



**SYDNEY BOYS HIGH  
SCHOOL**  
MOORE PARK, SURRY HILLS

**2007**

Year 7

Half Yearly Examination

# Mathematics

### General Instructions

- Working time – 60 minutes
- Write using black or blue pen
- Calculators may **NOT** be used
- All *necessary* working should be shown in every question if full marks are to be awarded.
- Marks may **NOT** be awarded for messy or badly arranged work.
- If more space is required, clearly write the number of the QUESTION on one of the back pages and answer it there. Indicate that you have done so.
- Clearly indicate your class by placing an **X**, next to your class.

**NAME:**

Examiner: *C.Kourtesis*

Class	Teacher	
7E	Mr. Gainford	
7F	Mr. McQuillan	
7M	Ms. Roessler	
7R	Ms. Nesbitt	
7S	Mr. Hespe	
7T	Mr. McQuillan	

Question	Mark	
1		/20
2		/15
3		/15
4		/15
5		/15
<b>Total</b>		<b>/80</b>

Question ONE (20 Marks)	ANSWERS
(a) Simplify the following:	
(i) $8 \times (-4)$	
(ii) $5 - (-9)$	
(iii) $(-2)^5$	
(iv) $1 + 5 \times 6$	
(v) $13 \times 105 + 87 \times 105$	
(vi) $-5^2$	
(vii) $ -3  \times  5 $	
(viii) $ -10  -  20 $	
(b) Convert:	
(i) $2\frac{2}{5}$ to a decimal	
(ii) 0.015 to a fraction in simplest form	
(c) Write down the value of the 4 in 240715	
(d) Express in words 401070	

(e) Simplify $\frac{75}{1250}$	
(f) Plot the elements of $\{5, -1, 2, -4\frac{1}{2}\}$ on a number line	
(g) Find $\frac{1}{4}$ of 1256	
(h) Find $8.4 - 2.51$	
(i) Write as a numeral $4 \times 10^3 + 1 \times 10^2 + 8 \times 1$	
(j) Write in simplest form:	
(i) $m + m + 5m$	
(ii) $4 \times m \times n \times m$	

Question TWO (15 Marks)	ANSWERS
(a) Find $4\frac{2}{3} + 1\frac{1}{6}$	
(b) Express $11101_2$ as a decimal numeral	
(c) If $a = 4$ , $b = -3$ , $c = -2$ evaluate:	
(i) $b - c$	
(ii) $\frac{ab}{c}$	
(iii) $ab^2$	
(d) Express as a decimal:	
(i) $\frac{3}{8}$	
(ii) $\frac{2}{11}$	
(e) Which number is 55 less than 10010?	
(f) Write 51 as a binary number	
(g) Draw a number lattice and plot the following points:	
$A(0, -2)$ $B(3, 4)$	
$C(-1, -3)$ $D(-2, 3\frac{1}{2})$	

Question THREE (15 Marks)	ANSWERS
(a) What is the average of $\frac{1}{8}$ and $\frac{7}{12}$ ?	
(b) Simplify:	
(i) $0.244 \div 8$	
(ii) $4.15 \times 0.23$	
(iii) $1.244 \div 0.04$	
(c) Simplify $20 \div [-2 \times (3 - 4)]$	
(d) Insert grouping symbols to make the following true $3 + 2 \times 8 - 4 = 0$	
(e) Simplify $\frac{43 - (-11 + 2)}{1 + 2 \times 6}$	
(f) Simplify $(0.3)^2 \times 0.8$	

Question FOUR (15 Marks)	ANSWERS										
(a) Express 15 cents as a fraction of \$4.75 in simplest terms.											
(b) Express 2.7188 correct to 2 decimal places.											
(c) Four children share $\frac{2}{3}$ of a cake equally. What fraction does each child get?											
(d) Complete the table below for the given rule: $m = 4 - 4n$											
<table border="1" style="margin-left: auto; margin-right: auto;"> <tbody> <tr> <td>n</td> <td>-2</td> <td><math>-\frac{1}{2}</math></td> <td>0</td> <td>3</td> </tr> <tr> <td>m</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	n	-2	$-\frac{1}{2}$	0	3	m					
n	-2	$-\frac{1}{2}$	0	3							
m											
(e) How many $3\frac{1}{2}$ metre lengths of rope can be cut from 35 metres of rope?											
(f) If $\frac{a}{b} = -1$ find the value of $a + b$											

(g) A banana costs twice as much as a plum. If I buy 8 bananas and 7 plums, the total bill is \$1.61. Find the cost of 1 plum.	
(h) Find the value of $1+11 \times 111 - 1111$	

Question FIVE (15 Marks)	ANSWERS												
(a) Evaluate using long division: $36 \overline{)49786}$													
(b) Find $10\frac{1}{2} \times 11\frac{1}{2}$													
(c) Find the rule connecting $x$ and $y$ <table border="1" style="margin: 10px auto;"> <tr> <td><math>x</math></td> <td>-1</td> <td>0</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td><math>y</math></td> <td>-3</td> <td>-2</td> <td>-1</td> <td>6</td> <td>25</td> </tr> </table>	$x$	-1	0	1	2	3	$y$	-3	-2	-1	6	25	
$x$	-1	0	1	2	3								
$y$	-3	-2	-1	6	25								
(d) Find the next three terms of the sequences:  (i) 0, 7, 26, 63, .....  (ii) 3, 4, 6, 8, 12, .....													
(e) Find the value of $1 - \frac{1}{1 - \frac{1}{1 - \frac{1}{2}}}$													



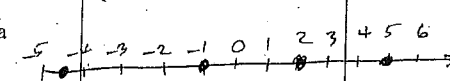
Use this space if you wish to **REWRITE** any answers

Clearly *indicate* the **QUESTION** number

Question	

SBMS (SOLUTIONS)

Question ONE (20 Marks)	ANSWERS
(a) Simplify the following:	
(i) $8 \times (-4)$	$-32$
(ii) $5 - (-9)$	$14$
(iii) $(-2)^5$	$-32$
(iv) $1 + 5 \times 6$	$31$
(v) $13 \times 105 + 87 \times 105$	$10500$
(vi) $-5^2$	$-25$
(vii) $ -3  \times  5 $	$15$
(viii) $ -10  -  20 $	$-10$
(b) Convert:	
(i) $2\frac{2}{5}$ to a decimal	$2.4$
(ii) 0.015 to a fraction in simplest form	$\frac{15}{1000} = \frac{3}{200}$
(c) Write down the value of the 4 in 240715	$4 \times 10^{000}$
(d) Express in words 401070	Four hundred and one thousand and seventy
(e) Simplify $\frac{75^3}{1250}$	$\frac{3}{50}$

(f) Plot the elements of $\{5, -1, 2, -4\frac{1}{2}\}$ on a number line	
(g) Find $\frac{1}{4}$ of 1256	314
(h) Find $8.4 - 2.51$	$\begin{array}{r} 8.4 \\ -2.51 \\ \hline 5.89 \end{array}$ 5.89
(i) Write as a numeral $4 \times 10^3 + 1 \times 10^2 + 8 \times 1$	4108
(j) Write in simplest form:	
(i) $m + m + 5m$	$7m$
(ii) $4 \times m \times n \times m$	$4m^2n$

Question TWO (15 Marks)	ANSWERS
(a) Find $4\frac{2}{3} + 1\frac{1}{6}$	4
(b) Express $11101_2$ as a decimal numeral	29
(c) If $a=4$ , $b=-3$ , $c=-2$ evaluate:	-1
(i) $b-c$	
(ii) $\frac{ab}{c}$	6
(iii) $ab^2$	36
(d) Express as a decimal:	0.375
(i) $\frac{3}{8}$	
(ii) $\frac{2}{11}$	0.18
(e) Which number is 55 less than 10010?	9955
(f) Write 51 as a binary number	110011
(g) Draw a number lattice and plot the following points: A(0,-2)    B(3,4) C(-1,-3)    D(-2,3 $\frac{1}{2}$ )	

Question THREE (15 Marks)	ANSWERS
(a) What is the average of $\frac{1}{8}$ and $\frac{7}{12}$ ?	$(\frac{3}{24} + \frac{14}{24}) \div 2$ <span style="float: right;"><math>\frac{17}{48}</math> (2)</span>
(b) Simplify:	$\begin{array}{r} 0.0305 \\ 8 \overline{) 0.2440} \\ \underline{0.2440} \\ 0 \end{array}$
(i) $0.244 \div 8$	0.0305 <span style="float: right;">(2)</span>
(ii) $-4.15 \times 0.23$	$\frac{4.15 \times 23}{100}$ 0.9545 <span style="float: right;">(2)</span>
(iii) $1,244 \div 0.04$	31.1 <span style="float: right;">(2)</span>
(c) Simplify $20 \div [-2 \times (3-4)]$	10 <span style="float: right;">(2)</span>
(d) Insert grouping symbols to make the following true $3 + 2 \times 8 - 4 = 0$	question faulty give full marks <span style="float: right;">(1)</span>
(e) Simplify $\frac{43 - (-11 + 2)}{1 + 2 \times 6}$	$\frac{52}{13}$ 4 <span style="float: right;">(2)</span>
(f) Simplify $(0.3)^2 \times 0.8$	0.072 <span style="float: right;">(2)</span>

$$\begin{array}{r} 4.15 \times \\ 0.23 \\ \hline 1245 \\ 8300 \\ \hline 9545 \end{array}$$

$$\begin{array}{r} 31.1 \\ 4 \overline{) 124.4} \\ \hline 0.09 \times \\ 0.8 \\ \hline 0.072 \end{array}$$



Question FOUR (15 Marks)	ANSWERS											
(a) Express 15 cents as a fraction of \$4.75 in simplest terms.	$\frac{15}{475} = \frac{3}{95}$	[1]										
(b) Express 2.7188 correct to 2 decimal places.	2.72	[1]										
(c) Four children share $\frac{2}{3}$ of a cake equally. What fraction does each child get?	$\frac{2}{3} \times \frac{1}{4} = \frac{2}{12} = \frac{1}{6}$	[2]										
(d) Complete the table below for the given rule: $m = 4 - 4n$		[4]										
	<table border="1"> <tbody> <tr> <td>n</td> <td>-2</td> <td><math>-\frac{1}{2}</math></td> <td>0</td> <td>3</td> </tr> <tr> <td>m</td> <td>12</td> <td>6</td> <td>4</td> <td>-8</td> </tr> </tbody> </table>	n	-2	$-\frac{1}{2}$	0	3	m	12	6	4	-8	
n	-2	$-\frac{1}{2}$	0	3								
m	12	6	4	-8								
(e) How many $3\frac{1}{2}$ metre lengths of rope can be cut from 35 metres of rope?	$3.5 \times 10 = 35$ 10	[2]										
(f) If $\frac{a}{b} = -1$ find the value of $a + b$	0	[1]										

(g) A banana costs twice as much as a plum. If I buy 8 bananas and 7 plums, the total bill is \$1.61. Find the cost of 1 plum.	$2p = b$ $8 \times 2p + 7p = 161$ $23p = 161$ $p = 7$	[2]
(h) Find the value of $1 + 11 \times 111 - 1111$	$1 + 1221 - 1111$ $= 1222 - 1111$ $= 111$	[2]

Question FIVE (15 Marks)	ANSWERS												
(a) Evaluate using long division: $\begin{array}{r} 1382 \\ 36 \overline{) 49786} \\ \underline{36} \phantom{00} \\ 137 \phantom{00} \\ \underline{108} \phantom{00} \\ 298 \phantom{00} \\ \underline{288} \phantom{00} \\ 106 \phantom{00} \\ \underline{72} \phantom{00} \\ 34 \end{array}$	$1382 \frac{34}{36}$ $\approx 1382 \frac{17}{18}$ $\approx 1382.94$												
(b) Find $10\frac{1}{2} \times 11$ $\approx 5 \times 3$ $\approx 15 \times 10 = 1111$	$\begin{array}{r} 101 \\ 1010 \times \\ \hline 1111 \end{array}$ $1111_2$												
(c) Find the rule connecting $x$ and $y$ <table border="1" data-bbox="257 746 560 805"> <tr> <td><math>x</math></td> <td>-1</td> <td>0</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td><math>y</math></td> <td>-3</td> <td>-2</td> <td>-1</td> <td>6</td> <td>25</td> </tr> </table>	$x$	-1	0	1	2	3	$y$	-3	-2	-1	6	25	$y = x^2 - 2$
$x$	-1	0	1	2	3								
$y$	-3	-2	-1	6	25								
(d) Find the next three terms of the sequences: (i) 0, 7, 26, 63, 124, 215, 342 7 19	$124, 215, 342$												
(ii) 3, 4, 6, 8, 12, 14, 18, 20 1 2 2 4	$14, 18, 20$												
(e) Find the value of $1 - \frac{1}{1 - \frac{1}{1 - \frac{1}{2}}}$ $\approx 1 - \frac{1}{1 - \frac{1}{\frac{1}{2}}}$ $\approx 1 - \frac{1}{1 - 2}$ $\approx 2$	$2$												

(f) In her latest game, Mary bowled 199 and this raised her average from 177 to 178. To raise her average to 179 with her next game, what must she bowl?	$201$
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End of Paper