NAME		REG. NO.		CLASS	

SERANGOON GARDEN SECONDARY SCHOOL
YEAR END EXAMINATION 2010

SUBJECT: ELEMENTARY MATHEMATICS

PAPER NO: PAPER 1

LEVEL: SECONDARY ONE EXPRESS

DATE: 12TH OCTOBER 2010

TIME: 0805 - 0905

DURATION: 1 HOUR

INSTRUCTIONS TO CANDIDATES

Write your name, index number and class in the space provided on the top of this page.
Write in dark blue or black pen.
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 will 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 requires the answer in terms of π.

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.

Name/Signature of Parent/Guardian _____ Date _____

FOR MARKER'S USE
40

This question paper consists of 7 printed pages and 1 blank page.

Setter : Mr Larry Lim **Vetter: Mrs Ravi** [Turn over

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1. (a) Express 4.5% as a fraction in its lowest term.

   (b) Express 1.35 pm in 24-hr format.

   (c) Given that $x : 2 = 50\% : 1$, find the value of x.

Ans: (a) _____ [1]

(b) _____ [1]

(c) _____ [1]

---

2. During the Great Singapore Sale, a washing machine was sold at a discounted price of $578.50.

   (a) If the washing machine was sold at a discount of 35%, find the original price of the washing machine.

   (b) There is a GST of 7% on the selling price of the washing machine. Find the total amount the customer has to pay for the purchase of the washing machine?

Ans: (a) _____ [2]

(b) _____ [2]

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3. Express

(a) 6.2 m^2 in cm^2

(b) 3.5 km^2 in m^2

Ans: (a) _____ [1]

(b) _____ [1]

---

4. Simplify

(a) $-3(4-8x)+7(4-6x)$

(b) $\frac{(10x-7)}{6}-\frac{3(x+2)}{8}$

Ans: (a) _____ [2]

(b) _____ [3]

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5. A man left a sum of money of $48000 for his 3 children. Jason received $a, Marcus received $b and Susan received $c.

(a) If Susan got $8000 and Jason got $20000, find the ratio b : c in the lowest term.

(b) Jason decides to give $2000 to Susan, find the ratio of a : b : c?

Ans:(a) _____[2]

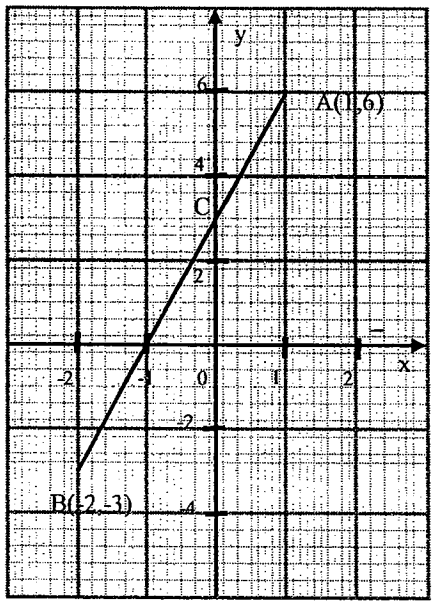
(b) _____ [2]

---

6. The diagram below shows a straight line graph which passes through the points A(1, 6) and B(-2, -3).

(a) Find the gradient of the line.

(b) The straight line cuts the y-axis at the point C. Find the coordinates of the point C.



Ans: (a) _____ [2]

(b) _____ [1]

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7. (a) Given that $Z=\frac{-ab^2}{c(a+b)}$, find the value of c when $Z=-1$, $a=2$ and $b=-3$.

(b) Solve $3x-10<-19$.

(c) Solve $-9(-3q+1)=11(3-2q)$

Ans: (a) _____ [2]

(b) _____ [2]

(c) _____ [2]

---

8. Each interior angle of a regular polygon is 120°.

(a) Find the number of sides of this polygon.

(b) Find the size of each exterior angle.

Ans: (a) _____ [2]

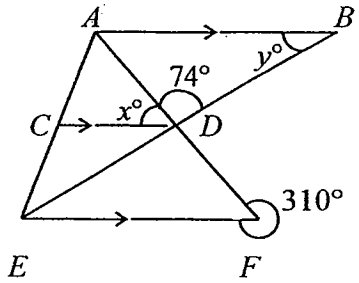
(b) _____ [2]

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9. Given that AB // CD // EF, find

(a) the value of x.

(b) the value of y.



Ans: (a) _____ [2]

(b) _____ [2]

---

10. The amount of pocket money, in $, received by 24 secondary students daily is given below.

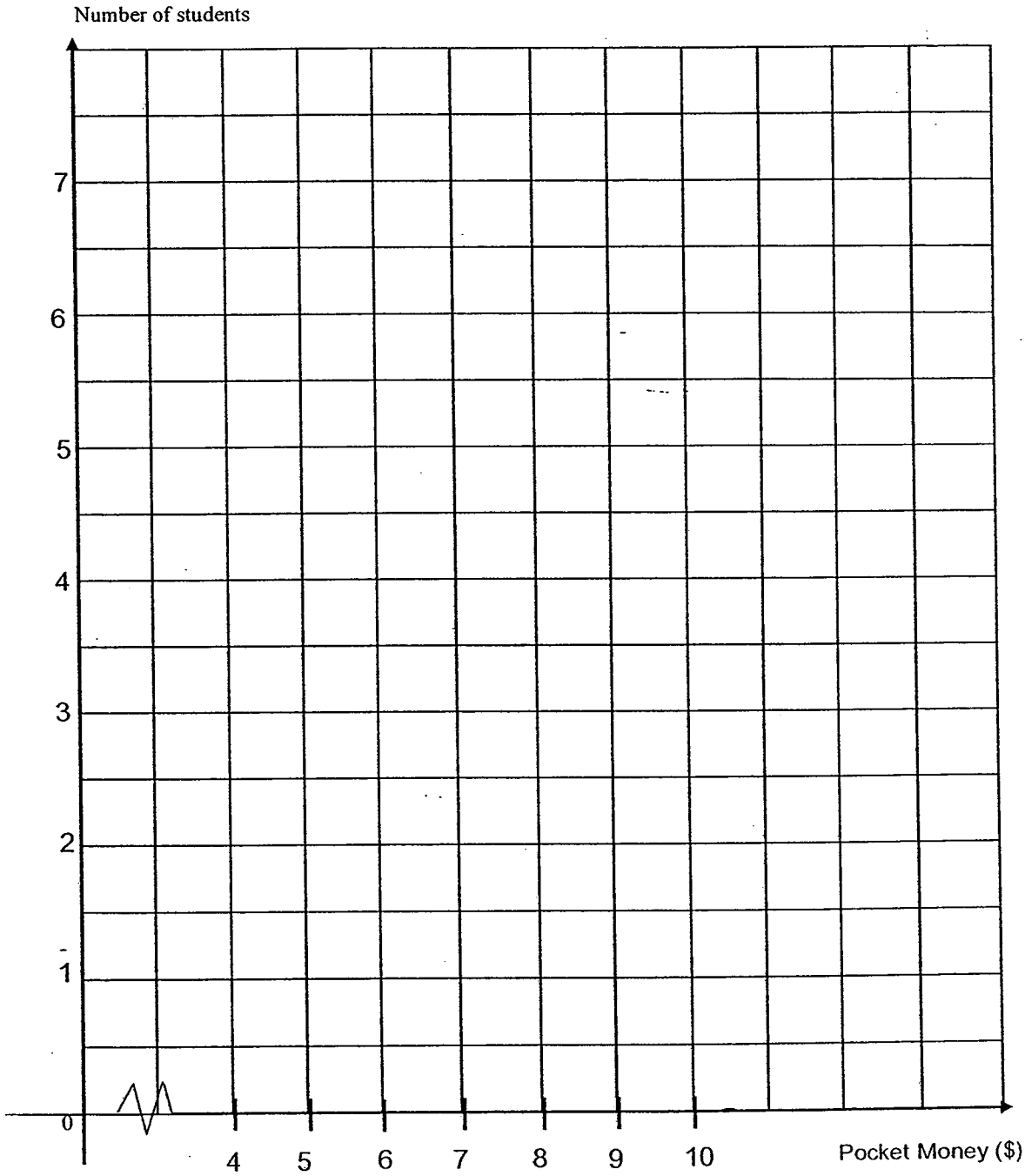
7	5	8	10	6	8	10	9	7	6	9	10
4	10	7	7	4	6	7	6	8	5	8	6

(a) Complete the table below. [3]

Amount of Pocket Money ($)	Tally	Frequency
4		
5		
6		
7		
8		
9		
10		

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(b) Draw a line graph on the axes provided to illustrate the distribution. [2]



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SERANGOON GARDEN SECONDARY
EOY 2010
E. MATHEMATICS (PAPER 1) SEC 1E
ONE-PAGE ANSWER

QN	ANSWER	QN	ANSWER
1a	$\frac{9}{200}$	8a	n = 6
1b	13 35 hrs	8b	60^o
1c	x = 1	9a	50^o
2a	$890	9b	56^o
2b	$619	10a	Tally / Frequency: I 2; II 2; ~~IIII~~ 5; ~~IIII~~ 5; IIII 4; II 2; IIII 4
3a	62 000cm²	10b	Refer to graph in marking scheme
3b	3 500 000 m²		
4a	$16-18x$		
4b	$\frac{31x-46}{24}$		
5a	5 : 2		
5b	9 : 10 : 5		
6a	3		
6b	(0, 3)		
7a	c = -18		
7b	x < -3		
7c	$q=\frac{6}{7}$		

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SERANGOON GARDEN SECONDARY
EOY 2010
E. MATHEMATICS (PAPER 1) SEC 1E
MARKING SCHEME

1. (a) Express 4.5% as a fraction in its lowest term.

(b) Express 1.35 pm in 24-hr format.

(c) Given that $x : 2 = 50\% : 1$, find the value of x.

(a) $4.5\% = \frac{4.5}{100} = \frac{9}{200}$ [A1]

(b) 1.35 pm = 1335 hrs [A1]

(c) $x = 1$ [A1]

Ans: (a) $\frac{9}{200}$ [1]

(b) 1335 hrs [1]

(c) $x = 1$ [1]

---

2. During the Great Singapore Sale, a washing machine was sold at a discounted price of $578.50.

(a) If the washing machine was sold at a discount of 35%, find the original price of the washing machine.

(b) There is a GST of 7% on the selling price of the washing machine. What is the total amount the customer has to pay for the purchase of the washing machine?

(a) 65% - $578.50

1% - $\frac{578.50}{65}$

100% - $\frac{578.50}{65} \times 100$ [M1]

= $890.00 [A1]

(b) GST = 7% × $578.50

= $40.50 [M1]

Total amount paid

= $578.50 + $40.50

= $619.00 [A1]

Ans: (a) $890.00 [2]

(b) $619.00 [2]

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3. Express

(a) 6.2 m^2 in cm^2

(b) 3.5 km^2 in m^2

(a) 6.2 m^2 = 6.2 × 100 × 100

= 62000 cm^2 [A1]

(b) 3.5 km^2 = 3.5 × 1000 × 1000

= 3500000 m^2 [A1]

Ans: (a) 62000 cm^2 [1]

(b) 3500000 m^2 [1]

---

4. Simplify

(a) $-3(4-8x)+7(4-6x)$

(b) $\frac{(10x-7)}{6}-\frac{3(x+2)}{8}$

(a) $-3(4-8x)+7(4-6x)$

$= -12+24x+28-42x$ [M1]

$= 16-18x$ [A1]

(b) $\frac{(10x-7)}{6}-\frac{3(x+2)}{8}$

$= \frac{4(10x-7)-9(x+2)}{24}$ [M1]

$= \frac{40x-28-9x-18}{24}$ [M1]

$= \frac{31x-46}{24}$ [A1]

Ans: (a) $16-18x$ [2]

(b) $\frac{31x-46}{24}$ [3]

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5. A man left a sum of money of $48000 for his 3 children. Jason received $a, Marcus received $b and Susan received $c.

(a) If Susan got $8000 and Jason got $20000, find the ratio b : c in the lowest term.

(b) Jason decides to give $2000 to Susan, what is the ratio of a : b : c?

(a) Amount of money Marcus received = $48000-$8000-$20000 = $20000

b:c = 20000 : 8000 [M1]

= 5:2 [A1]

(b) Jason : Marcus : Susan

$18000 : $20000 : $10000 [M1]

18 : 20 : 10

9 : 10 : 5 [A1] Ans:(a) 5:2 [2]

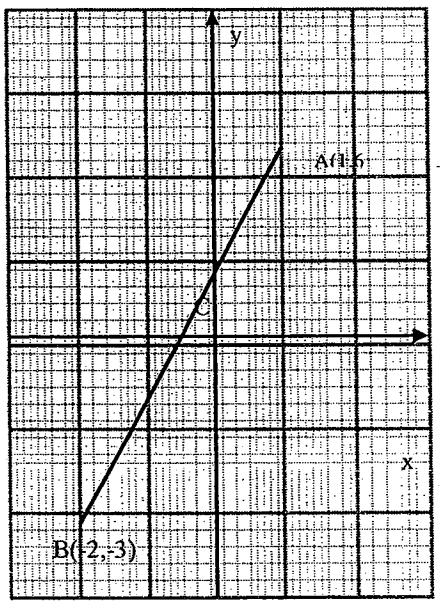
(b) 9 : 10 : 5 [2]

---

6. The diagram below shows a straight line graph which passes through the points A(1, 6) and B(-2, -3).

(a) Find the gradient of the line.

(b) The straight line cuts the y-axis at the point C. Find the coordinates of the point C.



(a) $gradient = \frac{vertical\ change}{horizontal\ change}$

$= \frac{9}{3}$ [M1]

= 3 [A1]

Ans: (a) 3 [2]

(b) (0,3) [1]

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7. (a) Given that $Z=\frac{-ab^2}{c(a+b)}$, find the value of c when $Z=-1$, $a=2$ and $b=-3$.

(b) Solve $3x-10<-19$.

(c) Solve $-9(-3q+1)=11(3-2q)$

(a) $Z=\frac{-ab^2}{c(a+b)}$

$-1=\frac{-2(-3)^2}{c(2-3)}$ [M1]

$-1=\frac{18}{c}$ [M1]

$c=-18$ [A1]

(b) $3x-10<-19$

$3x<-19+10$ [M1]

$x<-3$ [A1]

(c) $-9(-3q+1)=11(3-2q)$

$27q-9=33-22q$ [M1]

$49q=42$

$q=\frac{6}{7}$ [A1]

Ans: (a) $c=-18$ [2]

(b) $x<-3$ [2]

(c) $q=\frac{6}{7}$ [2]

---

8. Each interior angle of a regular polygon is 120°.

(c) Find the number of sides of this polygon.

(d) Find the size of each exterior angle.

(a) $\frac{(n-2)\times 180}{n}=120$ [M1]

$180n-360=120n$

$n=6$ [A1]

(b) size of each exterior angle

$=\frac{360}{6}$ [M1]

$=60°$ [A1]

Ans: (a) $n=6$ [2]

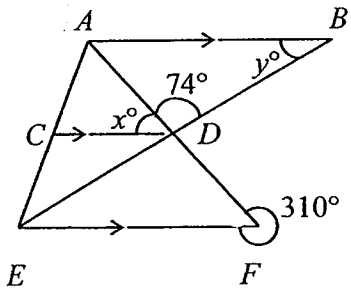
(b) 60° [2]

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9. Given that AB // CD // EF, find

(c) the value of x.

(d) the value of y.



(a) $x = \angle EFD$ (corr. angles) [M1]
$= 360° - 310°$
$= 50°$ [A1]

(b) $y = 180° - 74° - 50°$ (int angles) [M1]
$= 56°$ [A1]

Ans: (a) 50° [2]

(b) 56° [2]

---

10. The amount of pocket money, in $, received by 24 secondary students daily is given below.

7	5	8	10	6	8	10	9	7	6	9	10
4	10	7	7	4	6	7	6	8	5	8	6

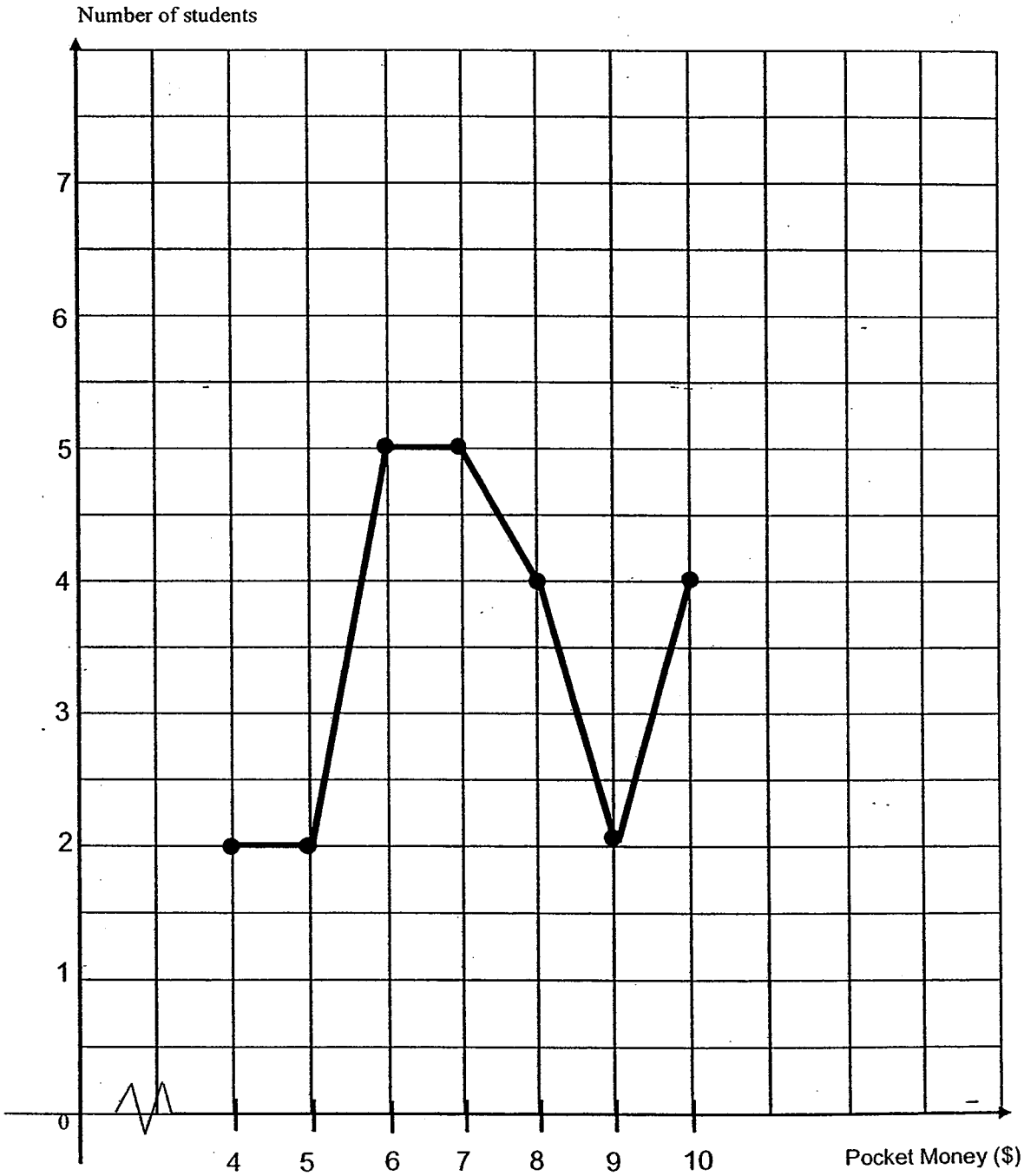
(a) Complete the table below. [3]

Amount of Pocket Money ($)	Tally	Frequency
4	||	2
5	||	2
6	𝍸	5
7	𝍸	5
8	||||	4
9	||	2
10	||||	4

B3, 2, 1. 1 mark for 3 pairs, 2 marks for 5 pairs, 3 marks for all pairs.

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(b) Draw a line graph on the axes provided to illustrate the distribution. [2]



B2, 1. 1) All points marked correctly. 2) All points joined with a straight line.

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NAME		REG. NO.		CLASS	

SERANGOON GARDEN SECONDARY SCHOOL
YEAR END EXAMINATION 2010

SUBJECT: ELEMENTARY MATHEMATICS

PAPER NO: PAPER 2

LEVEL: SECONDARY ONE EXPRESS

DATE: 13TH OCTOBER 2010

TIME: 0805 - 0935

DURATION: 1 HOUR 30 MIN

INSTRUCTIONS TO CANDIDATES

Write your name, index number and class in the space provided on the answer paper.
Write in dark blue or black pen.
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 will 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 requires 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 60.

Name/Signature of Parent/Guardian _____ Date _____

FOR MARKER'S USE
60

This question paper consists of 5 printed pages and 1 blank page.

Setter : Mr Larry Lim **Vetter: Mrs Ravi** **[Turn over**

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Answer all the questions

1. (a) Express 384 as a product of its prime factors. [2]

(b) If $720 = 2^a \times 3^b \times 5^c$, find the values of a, b and c. [4]

(c) Find the greatest common factor of 384 and 720. [2]

(d) Find the lowest common multiple of 384 and 720. [2]

(e) Find the value of q such that 384q is a perfect cube. [1]

---

2. (a) Factorise the following completely

(i) $-48ab^3 + 16a$ [1]

(ii) $p^2 + 6pq - 9p - 54q$ [2]

(b) Solve the following equations:

(i) $\frac{x+2}{5} - \frac{2x-3}{3} = 8$ [3]

(ii) $-7(x-3) + 2(6x-1) = 12$ [2]

---

3. David walks to school everyday at a speed of x m/s. If the distance between his house and the school is 6 km,

(a) Find, in terms of x, the time taken for David to reach the school [2]

(b) If he increases his speed by 1.5 times to 6 m/s, find the value of x. [2]

(c) If he leaves his house at 6 am and travels at the speed of 6 m/s, what time will he reach the school? Express your answer in 24-hour format. [2]

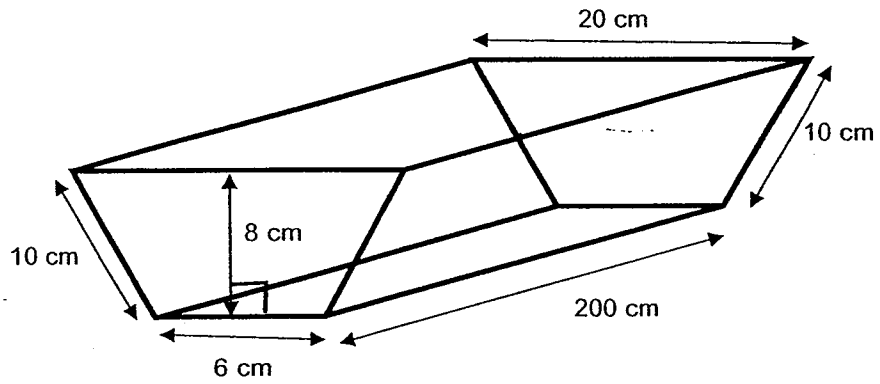
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4. (a) Evaluate $\frac{9.8^3 - \sqrt{3.42}}{7.2^2 - 1.2}$ and round off your answer correct to 3 significant figures. [1]

(b) Given that $x = 3$, $y = -2$ and $z = 5$, evaluate $\frac{y(xz - y)}{2x + z}$. [2]

---

5. A metal container shown below is used to make large blocks of ice.



(a) Find the amount of water required to fill the container fully. [2]

(b) Assuming that the container has a cover, find the total surface area of the container. [2]

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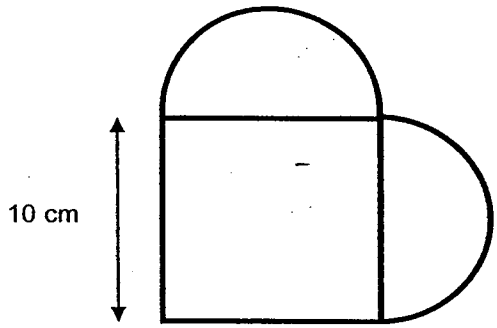
6. Jiant Departmental Store is having a sale and gives 20% discount on all electrical items and 15% on all clothes items. Susan bought a refrigerator, a fan, a dress and two blouses. The original prices of the items are as follows: refrigerator: $620, fan: $38, dress: $74 and blouse: $39.

(a) Find the total amount of money Susan saved. [3]

(b) Express her total savings due to the discount, as a percentage of the total purchases before discount, leaving your answer correct to 1 decimal place. [2]

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7. A heart-shaped cake shown below has a cross-section made up of one square and 2 semicircles. The thickness of the cake is 7 cm.



Calculate

(a) the area of the cross-section, [3]

(b) the volume of the heart-shaped cake, [2]

(c) the total length of ribbon required, if a ribbon is tied around the cake for decoration with a 3 cm overlap. [2]

---

8. Mr Lim works for Xingtel selling iphone4. He is paid a basic wage of $160 per week and a commission of $12 for every phone that he sells.

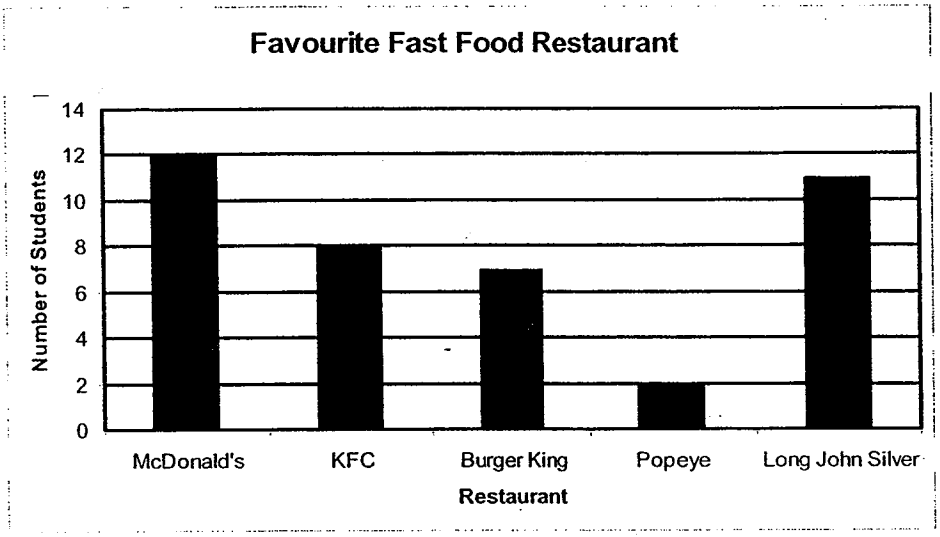
(a) If he sells x number of phones for a particular week, write an expression to show the amount of money he earned for that week. [1]

(b) Mr Lim earned $256 for a particular week, find the number of phones he sold. [2]

(c) For every ten phones that Mr Lim sells, he gets an additional $20 commission. Find Mr Lim's wage if he sells 15 phones in a week. [2]

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9. The bar chart below shows the results of a survey to find out the favourite fast food restaurant among students in a class.



(a) How many students prefer Burger King? [1]

(b) Find the ratio of the number of students who prefer KFC to Popeye. [1]

(c) How many students are there in the class? [1]

(d) Find the percentage of students who prefer Long John Silver. [1]

---

10. **Answer the whole of this question on a sheet of graph paper.**

The variables x and y are connected by the equation $y = x + 4$. The table gives some corresponding values of x and y.

x	-2	-1	0	1	2
y	2	a	4	b	6

(a) Find the values of *a* and *b*. [2]

(b) Using a scale of 2 cm to represent 1 unit on the x-axis and 2 cm to represent 1 unit on the y-axis, draw the graph of $y = x + 4$ for $-2 \leq x \leq 2$. [3]

(c) Find the gradient of the graph of $y = x + 4$. [1]

(d) Find the coordinates of the point where the graph cuts the y-axis. [1]

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SERANGOON GARDEN SECONDARY
EOY 2010
E. MATHEMATICS (PAPER 2) SEC 1E
ONE-PAGE ANSWER

QN	ANSWER	QN	ANSWER
1a	3	6a	$154.40
1b	a = 4, b = 2, c = 1	6b	19.1%
1c	48	7a	179 cm^2
1d	5760	7b	1250 cm^3
1e	36	7c	54.4 cm
2a(i)	$16a(-3b^3 + 1)$	8a	$(160 – 12x)
2a(ii)	$(p - 9)(p + 6q)$	8b	8
2b(i)	$-14\frac{1}{7}$	8c	$360
2b(ii)	$-\frac{7}{5}$	9a	7 students
3a	$\frac{6000}{x}$ seconds	9b	4 : 1
3b	4	9c	40 students
3c	06 17 hrs	9d	27.5%
4a	18.5	10a	a = 3, b = 5
4b	$-\frac{34}{11}$	10b	Refer to graph
5a	20 800cm^3	10c	Gradient = 1
5b	9408cm^2	10d	(0, 4)

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SERANGOON GARDEN SECONDARY
EOY 2010
E. MATHEMATICS (PAPER 2) SEC 1E
MARKING SCHEME

QN	Solution	Marks
1a	2 | 384 2 | 192 2 | 96 2 | 48 2 | 24 2 | 12 2 | 6 3 | 3 | 1 $384 = 2^7 \times 3$	M1 A1
1b	2 | 720 2 | 360 2 | 180 2 | 90 3 | 45 3 | 15 5 | 5 | 1 $720 = 2^4 \times 3^2 \times 5$ $a = 4, b = 2, c = 1$	M1 A3
1c	HCF $= 2^4 \times 3$ $=48$	M1 A1
1d	LCM $= 2^7 \times 3^2 \times 5$ $= 5760$	M1 A1
1e	384q = perfect cube $q = 2^2 \times 3^2$ $q = 36$	A1
2a(i)	$-48ab^3 + 16a$ $= 16a(-3b^3 + 1)$	A1
2a(ii)	$p^2 + 6pq - 9p - 54q$ $= p^2 - 9p + 6pq - 54q$ $= p(p-9) + 6q(p-9)$ $= (p-9)(p+6q)$	M1 A1

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2b(i)	$\frac{x+2}{5}-\frac{2x-3}{3}=8$ $\frac{3(x+2)-5(2x-3)}{15}=8$ $3x+6-10x+15=120$ $-7x+21=120$ $7x=21-120$ $x=-\frac{99}{1}$ $x=-14\frac{1}{7}$	M1 M1 A1
2b(ii)	$-7(x-3)+2(6x-1)=12$ $-7x+21+12x-2=12$ $5x+19=12$ $5x=-7$ $x=-\frac{7}{5}$	 M1 A1
3a	Time taken = $\frac{6}{3-6x}$ $=\frac{5}{3x}$ hours or Time taken = $\frac{6000\ m}{x\ m/s}$ $=\frac{6000}{x}$ seconds	M1 A1 Or M1 A1
3b	1.5x = 6 x = 4	M1 A1
3c	Speed = 6 m/s = 6 x 3600 m/h = 21.6 km/h Time taken = $\frac{6\ km}{21.6\ km/h}$	

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	$= \frac{5}{18}$ *hours* = 16.7 mins = 17 mins Time reached = 06 17 hours	M1 A1
4a	$\frac{9.8^2 - \sqrt{3.42}}{7.2^2 - 1.2} = 18.5$	A1
4b	$\frac{y(xz-y)}{2x+z}$ $= \frac{-2[(3\times 5)-(-2)]}{2(3)+5}$ $= -\frac{34}{11}$	M1 A1
5a	Volume of water = Base area x height $= \frac{1}{2}$ x (6 + 20) x 8 x 200 = 26 x 4 x 200 = 20 800cm³	M1 A1
5b	T. S. A = (2 x base area) + (perimeter of base x height) = [2 x $\frac{1}{2}$ x (6 + 20) x 8] + [(6 + 20 + 10 + 10) x 200) = 9408cm²	M1 A1
6a	Amt saved on electrical items = 20% x [620 + 38] = $131.60 Amt saved on clothes = 15% x [74+39+39] = $ 22.80 Total amt saved = $(131.60 + 22.80) = $154.40	M1 M1 A1
6b	% of total savings = $\frac{154.40}{(620 + 38 + 74 + 39 + 39)} \times 100\%$ = 19.1%	M1 A1
7a	Cross – sectional area of cake = (10 x 10) + 2($\frac{1}{2}$ x π x 5 x 5) = 100 + 25 π	M2

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	= 178.54 ≈ 179 cm^2	 A1
7b	Volume of cake = 178.54 x 7 = 1249.78 = 1250 cm^3	M1 A1
7c	Length of ribbon required = $2\pi r + 23$ = $(2\pi$ x 5) + 23 = 54.4 cm	M1 A1
8a	Amt of money earned = $ (160 +12x)	A1
8b	160 + 12x = 256 12x = 96 x = 8	M1 A1
8c	Wage = $160 + 12x + $20 = $180 + 12(15) = $360	M1 A1
9a	7 students	B1
9b	4 : 1	B1
9c	40 students	B1
9d	27.5%	B1
10a	a = 3, b = 5	B1, B1
10b		1 mark each for corrects scale 1 mark for correct plot
10c	Gradient = 1	B1
10d	(0, 4)	B1

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