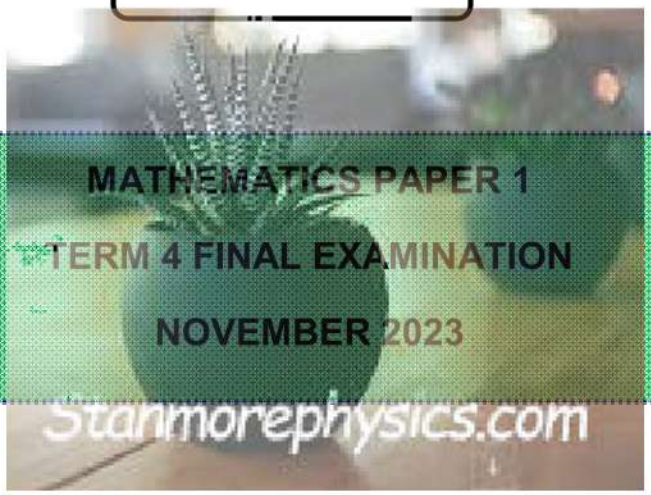
LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF
EDUCATION

VHEMBE EAST DISTRICT

SENIOR PHASE

GRADE 9



MARKS: 75
TIME: 2 HOURS

This question paper consists of 8 pages including the cover page.

INSTRUCTIONS:

1. Answer all the questions on a separate answer sheet
2. Answer question 6.2.2 on the grid paper provided. Remove the grid paper from the question paper and submit together with your answer sheet.
3. Number your answers the way the questions are numbered.
4. Show all your calculations.
5. You may start with any question, but keep its sub-questions together.
6. A non-programmable calculator may be used.
7. Write neatly and legibly.

QUESTION 1 **[10]**

Four options are provided as possible answers to the following questions. Choose the correct option and write only the letter (A – D) next to the question number, for example
1.11. D

1.1 Which of the following numbers is a rational number?

A π
B $\sqrt{-1}$
C $1,2\dot{3}$
D $\sqrt{10}$ [1]

1.2 Calculate: $6 + 6 \div 2 - 6 \times (-2) =$

A 12
B 18
C 21
D 0 [1]

1.3 Simplify: $(2abc)^3 \times (2bc)^{-2} =$

A $8a^3b^3c^3 \times 4\frac{1}{b^2c^2}$
B $6a^3b^3c^3 \times 4\frac{1}{b^2c^2}$
C $8a^3b^3c^3 \times \frac{1}{4b^2c^2}$
D $6a^3b^3c^3 \times \frac{1}{4b^2c^2}$ [1]

1.4 The next term of the sequence: 18; 14; 11; 9; . . . is ?

A 5
B 6
C 8
D 7 [1]

1.5 How many terms are there in the expression $\frac{-x^2-x+2}{x-1} \times \frac{3}{x-2}$

A 4
B 1
C 8
D 2 [1]

1.6 Simplify: $(x-3)^2 =$

A $x^2 - 9$

B $x^2 - 6x + 9$

C $x^2 - 6x - 9$

D $x^2 - 6$ [1]

1.7 If $x^2 = 25$, then $x = \ldots$?

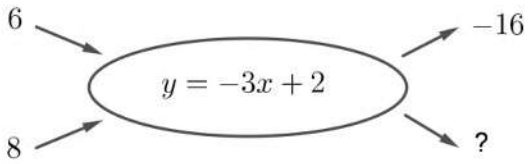
A 5

B 625

C 5 or – 5

D 26 [1]

1.8 Complete the flow diagram by using the given rule.



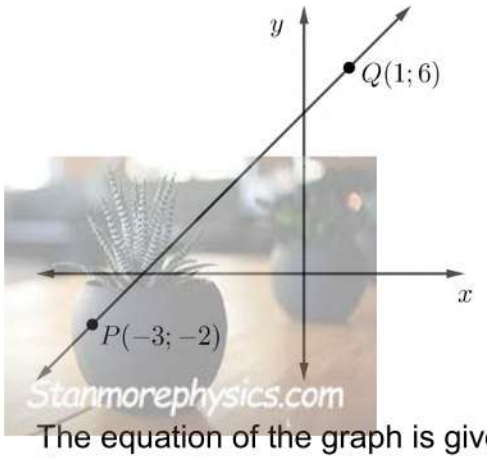
A – 22

B 26

C 22

D – 26 [1]

1.9 Consider the graph of $y = mx + c$ sketched below



The equation of the graph is given by. . .

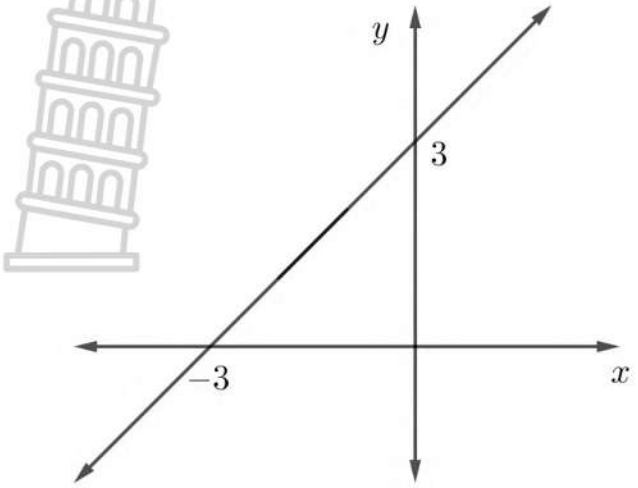
A $y = 2x - 4$

B $y = -2x - 4$

C $y = -2x + 4$

D $y = 2x + 4$ [1]

1.10 Consider the linear graph given below



x	– 3	– 2	– 1	0	**b**
y	0	1	2	**a**	4

A $a = 1$ and $b = 0$

B $a = 0$ and $b = 1$

C $a = 1$ and $b = 3$

D $a = 3$ and $b = 1$ [1]

QUESTION 2 **[23]**

2.

2.1 Four packets of biscuits cost R74, 00. What will six packets cost? [2]

2.2 Find the LCM and HCF of 60 and 80. [4]

2.3 Delea invested a certain amount into a savings account at 6,5% compound interest per annum. If the final amount is R15 000 after 5 years, how much did she originally invest? [4]

2.4 Simplify without using a calculator:

2.4.1 $4 \times [20 + (-5)]$ [2]

2.4.2 $10 \times (-4) + 25 \div (-5)$ [2]

2.4.3 $2^5 - (-2)^3$ [2]

2.4.4 $\dfrac{\sqrt[3]{-125} \times \sqrt{64}}{\sqrt{100} \times \sqrt[3]{-64}}$ [3]

2.5 Simplify using laws of exponents:

2.5.1 $3^2 \times 3^5$ [2]

2.5.2 $5^2 \times 2^0 - 3 \div 6 + (-2)^3$ [2]

QUESTION 3 **[12]**

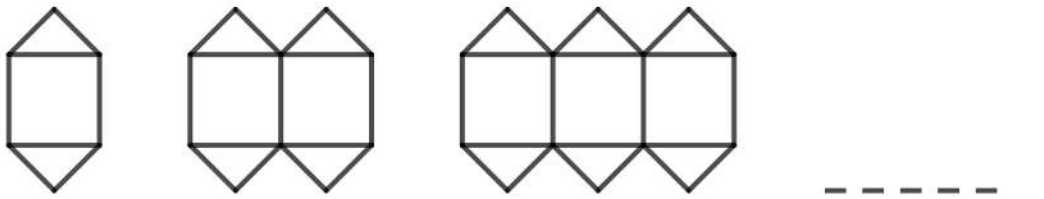
3.

3.1 Given the following number pattern: 2; 5; 10; 17; . . .

3.1.1 Write down the next TWO terms. [2]

3.1.2 Provide a rule to describe the relationship between the number numbers in the number pattern. [2]

3.2. Mukhethwa creates pattern with sticks as illustrated below.



PATTERN 1 PATTERN 2 PATTERN 3 PATTERN 4

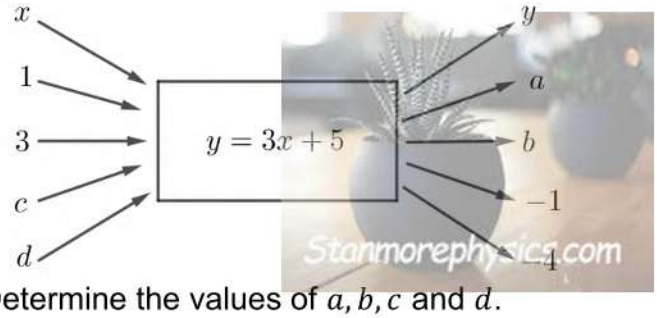
3.2.1 Draw PATTERN 4 [2]

3.2.2 The following table describes the relationship between the pattern number and the number of sticks used to construct the pattern.

PATTERN NUMBER	1	2	3	4		10
NUMBER OF STICKS USED	8	15	22	a		b

Complete the table by writing the values of a and b [2]

3.3 Consider the figure below.



Determine the values of a, b, c and d. [4]

QUESTION 4 **[12]**

4.

4.1 Simplify the following expressions:

4.1.1 $2(x+y)$ [1]

4.1.2 $(x+2)(x+2)$ [2]

4.1.3 $(x-y)^2$ [2]

4.1.4 $\frac{4x^3-6x^2+2}{2x}$, $x \neq 0$ [2]

4.2 Factorise the following expressions:

4.2.1 $3a+3b+3c$ [1]

4.2.2 x^2-y^2 [2]

4.2.3 $x^2+8x+15$ [2]

QUESTION 5 **[9]**

5.

5.1 Write an equation for the following problem:
When I add 24 to the cube of a number, the answer is – 3 . [1]
(**Hint**: Let the unknown number be x)

5.2 Write down the value of x which will make this statement TRUE.
$2x-4=12$ [1]

5.3 Solve for x

5.3.1 $2x-3=11$ [2]

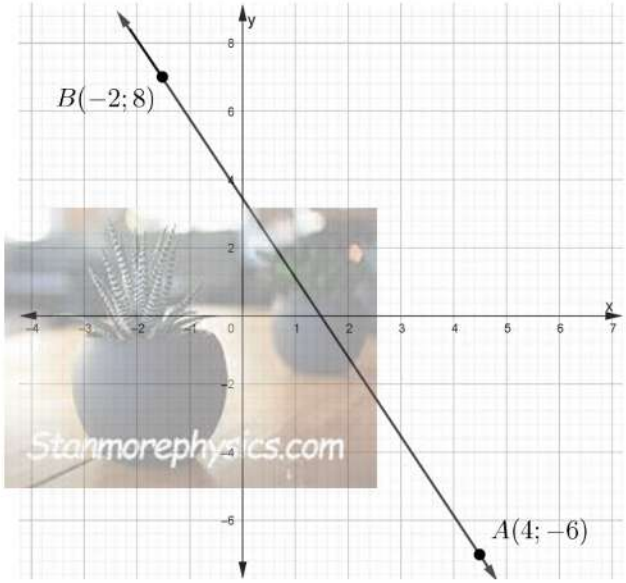
5.3.2 $x^2+3x+2=0$ [3]

5.3.3 $\frac{x^2+4x+4}{x+2}=0$ [2]

QUESTION 6 **[9]**

6.

6.1 Consider the graph below:



6.1.1 Determine the gradient of the line AB. [2]

6.1.2 Hence, determine the equation of AB in the form $y = \cdots$ [2]

6.2 Consider the table below:

x	– 3	– 1	0	1	2	5
y	– 1	a	5	7	9	b

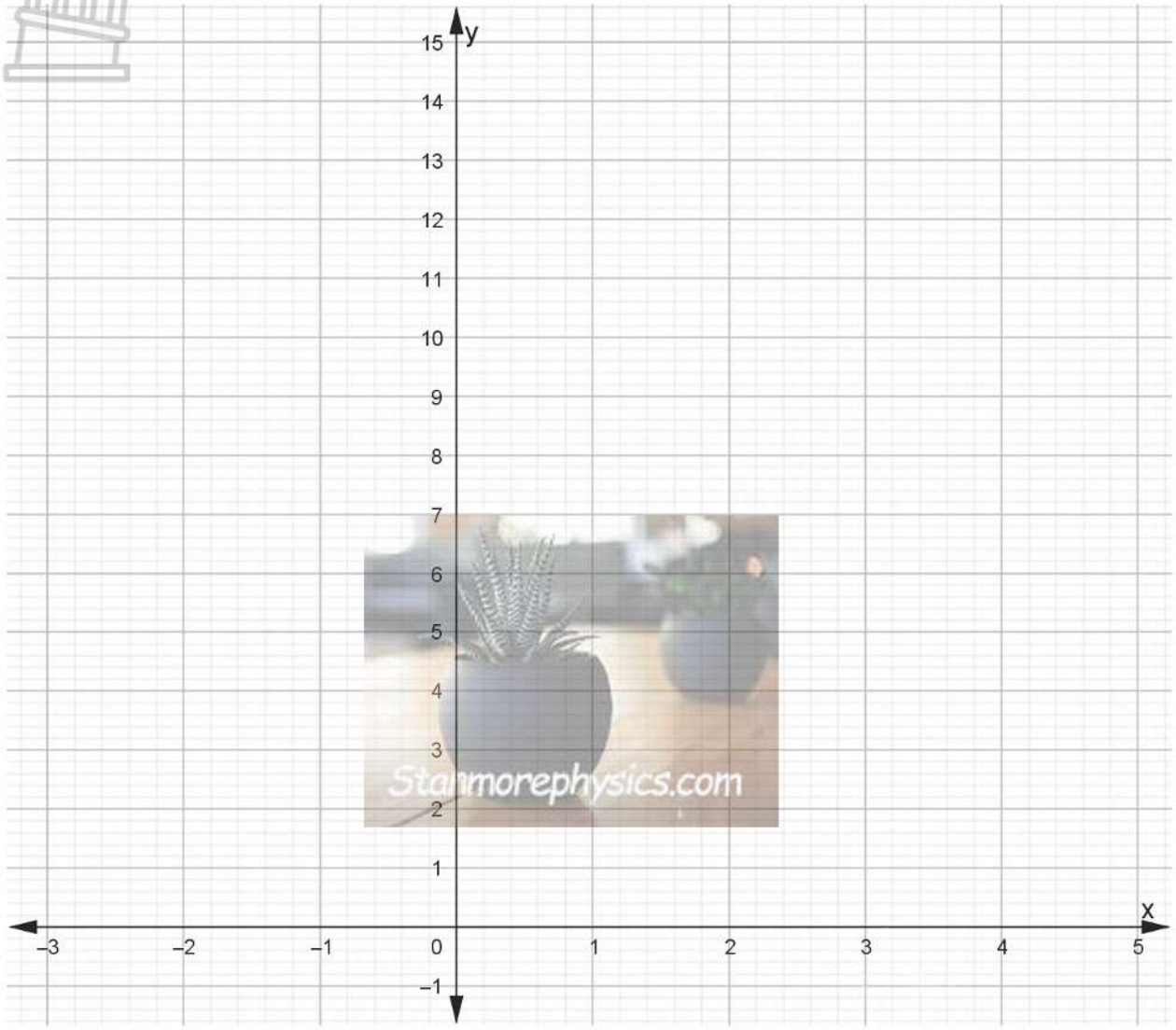
6.2.1 Complete the table by writing values of a and b. [2]

6.2.2 Use the values of x and y from the table to draw the graph on the grid provided. [3]

LEARNER'S NAME: _____

GRADE 9

6.2.2.



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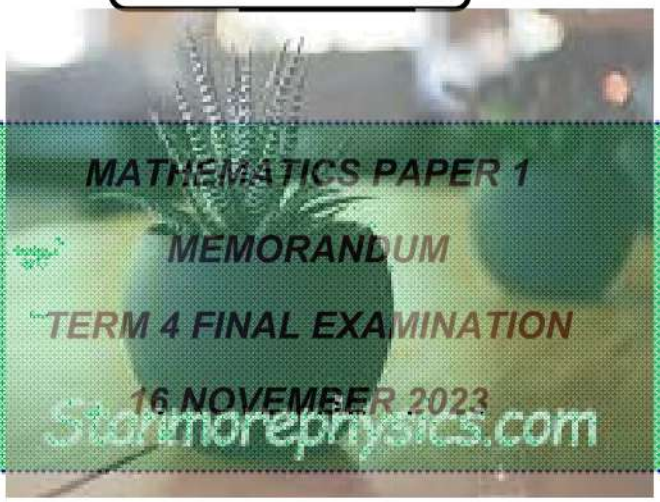


MATHEMATICS PAPER 1

MEMORANDUM

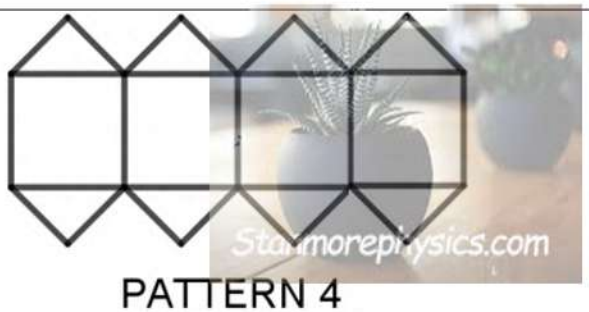
TERM 4 FINAL EXAMINATION

16 NOVEMBER 2023

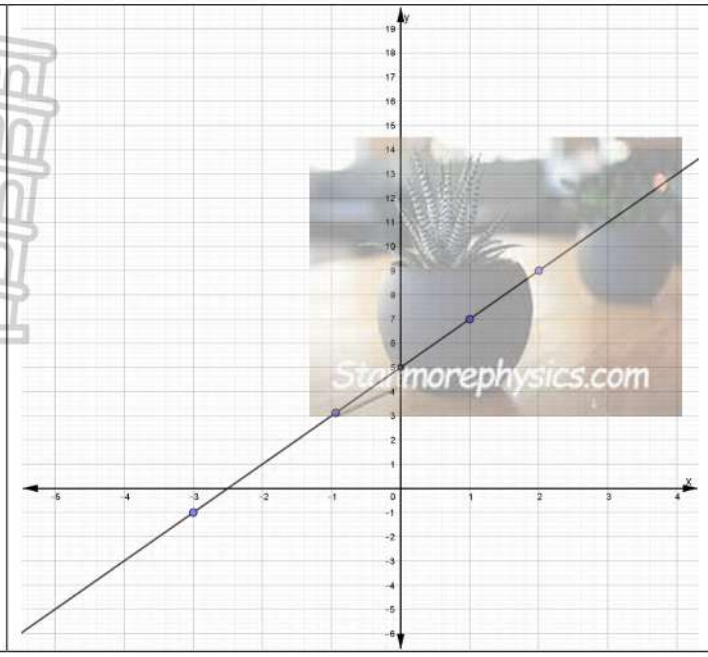
MARKS: 75

This memorandum consists of 5 pages including the cover page.

No.	Mathematical Calculations	Clarification on mark allocations	Total marks
QUESTION 1			**[10]**
1.1	C	✓	1
1.2	C	✓	1
1.3	C	✓	1
1.4	C	✓	1
1.5	B	✓	1
1.6	B	✓	1
1.7	B	✓	1
1.8	D	✓	1
1.9	D	✓	1
1.10	D	✓	1
QUESTION 2			**[24]**
2.1.	$R74{,}00 \div 4 = R18{,}5$ each packet ✓ $\therefore R18{,}5 \times 6 = R\ 111{,}00$ ✓	✓Method ✓Answer only **Note: Award full marks for answer only.**	2
2.2	$60 = 2 \times 2 \times 3 \times 5$ ✓ $80 = 2 \times 2 \times 2 \times 2 \times 5$ ✓ LCM$= 2 \times 2 \times 2 \times 2 \times 3 \times 5 = 240$ ✓ HCF$= 2 \times 2 \times 5 = 20$ ✓	✓factors of 60 ✓Factors of 80 ✓240 ✓20 **Note: Accept any correct method.**	4
2.3	$A = P\left(1 + \frac{i}{100}\right)^n$ ✓ $15\ 000$ ✓$= P\left(1 + \frac{6{,}5}{100}\right)^5$ ✓ $15000\left(1 + \frac{6{,}5}{100}\right)^{-5} = P$ $\therefore P = 10\,948{,}21$ ✓	✓Correct formula ✓✓Substitution ✓Answer **Note: Accept any correct method.**	4
2.4.1	$4 \times [20 + (-5)]$ $= 4 \times (20 - 5)$ $= 4 \times 15$ ✓ $= 60$ ✓	✓Method ✓Answer **Accept any correct method.**	2
2.4.2	$10 \times (-4) + 25 \div (-5)$ $= -40 - 5$ ✓ $= -45$ ✓	✓Method ✓Answer **Accept any correct method.**	2
2.4.3	$2^5 - (-2)^3$	✓-2^3 or 8	2

	$= 2^5 + 2^3$ ✓ $= 32 + 8$ $= 40$ ✓	✓ answer	
2.4.4	$\frac{\sqrt[3]{-125} \times \sqrt{64}}{\sqrt{100} \times \sqrt[3]{-64}}$ $= \frac{-5 \times 8}{10 \times -4}$ ✓ $= \frac{40}{40}$ $= 1$ ✓	✓✓ Simplification ✓Answer	3
2.5.1.	$3^2 \times 3^5$ $= 3^{2+5}$ $= 3^7$ ✓ $= 2187$ ✓	✓Adding exponents ✓Answer	2
2.5.2.	$5^2 \times 2^0 - 3^1 \div 6 + (-2)^3$ $= 25 \times 1 - \frac{1}{2} - 8$ ✓ $= \frac{33}{2}$ or $16\frac{1}{2}$ ✓	✓ Method ✓ Answer	2
QUESTION 3			**[12]**
3.1.1	26 ✓ ; 37 ✓	✓26 ✓ 37	2
3.1.2.	Add two more than was added to the previous term ✓✓	✓✓Answer	2
3.2.1	 PATTERN 4	✓✓Correct pattern	2
3.2.2	$a = 29$ ✓ and $b = 71$ ✓	✓$a = 29$ ✓$b = 71$	2
3.3	$a = 8$ ✓; b $= 14$ ✓; c $= -2$ ✓ and $d = -3$ ✓	✓$a = 8$ ✓b $= 14$ ✓c $= -2$ ✓$d = -3$	4
QUESTION 4			**[12]**
4.1.1.	$2(x + y) = 2x + 2y$ ✓	✓Answer	1
4.1.2.	$(x + 2)(x + 2) = x^2 + 4x + 4$ ✓✓	✓✓ Answer	2

4.1.3.	$(x-y)^2 = x^2 - xy + y^2$ ✓✓	✓✓ Answer	2
4.1.4.	$\frac{4x^3 - 6x^2 + 2}{2x}$ $= \frac{4x^3}{2x} - \frac{6x^2}{2x} + \frac{2}{2x}$ ✓ $2x^2 - 3x + \frac{1}{x}$ ✓	✓ Method ✓Answer	2
4.2.1	$3a + 3b + 3c = 3(a + b + c)$ ✓	✓ Answer	1
4.2.2	$x^2 - y^2 = (x - y)$ ✓$(x + y)$ ✓	✓$(x - y)$ ✓$(x + y)$	2
4.2.3	$x^2 + 8x + 15 = (x + 5)$ ✓$(x + 3)$ ✓	✓$(x + 5)$ ✓$(x + 3)$	2
	QUESTION 5	[8]	
5.1	$x^3 + 24 = -3$ ✓	✓Answer	1
5.2	$x = 8$ ✓	✓Answer	1
5.3.1	$2x - 3 = 11$ $2x = 14$ ✓ $x = \frac{14}{2}$ $x = 7$ ✓	✓Method ✓Answer	2
5.3.2	$x^2 + 3x + 2 = 0$ $(x + 1)(x + 2) = 0$ $x = -1$ ✓ or $x = -2$ ✓	✓Method ✓Answer	2
5.3.3	$\frac{x^2 + 4x + 4}{x + 2} = 0$ $\frac{(x + 2)(x + 2)}{x + 2} = 0$ ✓ $x + 2 = 0$ $x = -2$ ✓	✓$(x + 2)(x + 2)$ ✓Answer	2
	QUESTION 6	**[9]**	
6.1.1	$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{8 + 6}{-2 - 4}$ ✓$= \frac{14}{-6} = -\frac{7}{3}$ ✓	✓Substitution ✓Answer	
6.1.2	$y - 8 = -\frac{7}{3}(x + 2)$ ✓ $y = -\frac{7x}{3} + \frac{10}{3}$ ✓	✓Method ✓Answer	2
6.2.1	$a = 3$ ✓and $b = 15$ ✓	✓$a = 3$ ✓$b = 15$	2

6.2.2		✓Points correctly plotted ✓✓correct line drawn	2

TOTAL = 75