td>(3)</td><td>1 mark per row / column
Correctly completed table</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>9.3</td><td>9.3.1</td><td>$\frac{1}{9}$ √</td><td>(1)</td><td>Answer</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>9.3.2</td><td>$\frac{2}{9}$ √</td><td>(1)</td><td>Answer</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>9.3.3</td><td>$\frac{5}{9}$ √</td><td>(1)</td><td>Answer</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>9.4</td><td>9.4.1</td><td>Graph 1</td><td>(1)</td><td>Answer</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>9.4.2</td><td>In graph 1 the scale units on y-axis are small i.e. 10 units This results in graph being stretched (enlarged).
On the other hand the scale units on y-axis of graph 2 are bigger i.e. 50 units this results in the graph being compressed. √</td><td>(1)</td><td>Answer</td></tr>
<tr><td></td><td></td><td></td><td>[20]</td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td colspan="2">TOTAL:</td><td>100</td><td></td></tr>
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