Province of the
EASTERN CAPE
EDUCATION

SENIOR PHASE

GRADE 9

JUNE 2011

MATHEMATICS
MARKING GUIDELINE

MARKS: 100

This marking guideline consists of 9 pages.

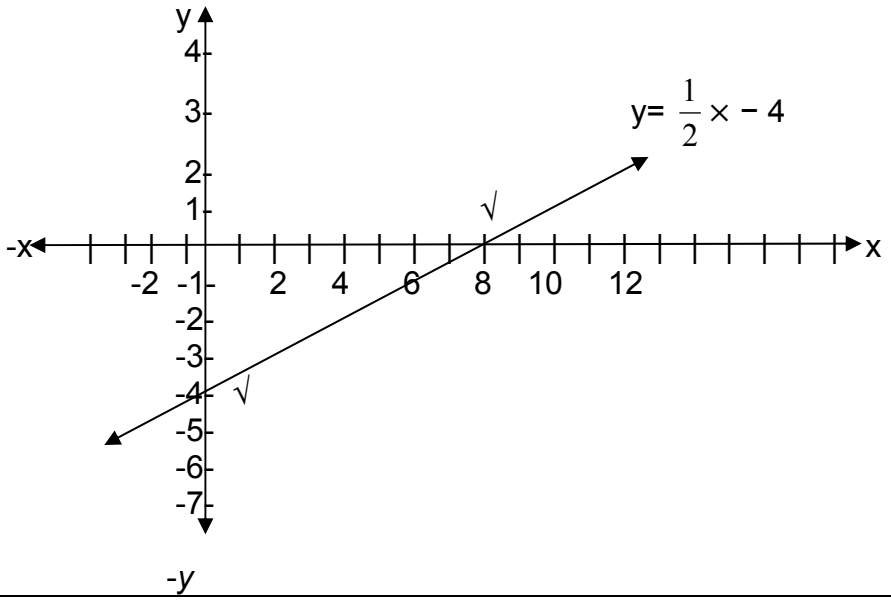
SECTION A

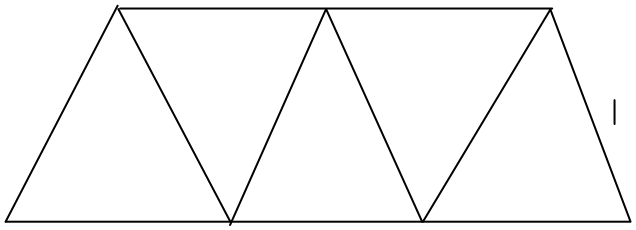
1. D √ (1)
2. C √ (1)
3. C √ (1)
4. C √ (1)
5. A √ (1)
6. A √ (1)
7. C √ (1)
8. B √ (1)
9. B √ (1)
10 A √ (1)
11. D √√ (2)
12. A √ (1)
13. C √ (1)
14. B √ (1)
15. A √ (1)
16. A√ (1)
17. A √ (1)
18. C √ (1)
19 B √ (1)
20. B √ (1)
21. B √ (1)
22 C √ (1)

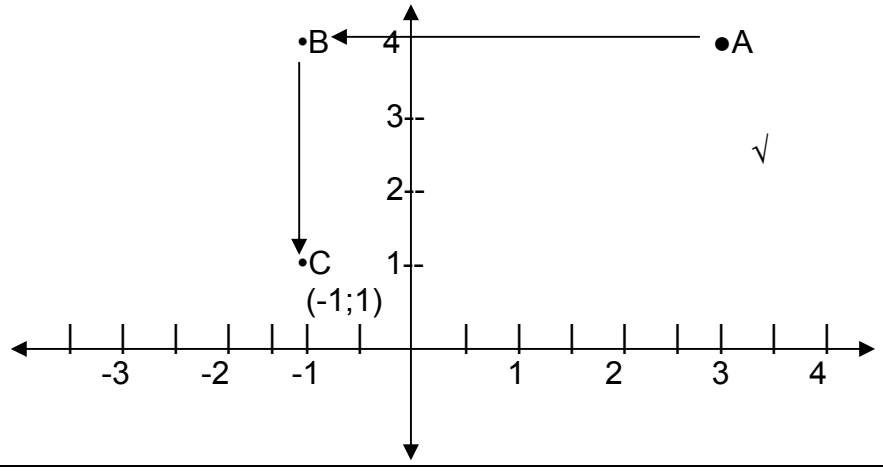
TOTAL SECTION A: 23

SECTION B					
QUESTION	**NO**	**SOLUTION**		**MARK ALLOCATION**	**REASON**
1.	1.1	1.1.1	$\sqrt{25}$; 2,3 ; 16 ; $4\frac{3}{7}$ √	(1)	If all four numbers mentioned.
		1.1.2	π ; $\sqrt[3]{19}$ √	(1)	If both numbers mentioned.
	1.2	Real numbers √		(1)	Answer only.
	1.3	0,005 629 √		(1)	Answer only.
	1.4	$\frac{(2a^2b^4)^3 \times 4ab^3}{8a^{-2}b^7}$ $= \frac{8a^6b^{12} \times 4ab^3}{8a^{-2}b^7}$ √ √ $= 4a^9b^8$ √		(3)	Product rule Simplification Answer
	1.5	Let the unknown distance be x 480 km : 4 hours x travelled km : $3^1/_3$ hours $\frac{480}{x} = \frac{4}{10} \times 3$ √ $12x = 4800$ $X = \frac{4800}{12}$ $x = 400$ √ The family is left with 80 km to its destination √ OR Average speed for 4 hours: $\frac{480}{4}$ = 120 km/h √ Distance travel for 3 hours 20 minutes: $120 \times 3\frac{1}{3}$ $= 120 \times \frac{10}{3}$ = 400 km √ Distance left = 480 km – 400 km = 80 km √		(3)	Direct proportion Answer Average speed Distance travelled in 3 hours 20 minutes Difference
				[10]	

QUESTION 2				
2.1	2.1.1	$\frac{a^2-b^2}{y(a-b)} \times \frac{x(3a+4b)}{9a^2-16b^2}$ $\frac{(a-b)(a+b)}{y(a-b)} \times \frac{x(3a+4b)}{(3a+4b)(3a-4b)}$ √ $\frac{a+b}{y} \times \frac{x}{3a-4b}$ √ $\frac{x(a+b)}{y(3a-4b)}$ √	(3)	Simplification Answer
	2.1.2	(5x – 1)(2x + 3) = $10x^2$ + 15x − 2x – 3 √ = $10x^2$ + 12x − 3 √	(2)	Removing of brackets Answer
2.2	$p^3 - p^2r - 9p + 9r$ = $(p^3 - p^2r) - (9p - 9r)$ √ = $p^2(p - r) - 9(p - r)$ √ = $(p - r)(p^2 - 9)$ = $(p - r)(p - 3)(p + 3)$ √	**OR**	$p^3 - 9p - p^2r + 9r$ = $p(p^2 - 9) - r(p^2 - 9)$ √ = $(p^2 - 9)(p - r)$ √ = $(p - 3)(p + 3))(p - 3)$ √	Correct grouping Common factor Answer
			(3)	
2.3	2.3.1	6(x + 2) = 3(3x – 4) – 3 6x + 12 = 9x – 12 – 3 √ 6x + 12 – 12 = 9x − 15 − 12 6x − 9x = - 27 √ - 3x = - 27 3x = 27 $\frac{3x}{3} = \frac{27}{3}$ x = 9 √	(3)	
	2.3.2	$\frac{4x}{5} = \frac{x-7}{3}$ OR $\frac{4x}{5} \times 15 = \frac{x-7}{3} \times 15$ 12x = 5x − 35 12x = 5x – 35 √ 7x = -35 7x = -35 $\frac{7x}{7} = -\frac{35}{7}$ $\frac{7x}{7} = -\frac{35}{7}$ x = -5 √ x = -5	(2)	Cross multiplication Answer

	2.3.3	$3.5^{x+1} = 75$ $\frac{3.5^{x+1}}{3} = \frac{75}{3}$ $5^{x+1} = 25$ √ $5^{x+1} = 5^2$ $x + 1 = 2$ √ $x + 1 - 1 = 2 - 1$ $\therefore x = 1$ √	(3)	Simplification Equal basis Answer
2.4		$y = \frac{1}{2}x - 4$ To find the y-intercept, let x = 0 $y = \frac{1}{2}(0) - 4$ $y = -4$ Co-ordinate of y intercept is (0; -4) √ To find the x-intercept , let y = 0 $\frac{1}{2} \times -4 = 0$ $\frac{1}{2} \times = 4$ $2x\frac{x}{2} = 2 \times 4$ $\therefore \times = 8$ Co-ordinates of x-intercept (8;0) √  -y	(4)	Co-ordinate of y intercept Co-ordinate of x intercept x-intercept in the graph x-intercept in the graph
			[20]	

QUESTION 3				
3.1		 Structure 5 √	(1)	Correct drawing
3.2	3.2.1	$\frac{25-1}{2} = 12$ or any other relevant method √	(2)	Answer
	3.2.2	Let the number of triangles be represented by n The difference in the matchsticks sequence is 2. √ Hence the number of matchsticks is 2 times number of triangles plus 1 i.e. 2n + 1 or any relevant method. √	(2)	Answer
	3.2.3	No. of n matchsticks = 2n + 1 n = 40 No. of matchsticks = (2 x 40) +1 = 80 + 1 = 81 √ There are 81 matchsticks	(1)	Answer
3.3	3.3.1	Let Linda's age be x Then Thami's age is x + 12 But x + (x + 12) = 82 √ x + x + 12 = 82 2x = 82 − 12 $\frac{2x}{2} = \frac{70}{2}$ ∴ x = 35 √ Linda's age is 35 years	(2)	Setting up the equation Answer
	3.3.2	Thami's age is x + 12 i.e. 35 + 12 = 47 Thami's age is 47 years.	(1)	Answer
			[9]	

QUESTION 4					
4.1				(1)	Position of C
4.2	C (-1;1)			(1)	Answer
4.3	Translation			(1)	Answer
4.4	4.4.1	Trapezium		(1)	Answer
	4.4.2	By rotating the shape all four angles meet a point, thus forming 360º. The sum of the angles of any quadrilateral is 360º or any other reasonable logical argument√√		(2)	
				[6]	
QUESTION 5					
5.1	5.1.1	∠R √		(1)	Answer
	5.1.2	Is similar √		(1)	Answer
	5.1.3	All angles of Δ PQR = All angles of Δ ABC √		(1)	Answer
	5.1.4	QR √		(1)	Answer
	5.1.5	RP √		(1)	Answer
5.2	5.2.1	Statement	Reason		
		In Δs ABO & PQO			
		AB = PQ	given √		Reason
		∠ABO = ∠OPQ	alternate angles √		Statement/Reason
		∠AOB = ∠POQ	vertically opposite angles √		Statement/Reason
		ΔABC ≡ Δ RST	∠, ∠,S √	(4)	Condition of congruency

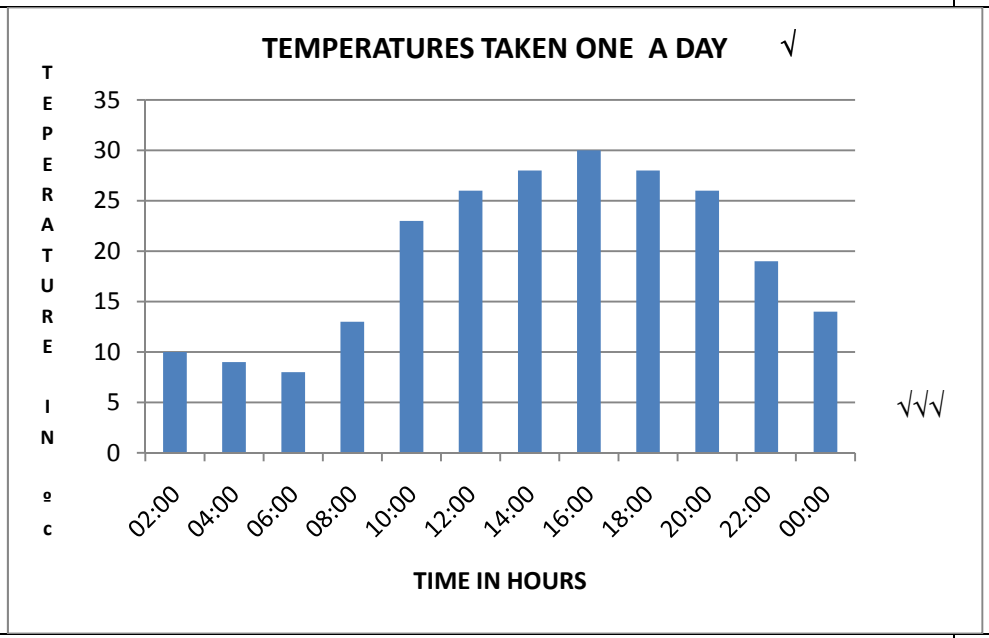
	5.2.2	Side, Side, Side (SSS) ;Side, Angle, Side (S,A,S); Right Angle, Hypotenuse and Side (RHS) (Any one of these) √	(1)	Answer
			[10]	
QUESTION 6				
6.1	6.1.1	Volume of can = $\pi r^2 h$ = $\frac{22}{7}$ x (32,5 *mm)*^{2} x 75 *mm* √ = $\frac{22}{7}$ x 1 056,25 *mm*^{3} x 75 *mm* = 24 8973,21 mm^3 √ Convert 24 8973,21 mm^3 to cm^3 (1 000 mm^3 = 1 cm^3) √ 24 8973,21 mm^3 X $\frac{1}{1000}$ = 248,97 cm^3 √	(4)	Substitution Answer Conversion Answer
	6.1.2	Convert 248,97 cm^3 to mℓ (1 cm^3 = 1 mℓ) :. 248,97 cm^3 = 248,97 mℓ √ Space = Volume of can − liquid in the can = 248,97 mℓ – 200 mℓ :. Space = 48,97 mℓ √	(2)	Conversion Answer
			[6]	
QUESTION 7				
7.1	First arrange the numbers in ascending order 16; 18; 19; 23; 24; 26; 27; 29; 30; <u>33; 34</u>; 35; 37; 38; 39; 40; 41; 42; 45; 49.		(4)	1 mark per stem

Stem	Leaf
1	6; 8; 9 √
2	3; 4; 6; 7; 9 √
3	0; 3; 4; 5; 7; 8; 9 √
4	0; 1; 2; 5; 9 √

7.2	√ √			

Interval	Tally	Frequency
0 − 9		0
10 − 19	///	3
20 − 29	////	5
30 − 39	//// //	7
40 − 49	////	5
	Total 20	(2)

Tally
frequency

7.3	7.3.1	$\text{Average Mark} = \frac{\text{Sum of marks obtained}}{\text{No. of Marks obtained}}$ $= \frac{645}{20}$ √ Average Mark = 32,25 √	(2)	Correct addition Answer
	7.3.2	Median − Middle Value 16; 18; 19; 23; 24; 26; 27; 29; 30; 33; 34; 35; 37; 38; 39; 40; 41; 42; 45; 49. $\text{Median} = \frac{33+34}{2}$ $= \frac{67}{2}$ = 33,5 √	(1)	Answer
	7.3.3	Mode – value that appears most frequently/ often in a set of data. There is no mode √	(1)	Answer
	7.3.4	Range = Highest mark − Lowest mark = 49 – 16 √ = 33	(1)	Answer
7.4	7.4.1	 √√√		Labels (1) All 12 bars (3) Max. 9 (2) Max.6 (1) Less than 6 (NO MARKS)
			(4)	
	7.4.2	16:00	(1)	Answer
			[16]	
		TOTAL SECTION B:	**77**	
		GRAND TOTAL:	**100**	