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Name: _____ ()

Class: _____



GREENDALE SECONDARY SCHOOL

Mid-Year Examination 2014

MATHEMATICS

Paper 1

19 May 2014

Secondary One Normal Academic

1 hour

Candidates answer on the Question Paper.

READ THESE INSTRUCTIONS FIRST

Write your index number and name on all the work you hand in.

Write in dark or blue pen.

You may use a soft pencil for any diagrams or graphs.

Do not use staples, paper clips, highlighters, glue or correction fluid.

Answer **all** questions.

If working is needed for any question it must be shown with the answer.

Omission of essential working may result in loss of marks.

You are expected to use a scientific calculator to evaluate explicit numerical expressions.

If the degree of accuracy is not specified in the question, and if the answer is not exact, give the answer to three significant figures. Give answers in degrees to one decimal place.

For π , use either your calculator value or 3.142, unless the question required the answer in terms of π .

At the end of the examination, fasten all your work securely together,

The number of marks is given in brackets [] at the end of each question or part question.

The total number of marks for this paper is **40**.

Question	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13
Strand	N	N	N	N	N	N	A	A	N	A	A	A	S
Marks													

This document consists of 9 printed pages.

Greendale Secondary School 2014

Answer all questions.

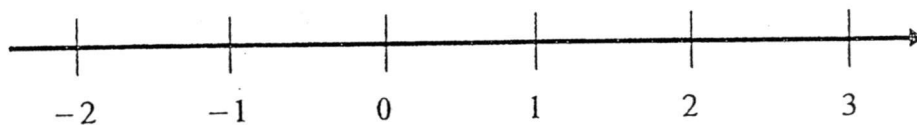
1. Use a calculator to evaluate $0.996^3 \times 3.208^2$, giving your answer correct to 3 significant figures.

Ans: _____ [1]

2. Arrange the numbers $-\frac{1}{4}$, $0.\dot{2}$, -0.3 , $0.2\dot{1}$, $\frac{1}{5}$ in ascending order.

Ans: _____ [1]

3. Represent the numbers $-\frac{1}{2}$, 2 , -1 , $1\frac{1}{5}$ on a number line.



[2]

4. Evaluate the following expressions.

(a) $-3 - (-9)$,

Ans: (a) _____ [1]

(b) $\sqrt{(-288) \div (-8) \div (-3)}$,

Ans: (b) _____ [1]

(c) $\left[-\frac{1}{5} - \left(-\frac{1}{4} \right) \right] \div \left[\frac{1}{2} + \left(-\frac{1}{8} \right) \right]$.

Ans: (c) _____ [1]

5. (a) Find the LCM of 18, 63 and 81.

Ans: (a) _____ [2]

- (b) Find the HCF of 42 and 105.

Ans: (b) _____ [2]

6. Express 678.5045 correct to
(a) 2 significant figures,

Ans: (a) _____ [1]

- (b) 3 decimal places,

Ans: (b) _____ [1]

- (c) the nearest hundred.

Ans: (c) _____ [1]

-
7. Express the following in index notation form.

- (a) $2 \times 2 \times 2 \times 3 \times 3$

Ans: (a) _____ [1]

- (b) $7 \times p \times p \times q \times p$

Ans: (b) _____ [1]

- (c) $2 \times 2 \times n \times m \times m \times 5 \times n$

Ans: (c) _____ [1]

8. Solve the equation $5a - 17 = 33$.

Ans: _____ [2]

9. (a) Express 320 as a product of its prime factors, giving your answers in index notation.

Ans: (a) _____ [2]

- (b) State the integer value of x for which $320x$ is a perfect square.

Ans: (b) _____ [1]

10. Write an algebraic expression for each of the following statements.

(a) Mr Huat sold p durians at $\$q$ each. How much did he get altogether?

Ans: (a) _____ [1]

(b) Janet is x years old. Sarah is 3 times as old as Janet. Ronald is 2 years younger than Sarah. How old is Ronald?

Ans: (b) _____ [2]

11. If $T = \frac{v^2 - 2u}{2}$, find the value of T

(a) when $u = v = 5$,

Ans: (a) _____ [2]

(b) when $u = 15$ and $v = -10$.

Ans: (b) _____ [2]

12. Expand and simplify

(a) $2p(q - 3r)$,

Ans: (a) _____ [1]

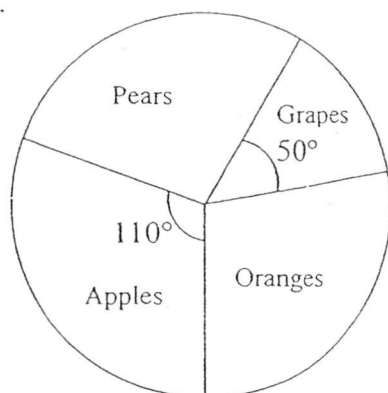
(b) $8x - 4 - 6x + 5$,

Ans: (b) _____ [2]

(c) $9(x + 4) + 5(2x - 1)$.

Ans: (c) _____ [2]

13. The pie chart below shows the survey data of fruits preference by some students last year.



- (a) If 90 students liked Apple more than Grapes,
(i) find the number of students who liked Apple.

Ans: (ai) _____ [2]

- (ii) find the number of students who liked Pears, if there were twice as many students who liked Pears as compared to Grapes.

Ans: (aii) _____ [2]

- (b) 20% of the students who liked Apples were females.
How many male students like Apples?

Ans: (b) _____ [2]

End of Paper

Name: _____ ()

Class: _____



GREENDALE SECONDARY SCHOOL

Mid-Year Examination 2014

MATHEMATICS

Paper 2

9 May 2014

Secondary One Normal Academic

1 hour 30 minutes

Candidates answer on the writing papers provided.

READ THESE INSTRUCTIONS FIRST

Write your index number and name on all the work you hand in.

Write in dark or blue pen.

You may use a soft pencil for any diagrams or graphs.

Do not use staples, paper clips, highlighters, glue or correction fluid.

Answer **all** questions in Section A.Answer **any 2** questions in Section B

If working is needed for any question it must be shown with the answer.

Omission of essential working may result in loss of marks.

You are expected to use a scientific calculator to evaluate explicit numerical expressions.

If the degree of accuracy is not specified in the question, and if the answer is not exact, give the answer to three significant figures. Give answers in degrees to one decimal place.

For π , use either your calculator value or 3.142, unless the question required the answer in terms of π .

At the end of the examination, fasten all your work securely together,

The number of marks is given in brackets [] at the end of each question or part question.

The total number of marks for this paper is **45**.

Question	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
Strand	A	N	N	A	A	A	N	S	N	A	S
Marks											

This document consists of 6 printed pages.

Greendale Secondary School 2014

Section A

Answer **all** the questions

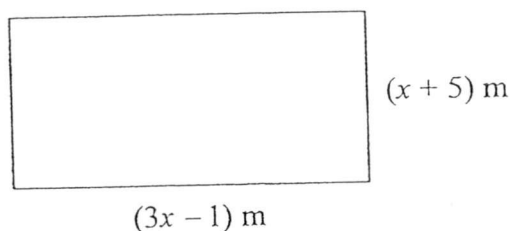
1. Jimmy bought 5 books at \$ x each and 9 pens at \$ y each. After buying, Jimmy has $\$(3p + 5q)$ left. Write an algebraic expression for the amount of money she had at first. [2]
-
2. Three lighthouses A , B and C flash light every 6, 8 and 18 minutes respectively. If all the three lighthouses flash together at 8.15 pm, at what time will they next flash together? [3]
-
- 3 (a) Using prime factorisation, express 576 as a product of its prime factors.
Leave your answer in index notation. [2]
- (b) Hence, find the value of $\sqrt{576}$ without the use of calculator. [1]
-
4. Expand and simplify
- (a) $5(3 + 2y) - (4 - y)$, [2]
- (b) $8x - [4x + 3(2x + 1)]$. [3]
-

5. The charges, \$ y , of a part-time technician is given by the formula

$y = 5x + 60$, where x represents the number of hours he spent on repair work.

- (a) Calculate the total charges for a repair lasting 4 hours. [1]
- (b) If the technician charged \$95, find the time taken for the repair. [2]
- (c) What do you think is the significance of the number 60 in the formula above? [1]
-

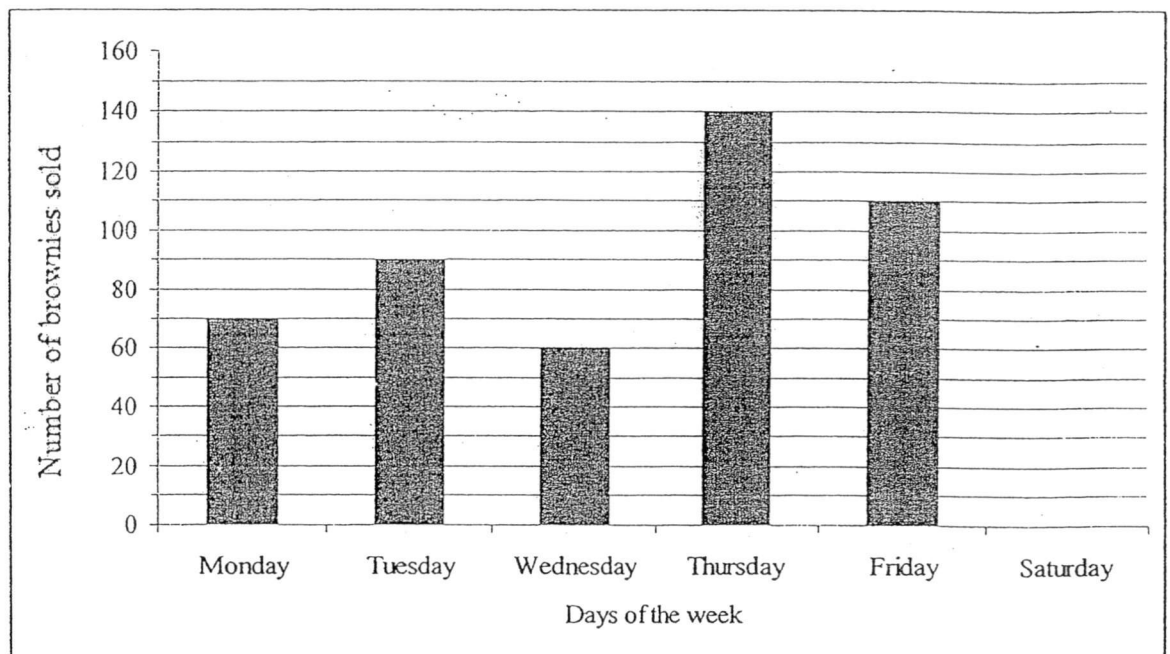
6. The diagram shows a rectangular room of dimensions $(3x - 1)$ m by $(x + 5)$ m.



It is given that the perimeter of the room is 64 m.

- (a) Write down an equation involving x . [1]
- (b) Solve the equation and find the length of the room. [3]
-
7. (a) If two integers are rounded off to the nearest 100, they become 200 and 500. Write down
- (i) the minimum possible value of each integer, [2]
- (ii) the maximum possible value of each integer. [2]
- (b) Find the minimum possible value of the sum of the two integers. [1]
-

- 8 The bar graph shows the number of brownies Mdm Rose sold in a particular week.



- (a) How many brownies were sold on Tuesday? [1]
- (b) On which days of the week was there a drop in the sales of the brownies as compared to Tuesday? [1]
- (c) Express the number of brownies sold on Tuesday as a fraction of the number of brownies sold on Thursday. [1]
- (d) The number of brownies sold on Wednesday was $\frac{3}{5}$ of the number sold on Saturday. Calculate the number of brownies sold on Saturday. [1]
- (e) Find the average number of brownies sold over the 6 days. [1]

Section B

Answer any 2 out of 3 questions

9. Irving bought some stationery from a bookshop.

Items	Cost/\$
Pen	0.90
Mechanical Pencil	2.25
Ruler	1.85
Blue ribbon	3.30
Red ribbon	4.35

- (a) (i) Round off each item to the nearest dollar and estimate the total cost of the stationery. [2]
- (ii) How much lesser is the estimated total cost compared to the actual total cost? [1]
- (b) The lengths of the red and blue ribbons which Irving bought were 192 cm and 120 cm respectively. She wanted to cut both ribbons to equal shorter length without any remainder.
- (i) What is the longest possible length that Irving can cut for both ribbons? [2]
- (ii) After cutting, how many pieces of red ribbons does Irving have? [2]

10. Peter's present age is $9x$ years old. Peter's son, Alex is one-third of his age.

- (a) Write in terms of x ,
- (i) Alex's age in 5 years' time, [2]
- (ii) Peter's age in 5 years' time, [1]
- (iii) their total ages in 5 years' time. [2]
- (b) Find the value of x if their total ages in 5 years' time is 58. [2]

11. The table below shows the number of hours, spent by 20 students on gaming on a particular day.

2	5	2	0	4	2	3	2	3	4
4	2	3	2	3	5	0	4	2	5

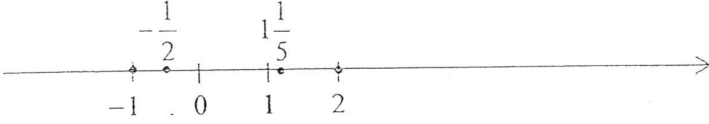
- (a) **Copy** and complete the frequency table below to represent this information. [2]

No. of hours	Tally	Frequency
0		2
1		
2	### //	7
3	////	
4		4
5		3

- (b) If the above data is represented in a pie chart, calculate the angle of the sector which would represent the students who spent 3 hours on gaming. [2]
- (c) A person will have to attend a counselling session if he/she spends 4 hours or more a day on gaming. What percentage of the students has to go for the counselling sessions? [3]

End of Paper

2014 SEC 1NA P1 MYE MARKING SCHEME

1	10.2 (3 s.f.)	[B1]
2	$-0.3, -\frac{1}{4}, \frac{1}{5}, 0.2\dot{1}, 0.\dot{2}$	[B1]
3		[B2] [award 1 mark for any 2 correct answer]
4a	6	[B1]
4b	-2	[B1]
4c	$\frac{2}{15}$	[B1]
5a	$\begin{array}{r rrr} 3 & 18 & 63 & 81 \\ \hline 3 & 6 & 21 & 27 \\ \hline & 2 & 7 & 9 \end{array}$ LCM = $3 \times 3 \times 2 \times 7 \times 9$ = 1134	[M1] [A1]
5b	$\begin{array}{r rr} 3 & 42 & 105 \\ \hline 7 & 14 & 35 \\ \hline & 2 & 5 \end{array}$ HCF = 3×7 = 21	[M1] [A1]
6a	680	[B1]
6b	678.505	[B1]
6c	700	[B1]
7a	$2^3 \times 3^2$	[B1]
7b	$7p^3q$	[B1]

7c	$2^2 \times 5 \times m^2 n^2$	[B1]																
8	$5a - 17 = 33$ $5a = 50$ $a = 10$	[M1] [A1]																
9a	<table><tr><td>2</td><td>320</td></tr><tr><td>2</td><td>160</td></tr><tr><td>2</td><td>80</td></tr><tr><td>2</td><td>40</td></tr><tr><td>2</td><td>20</td></tr><tr><td>2</td><td>10</td></tr><tr><td>5</td><td>5</td></tr><tr><td></td><td>1</td></tr></table> $320 = 2^6 \times 5$	2	320	2	160	2	80	2	40	2	20	2	10	5	5		1	[M1] [A1]
2	320																	
2	160																	
2	80																	
2	40																	
2	20																	
2	10																	
5	5																	
	1																	
9b	5	[B1]																
10a	\$ (pq)	[B1]																
10b	Janet : x Sarah: 3x Ronald: 3x - 2	[M1] [A1]																
11a	$T = \frac{(5)^2 - 2(5)}{2}$ $= \frac{15}{2} \text{ or } 7.5 \text{ or } 7\frac{1}{2}$	[M1] [A1]																
11b	$T = \frac{(-10)^2 - 2(15)}{2}$ $= 35$	[M1] [A1]																
12a	$2p(q - 3r)$ $= 2pq - 6pr$	[B1]																
12b	$8x - 4 - 6x + 5$ $= 8x - 6x - 4 + 5$ $= 2x + 1$	[M1] [A1] Or [B2]																

12c	$9(x+4) + 5(2x-1)$ $= 9x + 36 + 10x - 5$ $= 19x + 31$	[M1] [A1]
13ai	$110^\circ - 50^\circ = 60^\circ$ 60° represent 90 students 110° represent $\frac{90}{60} \times 110^\circ = 165$ students	[M1] [A1]
13aii	Grapes : 50° rep 75 students Pears: 100° rep 150 students	[M1] [A1]
13b	$80\% \text{ of } 165 \text{ students} = \frac{80}{100} \times 165$ $= 132 \text{ male students like apples.}$	[M1] [A1]

2014 SEC 1NA P2 EOY MARKING SCHEME

1	Amount spent : $5x + 9y$ Amount at first = $\$(5x + 9y + 3p + 5q)$	[M1] [A1]																		
2	<table><tr><td>2</td><td>6</td><td>8</td><td>18</td></tr><tr><td>3</td><td>3</td><td>4</td><td>9</td></tr><tr><td></td><td>1</td><td>4</td><td>3</td></tr></table> $LCM = 2 \times 3 \times 4 \times 3 = 72 \text{ mins} = 1 \text{ hr } 12 \text{ mins}$ $8.15 \text{ pm} + 1 \text{ hr } 12 \text{ mins} = 9.27 \text{ pm}$	2	6	8	18	3	3	4	9		1	4	3	[M1] [M1] [A1]						
2	6	8	18																	
3	3	4	9																	
	1	4	3																	
3a	<table><tr><td>2</td><td>576</td></tr><tr><td>2</td><td>288</td></tr><tr><td>2</td><td>144</td></tr><tr><td>2</td><td>72</td></tr><tr><td>2</td><td>36</td></tr><tr><td>2</td><td>18</td></tr><tr><td>3</td><td>9</td></tr><tr><td>3</td><td>3</td></tr><tr><td></td><td>1</td></tr></table> $576 = 2^6 \times 3^2$	2	576	2	288	2	144	2	72	2	36	2	18	3	9	3	3		1	[M1] [A1]
2	576																			
2	288																			
2	144																			
2	72																			
2	36																			
2	18																			
3	9																			
3	3																			
	1																			
3b	24	[B1]																		
4a	$5(3 + 2y) - (4 - y)$ $= 15 + 10y - 4 + y$ $= 11y + 11$	[M1] [A1]																		
4b	$8x - [4x + 3(2x + 1)]$ $= 8x - [4x + 6x + 3]$ $= 8x - [10x + 3]$ $= 8x - 10x - 3$ $= -2x - 3$	[M1] [M1] [A1]																		

5a	$y = 5(4) + 60$ $= 80$	[B1]
5b	$95 = 5x + 60$ $95 - 60 = 5x$ $x = 7 \text{ hr}$	[M1] [A1]
5c	It represents the fix charge for any repair./Transport cost/ Basic charge/ Minimum Charge.	[B1]
6a	$2(x + 5) + 2(3x - 1) = 64$	[B1]
6b	$2(x + 5) + 2(3x - 1) = 64$ $2x + 10 + 6x - 2 = 64$ $8x = 56$ $x = 7$ $\text{Length} = 3(7) - 1 = 20 \text{ m}$	[M1] [M1] [A1]
7ai	150 , 450	[B1, B1]
7aii	249 , 549	[B1, B1]
7b	600	[B1]
8a	90	[B1]
8b	Monday and Wednesday	[B1]
8c	$\frac{90}{140} = \frac{9}{14}$	[B1]
8d	100	[B1]
8e	Average = $\frac{70 + 90 + 60 + 140 + 110 + 100}{6}$ $= 95$	[B1] Allow ecf

9ai	<table border="1"> <thead> <tr> <th>Items</th><th>Cost/\$</th><th>Nearest Dollar</th></tr> </thead> <tbody> <tr> <td>Pen</td><td>0.90</td><td><u>\$1</u></td></tr> <tr> <td>Mechanical Pencil</td><td>2.25</td><td><u>\$2</u></td></tr> <tr> <td>Ruler</td><td>1.85</td><td><u>\$2</u></td></tr> <tr> <td>Blue ribbon</td><td>3.30</td><td><u>\$3</u></td></tr> <tr> <td>Red ribbon</td><td>4.35</td><td><u>\$4</u></td></tr> </tbody> </table> Estimated cost = \$(1 + 2 + 2 + 3 + 4) = \$12	Items	Cost/\$	Nearest Dollar	Pen	0.90	<u>\$1</u>	Mechanical Pencil	2.25	<u>\$2</u>	Ruler	1.85	<u>\$2</u>	Blue ribbon	3.30	<u>\$3</u>	Red ribbon	4.35	<u>\$4</u>	[B1] [B1]
Items	Cost/\$	Nearest Dollar																		
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Blue ribbon	3.30	<u>\$3</u>																		
Red ribbon	4.35	<u>\$4</u>																		
9aai	Actual Cost = \$12.65 Difference is estimated cost = 12.65 - 12 = \$0.65	[B1]																		
9bi	<table border="1"> <tbody> <tr> <td>2</td><td>120</td><td>192</td></tr> <tr> <td>3</td><td>60</td><td>96</td></tr> <tr> <td>2</td><td>20</td><td>32</td></tr> <tr> <td>2</td><td>10</td><td>16</td></tr> <tr> <td></td><td>5</td><td>8</td></tr> </tbody> </table> HCF = $2^3 \times 3$ = 24	2	120	192	3	60	96	2	20	32	2	10	16		5	8	[M1] [A1]			
2	120	192																		
3	60	96																		
2	20	32																		
2	10	16																		
	5	8																		
9bii	$\frac{192}{24}$ = 8 pcs	[M1] [A1]																		
10ai	$\frac{1}{3}(9x) + 5$ = 3x + 5	[M1] [A1]																		
10aai	9x + 5	[B1]																		

10aiii	$(3x + 5) + (9x + 5)$ $= 12x + 10$	[M1] allow e.c.f. [A1]																					
10b	$12x + 10 = 58$ $x = 4$	[M1]e.c.f. [A1]																					
11a	<table border="1"> <thead> <tr> <th>No. of hours</th><th>Tally</th><th>Frequency</th></tr> </thead> <tbody> <tr> <td>0</td><td>//</td><td>2</td></tr> <tr> <td>1</td><td></td><td>0</td></tr> <tr> <td>2</td><td>### //</td><td>7</td></tr> <tr> <td>3</td><td>////</td><td>4</td></tr> <tr> <td>4</td><td>////</td><td>4</td></tr> <tr> <td>5</td><td>///</td><td>3</td></tr> </tbody> </table>	No. of hours	Tally	Frequency	0	//	2	1		0	2	### //	7	3	////	4	4	////	4	5	///	3	[B2] all correct [B1] 1- mistake
No. of hours	Tally	Frequency																					
0	//	2																					
1		0																					
2	### //	7																					
3	////	4																					
4	////	4																					
5	///	3																					
11b	$\frac{4}{20} \times 360^\circ$ $= 72^\circ$	[M1] [A1]																					
11c	$4 + 3 = 7$ $\frac{7}{20} \times 100\%$ $= 35\%$	[M1] [M1] [A1]																					