Class	Index Number	Name

ANG MO KIO SECONDARY SCHOOL
MID-YEAR EXAMINATION 2011
SECONDARY ONE EXPRESS

Mathematics Part One

Setter: Mrs Seah Kwan Chaet

Thursday 12 May 2011 1 hour

Candidates answer on the Question Paper.

READ THESE INSTRUCTIONS FIRST

Write your name, index number and class on all the work you hand in.
Write in dark blue or black pen on both sides of the paper.
You may use a pencil for any diagrams or graphs.
Do not use 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.
Calculators should be used where appropriate.
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 of the marks for this paper is **50**.

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50

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Part 1 (50 marks)
Answer ALL the questions.

1. (a) Express $1\frac{3}{22}$ as a recurring decimal.

(b) Arrange the following numbers in ascending order.

$$\frac{4}{11}, \quad 0.\dot{3}\dot{5}\dot{3}, \quad \frac{7}{20}, \quad 0.3532$$

Ans: (a) _____ [1]

(b) _____ [1]

2. Express 204.016 to

(a) the nearest integer,

(b) 2 decimal places,

(c) 4 significant figures.

Ans: (a) _____ [1]

(b) _____ [1]

(c) _____ [1]

3. Consider the five numbers stated below.

$$1.\dot{3}, \quad -5, \quad 4\sqrt{2}, \quad 0, \quad \frac{\pi}{2}$$

Write down the

(a) integers,

(b) rational numbers,

(c) irrational numbers.

Ans: (a) _____ [1]

(b) _____ [1]

(c) _____ [1]

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4. (a) Showing your method clearly, estimate the value of $49.3 \times \sqrt{80.9}$, giving your answer correct to 1 significant figure.

(b) Use your answer in part (a) to estimate the value of $0.493 \times \sqrt{80.9}$.

Ans: (a) _____ [2]

(b) _____ [1]

5. (a) Express $\frac{1}{2}\%$ as a fraction in its simplest form.

(b) Find the ratio of 45 cents to \$1.05 in its simplest form.

(c) Convert 72 km/h to m/s.

Ans: (a) _____ [1]

(b) _____ : _____ [1]

(c) _____ m/s [2]

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6. 5 shirts and 3 pairs of trousers cost \$$x$ and \$12y respectively. After buying 10 shirts and 5 pairs of trousers, Melissa had \$6 left in her wallet.

(a) Write down an algebraic expression for

(i) the cost of 1 shirt,

(ii) the cost of 1 pair of trousers.

(b) Find in terms of x and y, the total amount of money Melissa had at first, giving your answer in its simplest form.

Ans: (a) (i) \$ _____ [1]

(ii) \$ _____ [1]

(b) \$ _____ [2]

7. Given that $p = 2^2 \times 5^a$ and $q = 2^3 \times 5^2 \times 7^b$, find the value of

(a) a, if the highest common factor of p and q is $2^2 \times 5$,

(b) b, if the lowest common multiple of p and q is $2^3 \times 5^2 \times 7^4$.

Ans: (a) $a =$ _____ [1]

(b) $b =$ _____ [1]

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8. (a) A car uses 12 litres of petrol to travel 70 km. How many litres of petrol are needed to travel 119 km?

(b) A TV programme lasted for 105 minutes and ended at 01 05 on Sunday. When did the programme start?

Ans: (a) _____ litres [1]

(b) _____ [2]

9. Simplify the following expressions.

(a) $7m-2n+4m-8n$,

(b) $4w(3+2w)+5w^2$,

(c) $3(p-2q)-(5p-q)$.

Ans: (a) _____ [1]

(b) _____ [2]

(c) _____ [2]

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10. The table below shows the airmail postage rates for sending parcels to USA and Spain in 2009.

Countries	Postage rates per 100 g
USA	\$1.25
Spain	\$1.85

(a) Calculate the total postage for sending a 1.2 kg parcel to USA and a 0.8 kg parcel to Spain.

(b) In 2010, the total postage charges for the same two parcels in (a) was \$35.20. Calculate the percentage change in the postage charges.

Ans: (a) \$ _____ [2]

(b) _____ % [2]

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11. Simplify the following expressions.

(a) $8d \div 4 \times 3e$,

(b) $\frac{u}{3} + \frac{5u}{6}$,

(c) $\frac{2s+r}{3} - \frac{s+r}{4}$.

Ans: (a) _____ [1]

(b) _____ [1]

(c) _____ [2]

12. The weight of a suitcase increased by 5% to 17.85 kg after placing an object in it. Calculate

(a) the original weight of the suitcase,

(b) the weight of the object.

Ans: (a) _____ kg [2]

(b) _____ kg [1]

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13. The time taken for a race by 30 candidates is given in the table below.

Time Taken (minutes)	26	27	28	29	30
No. of Candidates	m	4	n	12	9

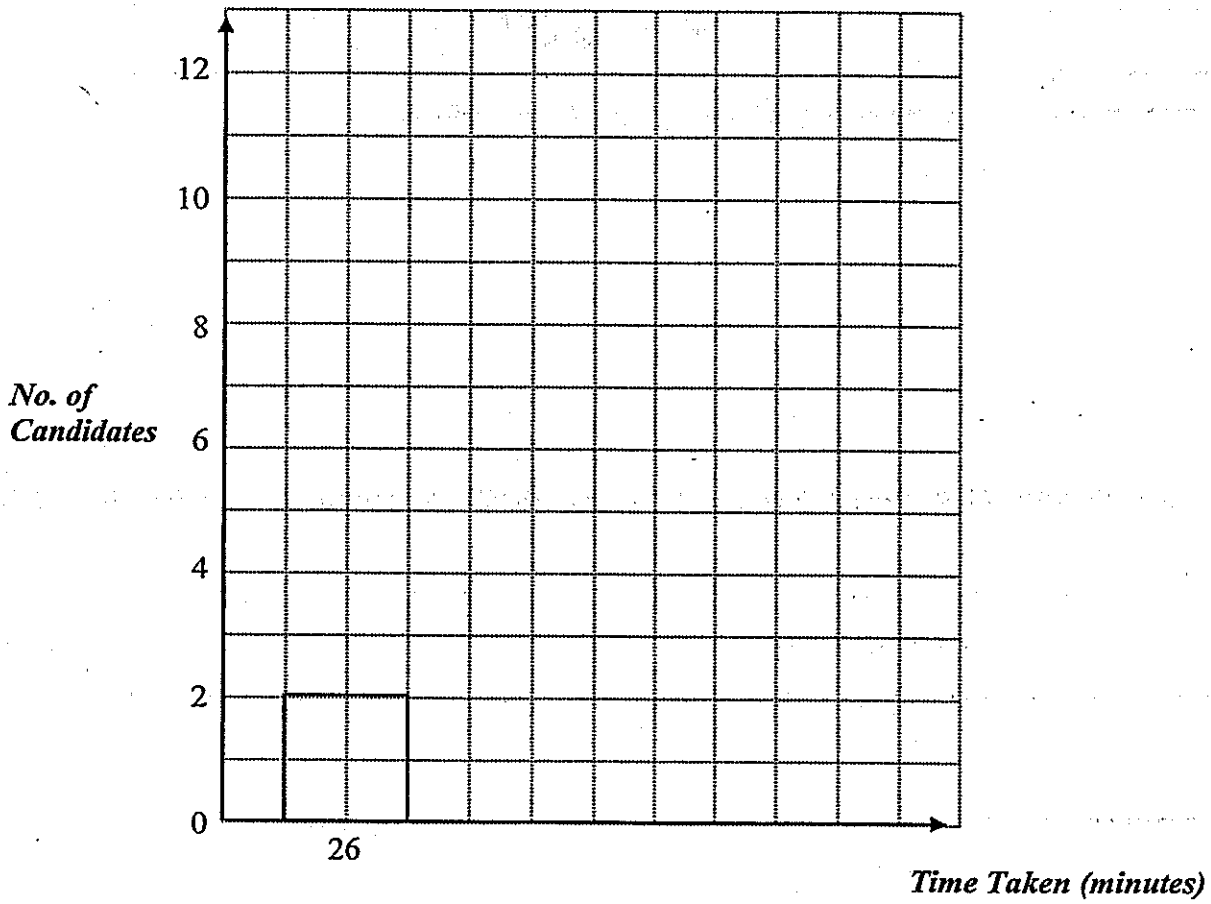
The results are represented in an incomplete histogram as shown in the answer space.

(a) State the value of

(i) m,

(ii) n.

(b) Complete the histogram as shown in the answer space below.



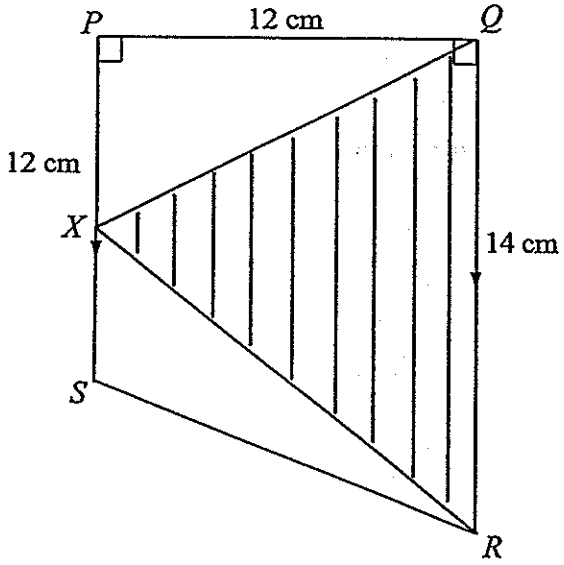
[2]

Ans: (a) (i) $m =$ _____ [1]

(ii) $n =$ _____ [1]

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14. Given $PQRS$ is a trapezium, PQ is perpendicular to QR and PS. $PQ = PS = 12$ cm and $QR = 14$ cm.



Calculate

(a) the area of shaded triangle QXR,

(b) the area of the unshaded region.

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

(b) _____ cm^2 [2]

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15. The ratio of the weights of Ken, Jan and Pat is 30 : 33 : 34. After 1 year, it is found that only Pat's weight remains unchanged. Given Pat weighed 68 kg, and the new ratio of the weights of Ken, Jan and Pat is 13 : 18 : 17, calculate

(a) the change in Ken's weight,

(b) the percentage change in Jan's weight.

Ans: (a) _____ kg [2]

(b) _____ % [1]

End of Paper

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Class	Index Number	Name

ANG MO KIO SECONDARY SCHOOL
MID-YEAR EXAMINATION 2011
SECONDARY ONE EXPRESS

Marking Scheme

Mathematics Part One

Setter: Mrs Seah Kwan Chaet

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Sec 1E Mid-Year Exam 2011 Mathematics Part 1

	Answer	Marking Scheme
1(a)	$1.1\dot{3}\dot{6}$	B1
1(b)	$\frac{7}{20}$, 0.3532, $0.\dot{3}\dot{5}\dot{3}$, $\frac{4}{11}$	B1
2(a)	204	B1
2(b)	204.02	B1
2(c)	204.0	B1
3(a)	$-5, 0$	B1
3(b)	$1.\dot{3}, -5, 0$	B1
3(c)	$4\sqrt{2}$, $\frac{\pi}{2}$	B1
4(a)	$49.3\times\sqrt{80.9} \approx 50\times\sqrt{81}$ $= 50\times 9$ $= 450 = 500$ (1 s.f.)	M1 A1
4(b)	$0.493\times\sqrt{80.9}$ $= \frac{49.3\times\sqrt{80.9}}{100} = \frac{500}{100} = 5$	B1
5(a)	$\frac{1}{2}\times\frac{1}{100} = \frac{1}{200}$	B1
5(b)	45 : 105 3 : 7	B1
5(c)	$\frac{72\text{km}}{1\text{h}} = \frac{72\times 1000}{1\times 3600}$ m/s $= 20$ m/s	M1 A1
6a(i)	$\frac{x}{5}$	B1
6a(ii)	$4y$	B1
6(b)	$10(\frac{x}{5})+5(4y)+6$ $= 2x+20y+6$	M1 A1
7(a)	$a = 1$	B1
7(b)	$b = 4$	B1
8(i)	$\frac{12}{70}\times 119 = 20.4$ litres	B1
8(ii)	105 min = 1h 45 min 2320 (11.20 pm) Saturday	B1 B1

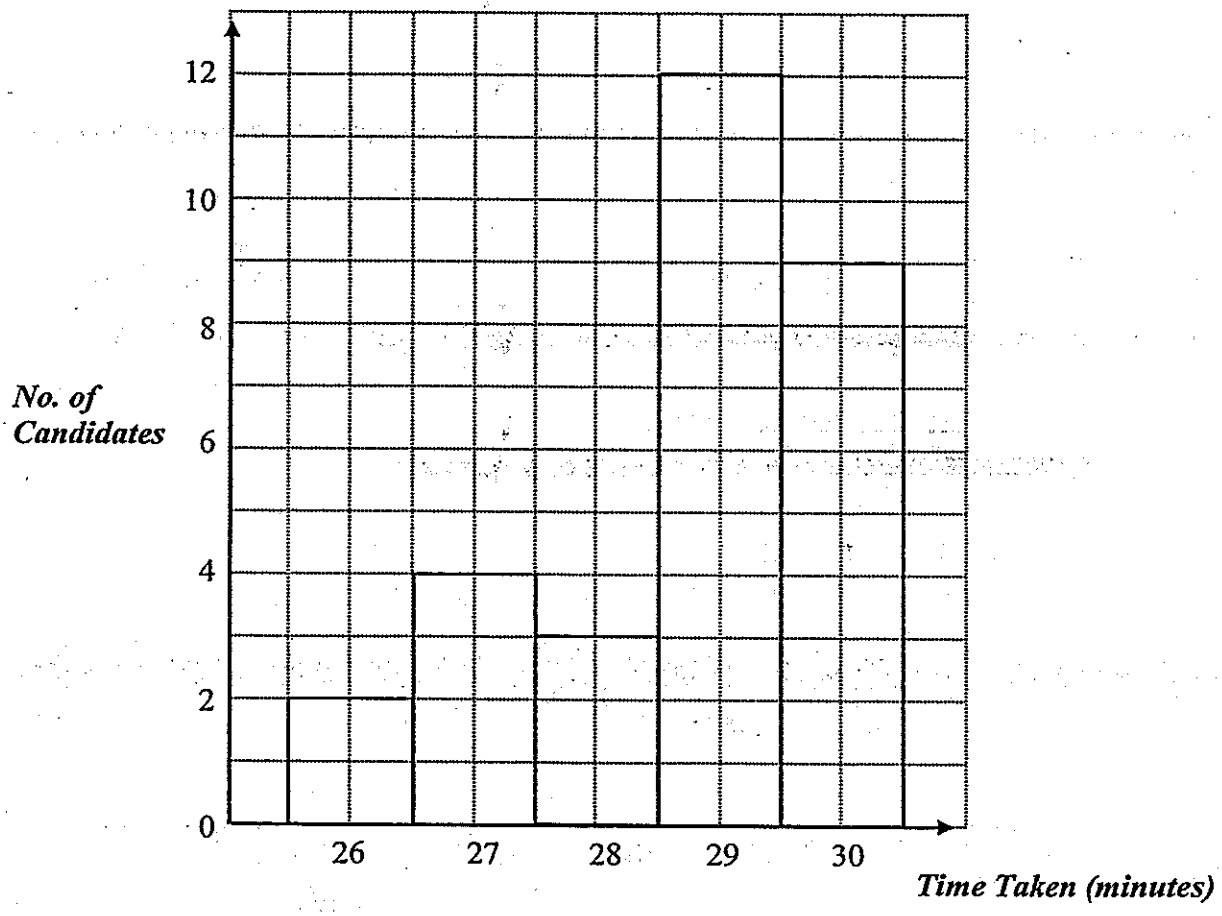
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9(a)	$7m-2n+4m-8n=11m-10n$	B1
9(b)	$4w(3+2w)+5w^2$ $=12w+8w^2+5w^2$ $=12w+13w^2$	 M1 A1
9(c)	$3(p-2q)-(5p-q)$ $=3p-6q-5p+q$ $=-2p-5q$	 M1 A1
10(a)	$\frac{1.2\times1000}{100}\times1.25+\frac{0.8\times1000}{100}\times1.85$ $=12\times1.25+8\times1.85$ $=\$29.80$	B1
10(b)	$\frac{35.20-29.80}{29.80}\times100\%$ $=18.1\%$	M1 A1
11(a)	$8d\div4\times3e$ $=2d\times3e=6de$	 B1
11(b)	$\frac{u}{3}+\frac{5u}{6}$ $=\frac{2u+5u}{6}=\frac{7u}{6}$	 B1
11(c)	$\frac{2s+r}{3}-\frac{s+r}{4}$ $=\frac{4(2s+4)-3(s+r)}{12}$ $=\frac{8s+4r-3s-3r}{12}$ $=\frac{5s+r}{12}$	 M1 A1
12(a)	$\frac{17.85}{105}\times100$ $=17$ kg	 M1 A1
12(b)	$17.85-17=0.85$ kg	B1
13a(i)	$m=2$	B1
13a(ii)	$n=3$	B1
13(b)	See below	B2
14(a)	$\frac{1}{2}\times12\times14=84\text{ cm}^2$	B1

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14(b)	Area of $PQRS = \frac{1}{2}[12+14] \times 12$ $= 156 \text{ cm}^2$ Area of unshaded region $= 156 - 84 = 72 \text{ cm}^2$	M1 A1
15(a)	Ken : Jan : Pat 30 : 33 : 34 (old ratio) 13 : 18 : 17 26 : 36 : 34 (new ratio) Change in Ken's weight $= \frac{4}{34} \times 68 = 8 \text{ kg}$	M1 A1
15(b)	% change in Jan's weight $= \frac{36-33}{33} \times 100\% = 9.09\%$	B1

12(d)



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ANG MO KIO SECONDARY SCHOOL
MID YEAR EXAMINATION 2011
SECONDARY ONE EXPRESS

MATHEMATICS
PART TWO

Wednesday **11 MAY 2011** **1 HOUR 15 MIN**

Name of Setter: Mr Eric Lee

Instructions to candidates:

1. Answer **ALL** the questions in Section A and Section B.

2. All relevant working must be done in ink and be clearly shown.

3. Silent non-programmable calculators may be used.

4. If the degree of accuracy is not specified in the question and the answer is not exact, the answer should be given to three significant figures. Answers in degrees should be given to one decimal place.

5. The intended marks for the questions or parts of the questions are given in brackets [ ].

6. The total mark of this paper is **50**.

This Question Paper consists of 7 printed pages (including this page)

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Section A (22 marks)

Answer ALL questions

1 (a) During the school holidays, Lion Airlines, Jetmoon Airlines and AirAsean Airlines fly to Hongkong every 12 days, 8 days and 10 days respectively. If all the airlines are flying to Hongkong today, how many days later will all the three airlines fly to Hongkong again ? [2]

(b) As part of their celebration for the holiday season, Disneyland Hongkong decided to manufacture a gigantic almond flavored chocolate of dimensions 140 cm by 320 cm and cut it into small squares of equal size to distribute to its visitors.

Find

(i) the largest possible length of the side of a square that can be cut without any wastage. [2]

(ii) the number of squares that can be cut. [1]

2 (a) Using your calculator, evaluate

(i) $(-7.2)^2 - (-5.6)^3 + \sqrt{28}$, giving your answer correct to 2 significant figures. [1]

(ii) $\dfrac{4\frac{1}{5} - \left[\frac{2}{3} \times \left(-\frac{4}{7}\right)\right]}{\left(\frac{2}{9}\right)^4}$, giving your answer correct to 2 decimal places. [1]

(b) The highest peak of Mount Everest is 8850 m above the sea level while its lowest point is 10990 m below the sea level. Given that the temperature at the highest peak of Mount Everest is $-40\,^{\circ}C$, and that the temperature rises at a steady rate of $0.005^{\circ}C$ per metre as it goes down the mountain, calculate

(i) the difference between these two points and [1]

(ii) the temperature at a base camp, 4500 m above the sea level. [3]

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3 (a) The cost of a meal for 4 people at Good Luck Restaurant is $ 256.45 before GST. Find the total bill when the cost of the meal is subjected to a 7 % GST charge correct to 2 decimal places. [2]

(b) A pan pizza was divided among 5 people, Aguero, Benni, Chacho, Denver and Eicho. Aguero received $\frac{1}{8}$ of the pan pizza and Benni received $\frac{1}{3}$ of the remainder. The rest of the pan pizza was divided equally among the other 3 people. If Benni received 700 g of the pan pizza, find

(i) the weight, in grams, of the pan pizza Aguero received. [2]

(ii) the total weight of the pan pizza, in kg. [1]

4 (a) A rectangular box has the dimensions of length : breadth =13 : 8 and length : height = 26 : 10 .

(i) Find the ratio of its length : breadth : height. [1]

(ii) Given that the breadth of the rectangular box is 56 cm, find the length of the rectangular box. [1]

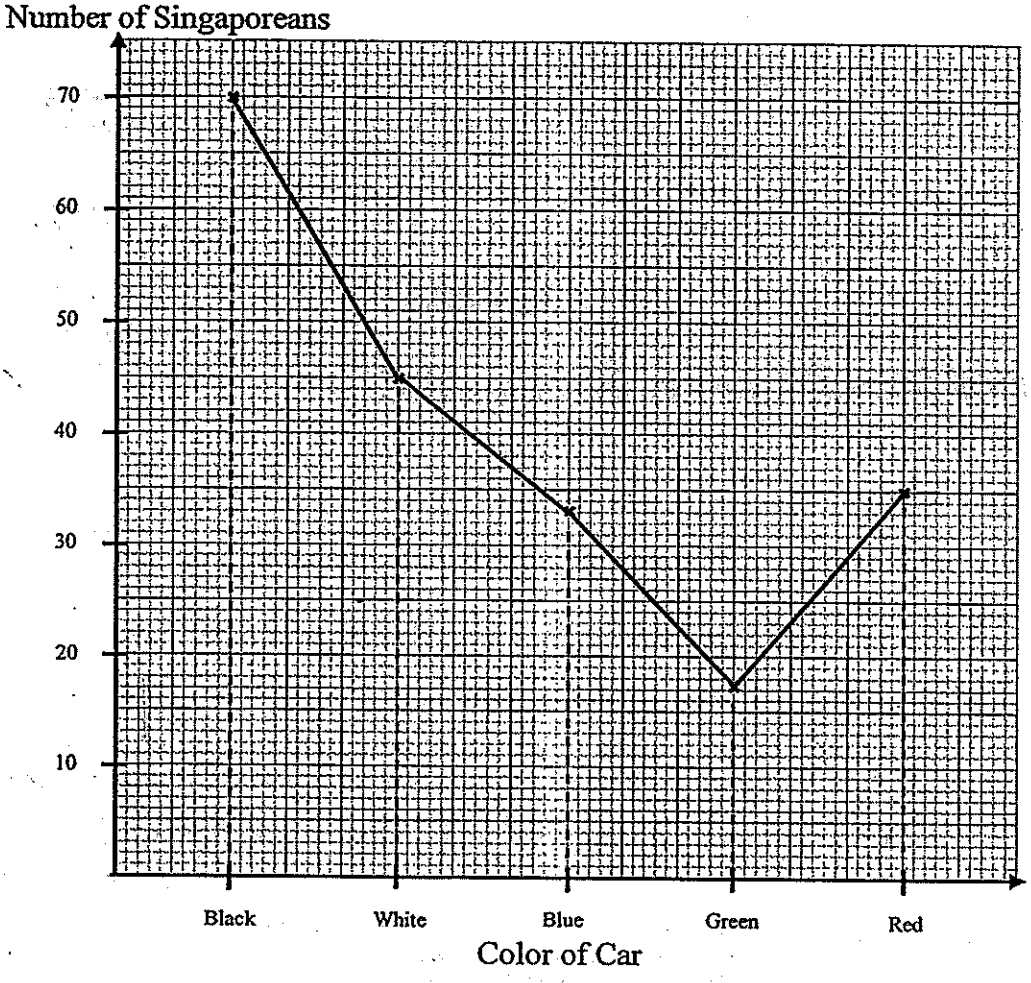
(b) To obtain a second rectangular box, its measurements are increased in the ratio of 9 : 5. Find the difference in height of the two boxes. [2]

5 Xavier is thrice as old as Yolanda. Zack is 2 years younger than Xavier. If the sum of their ages is 54, how old is Yolanda? [2]

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Section B (28 marks)
Answer ALL questions

6 (a) A survey was conducted with a group of Singaporeans to find out the colour of their cars. The results are illustrated in the line graph below.



(i) Find the total number of Singaporeans who participated in the survey. [1]

(ii) Calculate the percentage of Singaporeans who does not own a black car. [2]

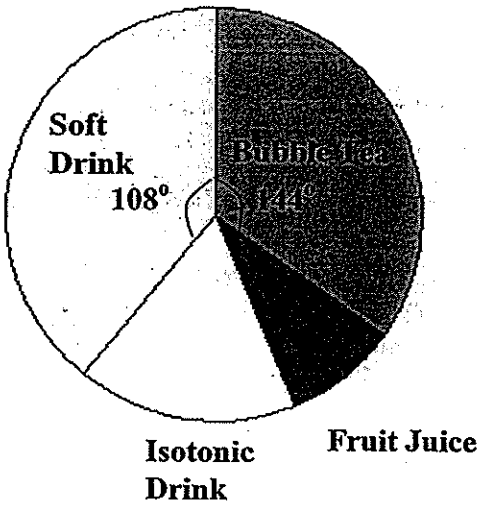
(iii) Given that some Singaporeans who originally owned blue cars changed their cars to green cars instead and the ratio of blue car owners to green car owners is now 14 : 11, find the number of Singaporeans who changed their cars. [2]

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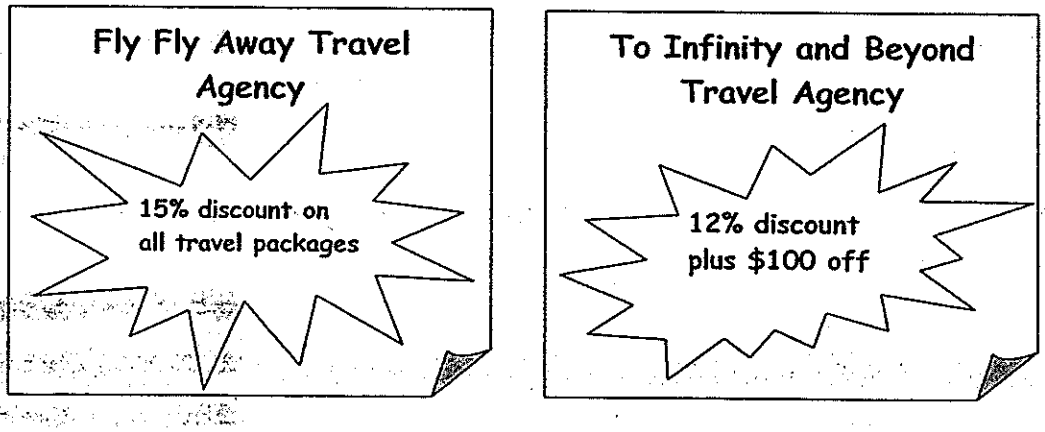
(b) The pie chart below represents beverages which Singaporeans prefer. If 200 of them prefer bubble tea.

(i) Find the total number of Singaporeans surveyed. [1]

(ii) Given that the number of Singaporeans who prefer isotonic drink is twice that of those who prefer fruit juice, find the number of Singaporeans who prefer fruit juice. [2]



7 At the recent travel fair, Matilda decided to book a tour package for the coming holidays.

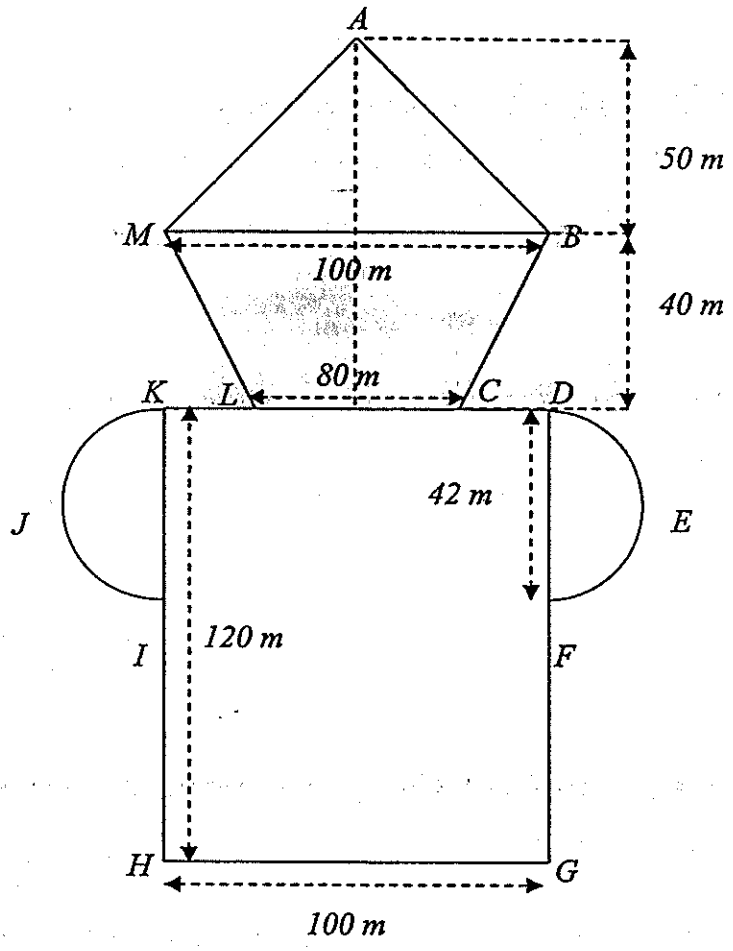


(a) A tour to Romania cost S$ 2567 before discount. Which of the above agency offers the best deal? [3]

(b) What is the percentage saved if Matilda went for the cheaper package? [2]

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8 An alien space craft intends to create a drawing on a field which includes a triangle ABM, a trapezium BCLM, a rectangle DGHK and 2 identical semi circles DEF and IJK as shown in the figure below. (Take $\pi = \frac{22}{7}$)



(a) Given that $CD = KL$, write down the length of KL. [1]

(b) Find the total area of the drawing. [4]

(c) (i) Given that the perimeter of the drawing is 631.88 m, find the perimeter of pentagon ABCLM. [4]

(ii) A rabbit hops at a steady pace of 12 m/s. Find the time taken to hop one round around the perimeter of the drawing, giving your answer correct to the nearest second. [2]

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9 (a) The parking rate of AMK hub is S$1.10 for the 1st hour and S$0.60 for subsequent $\frac{1}{2}$ hr. Ashton parks his car from 11.30 am to 5.00 pm. Find his total parking charges. [2]

(b) At the supermarket, Ashton decided to buy sauces for his restaurant cooking. Given that he uses twelve 1.5 litres bottles of sauces over a 10 days period, find how many bottles he would need over a 365 days period if the rate of using it remains unchanged. [2]

~End of Part 2 ~

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Secondary One Express Mid Year Examination 2011 Paper Two
Marking Scheme

Qn	Answer	Marking Scheme
1(a)	$\begin{array}{r\|lll} 2 & 12 & 8 & 10 \\ 2 & 6 & 4 & 5 \\ \hline & 3 & 2 & 5 \end{array}$ Number of days which all three airlines fly to Hongkong = LCM $= 2\times2\times3\times2\times5$ $= 120.$	 M1 A1
1(b)(i)	$\begin{array}{r\|ll} 2 & 140 & 320 \\ 2 & 70 & 160 \\ 5 & 35 & 80 \\ \hline & 7 & 16 \end{array}$ Largest possible length of square = HCF $= 2\times2\times5$ $= 20$ cm.	 M1 A1
1(b)(ii)	Number of squares $= \frac{140}{20}\times\frac{320}{20}$ $= 7\times16$ $= 112$ squares.	 B1
2(a)(i)	230. (2 s.f.)	B1
2(a)(ii)	1878.48. (2 d.p.)	B1
2(b)(i)	Difference between the two points $= 8850-(-10990) = 19840$ m	 B1
2(b)(ii)	Difference between Peak and Base Camp $= 8850-4500$ $= 4350$ m Temperature difference between Peak and Base Camp $= 4350\times0.005$ $= 21.75\,°C$ Temperature at Base Camp $= -40+21.75$ $= -18.25\,°C$	 M1 M1 A1

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Qn	Answer	Marking Scheme
3(a)	100% - $ 256.45 1% - $ 2.5645 107% - $ 274.4015 ≈ $ 274.40	 M1 A1
3(b)(i)	$\frac{1}{3}$ of $\frac{7}{8} = \frac{7}{24}$ $\frac{7}{24} = 700$ g 1 part = 100 g 3 parts = 300 g	M1 A1
3(b)(ii)	1 whole = 2400 g = 2.4 kg	B1
4(a)(i)	Length : Breadth : Height 13 : 8 : 5	B1
4(a)(ii)	8 parts = 56 cm 1 part = 7 cm 13 parts = 91 cm	 B1
4(b)	13 parts = 91 cm 1 part = 7 cm 5 parts = 35 cm 4 parts = 28 cm	 M1 A1
5	X = 3Y Z = X – 2 X + Y + Z = 54 3Y + Y + 3Y – 2 = 54 7Y = 56 Y = 8 years old	 M1 A1
6(a)(i)	Total number of Singaporeans surveyed = 70 + 45 + 33 + 17 + 35 = 200.	B1
6(a)(ii)	Percentage of Singaporeans who does not own a black car $= \frac{45+33+17+35}{200} \times 100$ = 65 %.	 M1 A1
6(a)(iii)	New ratio of Blue Cars to Green Cars = 14 : 11 = 28 : 22 Number of Singaporeans who changed their choice = 33 – 28 = 5.	 M1 A1
6(b)(i)	144° – 200 citizens 1° - $\frac{25}{18}$ citizens 360° – 500 citizens	 B1
6(b)(ii)	$3x = 360° - 144° - 108° = 108°$ $x = 36°$	M1

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Qn	Answer	Marking Scheme
	$36° = 50$ citizens	A1
7(a)	Fly Fly Away Travel $= 2567 \times 0.85$ $= \$2181.95$ To Infinity and Beyond Travel $= (2567 \times 0.88) - 100$ $= \$(2258.96 - 100)$ $= \$2158.96$ To Infinity and Beyond Travel Agency	M1 M1 A1
7(b)	$\$2181.95 - \$2158.96 = \$22.99$ Percentage saved $= \frac{22.99}{\$2158.96} \times 100\%$ $= 1.06\ \%$. (3 s.f.)	M1 A1
8(a)	$KL = 10$ m.	B1
8(b)	Area of Triangle ABM $= (50 \times 50)m^2 = 2500m^2$ Area of Trapezium BCLM $= (100 \times 40) - (10 \times 40)m^2 = 3600m^2$ Area of Rectangle DGHK $= (100 \times 120)m^2 = 12000m^2$ Area of 2 identical Semi-circles $= (\frac{22}{7} \times 21 \times 21)m^2 = 1386m^2$ Total Area $= 19486m^2$	M1 M1 M1 A1
8(c)(i)	Perimeter of circle $= (\frac{22}{7} \times 42) = 132m$ Perimeter of ABC and AML $= 631.88 - 20 - 156 - 100 - 132$ $= 223.88m$ Perimeter of Pentagon ABCLM $= (223.88 + 80)m = 303.88m$	M1 M1 M1 A1
8(c)(ii)	Time taken $= \frac{631.88m}{1.2m/s}$	M1

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Qn	Answer	Marking Scheme
	= 527 s. (nearest second).	A1
9(a)	12.30 pm to 5.00 pm = $4\frac{1}{2}$ h $\frac{1}{2}$ h = S$0.60 $4\frac{1}{2}$ h = S$5.40 Total parking charges = S$1.10 +S$5.40 = S$6.50	M1 A1
9(b)	10 days – 18 litres 1 day – 1.8 litres 365 days – 657 litres 657 ÷ 1.5 = 438 bottles	M1 A1

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