聖嬰中學

HOLY INNOCENTS' HIGH SCHOOL

MID-YEAR EXAMINATION 2012
SECONDARY 1 EXPRESS

MATHEMATICS **4016/01**

Paper 1

Name : _____ **Date** : **9 May 2012**

Register No : _____ **Duration : 1 h 30 min**

Class : _____

Additional Materials needed: NIL

Students answer on the Question Paper.

Instructions to Candidates

Write your index number and name on all the work you hand in.
Write in dark blue or black pen.
You may use a 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 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.

The number of marks is given in brackets [ ] at the end of each question or part question.
The total marks for this paper is 60.

Setter: Mr Lin WeiDing

This paper consists of 13 printed pages, inclusive of this cover page.

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Answer **all** the questions.

1 Express

(a) $4\frac{1}{2}\%$ as a decimal,

(b) $\frac{23}{25}$ as a percentage.

Answer (a) ..... [1]

(b) ..... % [1]

---

2 Express the ratio 650 g to 17.5 kg in its lowest terms.

Give your answer in the form $m : n$, where m and n are integers.

Answer ..... : ..... [2]

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3 A car took 4 hours 39 minutes to complete a journey of 320.50 kilometres.

(a) Express 4 hours 39 minutes in hours.

(b) Express 320.50 kilometres in metres.

Answer (a) ..... h [1]

(b) .....m [1]

---

4 Consider the numbers below

$$-\pi,\ 0.\dot{6}\dot{3},\ 1,\ \sqrt{3},\ -9^2,\ \sqrt[3]{8}.$$

(a) Arrange all numbers in descending order.

(b) Write down

(i) the prime number(s),

(ii) the irrational number(s).

Answer (a) .....[2]

(b) (i) ..... [1]

(b) (ii) .....[1]

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5 (a) Find the fraction which is exactly halfway between $\frac{3}{5}$ and $-\frac{3}{10}$.

(b) Jason spent $\frac{5}{9}$ of his allowance and had \$6.80 left.
How much did he spend?

Answer (a) ..... [1]

(b) \$ ..... [1]

---

6 Given that $p = -5$, $q = 9$ and $z = \frac{1}{3}$, find the value of $\frac{\sqrt{q} + p^3}{pz}$.

Answer ..... [2]

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7 The temperature at 05 30 h is $-3^{\circ}\mathrm{C}$ and the temperature at 12 30 h is $18^{\circ}\mathrm{C}$.

(a) Find the difference between the two temperatures.

(b) Assuming that the temperature rises at a steady rate, find the time when the temperature reaches $9^{\circ}C$.

Answer *(a)* ..... °C [1]

(b) ..... h [2]

---

8 (a) Solve the inequality $17x - 40 < 8x - 6$.

(b) Hence write down the greatest integer x which satisfies $17x - 40 < 8x - 6$.

Answer *(a)* ..... [2]

(b) ..... [1]

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9 (a) Given that $1\frac{1}{3} : 7 = \frac{3}{4}t : 21$, find the value of t.

(b) Michelle won a lucky draw prize.
She divided her winning among her mother, father and herself in the ratio 3 : 5 : 9.
If her father received \$150 more than her mother, calculate the amount of money Michelle won.

Answer (a) $t =$ ..... [1]

(b) \$ ..... [2]

---

10 Express as a single fraction in its simplest form

$$\frac{2p}{9} - \frac{3p+2}{2}.$$

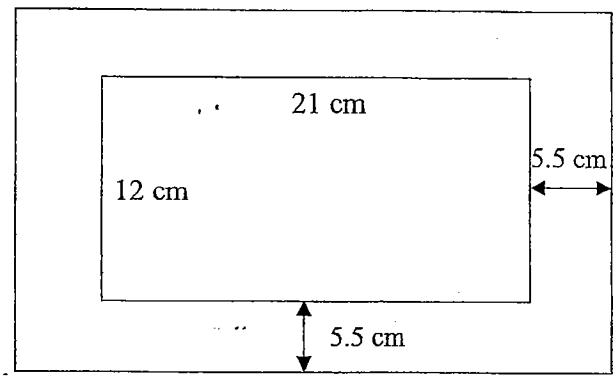
Answer ..... [3]

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11 A rectangular poster is 21 cm long and 12 cm wide.
It has a 5.5 cm border around it, as shown in the diagram below.



(a) Calculate the area of the border.

(b) Given that 1 cm^2 of the border costs \$0.20.
Find the total cost of making the border.

Answer *(a)* ..... cm^2 [2]

(b) \$..... [1]

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12 (a) By rounding each number to 1 significant figure, estimate the value of

$$\frac{\sqrt{121.42}-2.512^2}{1.821\times1.01^3}$$

You must show your workings.

(b) Evaluate $\dfrac{\sqrt{121.42}-2.512^2}{1.821\times1.01^3}$.

Give your answer correct to 5 significant figures.

Answer (a) ..... [2]

(b) ..... [2]

---

13 Factorise the following expressions

(a) $(x+2)^2-2(x+2)$,

(b) $2bg-3cg+6bf-9cf$.

Answer (a) ..... [2]

(b) ..... [2]

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14 Jaclyn prepared 120 fish balls, 160 chicken wings and 280 sandwiches for a function. She packed the food into smaller bags with the same number of each type of food.

(a) Find the greatest number of bags that Jaclyn can pack.

(b) Find the number of sandwiches in each bag.

Answer *(a)*..... bags [3]

(b)..... sandwiches [1]

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15 Written as the product of its prime factors,

$$3400 = 2^3 \times 5^2 \times 17.$$

(a) Write 765 as the product of its prime factors.

(b) Find the greatest integer that will divide both 3400 and 765 exactly.

(c) Find the smallest positive integer n such that $765n$ is a multiple of 3400.

Answer *(a)* 765 = ... [1]

(b) ..... [1]

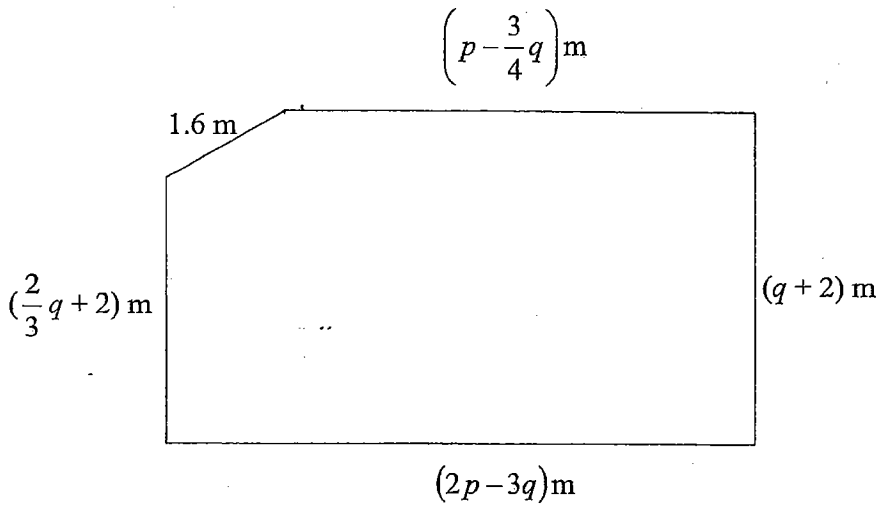
(c) ..... [2]

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16 (a) The diagram below shows the layout of a shop.
Find an expression, in terms of p and q, for the perimeter of the shop's layout.



(b) y grams of chocolate cost 89 cents.

Find an expression in terms of y for

(i) the cost of 100 g of chocolate,

(ii) the number of grams of chocolate that can be bought for \$44.50.

Answer *(a)* ..... m [2]

(b)(i) ..... cents [1]

(b)(ii) ..... g [2]

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17 Simplify the following expressions

(a) $12h-\frac{1}{4}k+h-8k$,

(b) $\frac{2}{3}x^2+(-\frac{x}{2})^2-\frac{4}{5}x^2$,

(c) $3d+2[3a-(12a-8d)]$.

Answer (a) ..... [1]

(b) ..... [2]

(c) ..... [2]

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18 Solve the equations

(a) $\frac{5}{6x} = 2$,

(b) $5p - 20 = 31 - 3p$,

(c) $\frac{12}{3k+1} = -\frac{3}{2k}$.

Answer (a) $x =$ ..... [1]

(b) $p =$ ..... [1]

(c) $k =$ ..... [3]

-End of Paper-

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Secondary School Exam Papers

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Mid-Year Examinations 2012
Secondary 1 Express Mathematics Paper 1
Answer Key

1	(a)	0.045	12	(a)	$\frac{1}{2}$
	(b)	92%		(b)	2.5099 (correct to 5 sig. fig)
2		13:350	13	(a)	$x(x+2)$
3	(a)	$4\frac{13}{20}hr$ or 4.65 h		(b)	$(2b-3c)(g+3f)$
	(b)	320500m	14	(a)	40 bags
4	(a)	$\sqrt[3]{8}, \sqrt{3}, 1, 0.\dot{6}\dot{3}, -\pi, -9^2$		(b)	7 sandwiches
	(b)(i)	Prime Number = $\sqrt[3]{8}$	15	(a)	$3^2 \times 5 \times 17$
	(b)(ii)	Irrational number = $-\pi$ and $\sqrt{3}$		(b)	85
5	(a)	$\frac{3}{20}$		(c)	40
	(b)	\$8.50	16	(a)	$(3p-\frac{25}{12}q+5.6)$ m
6		$73\frac{1}{5}$ or 73.2		(bi)	$\frac{8900}{y}$ cents
7	(a)	$21^\circ C$		(bii)	50y grams
	(b)	09 30 hr	17	(a)	$13h-\frac{33}{4}k$
8	(a)	$x < 3\frac{7}{9}$		(b)	$\frac{7}{60}x^2$
	(b)	3		(c)	$19d-18a$
9	(a)	$5\frac{1}{3}$	18	(a)	$x=\frac{5}{12}$
	(b)	\$1275		(b)	$p=6\frac{3}{8}$ or 6.375
10		$\frac{-23p-18}{18}$		(c)	$k=-\frac{1}{11}$
11	(a)	484 cm^2			
	(b)	\$96.80			

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HOLY INNOCENTS' HIGH SCHOOL

MID-YEAR EXAMINATION 2012
SECONDARY 1 Express

MATHEMATICS **4016/02**

Paper 2

Name : _____ Date : 11 May 2012

Register No : _____ Duration : 1 h 30 min

Class : _____

Additional Materials needed: 4 Sheets of Writing Paper

Instructions to Candidates

Write your index number and name on all the work you hand in.
Write in dark blue or black pen.
You may use a 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 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.

The number of marks is given in brackets [ ] at the end of each question or part question.
The total marks for this paper is 60.

Setter: Ms Lua Bee Hian

This paper consists of 7 printed pages, inclusive of this cover page.

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Answer **all** the questions

1. Three bus services operate from the same bus interchange.
Bus A service leaves at 10 minute interval, Bus B service leaves at 14 minute interval and Bus C service leaves at 16 minute interval.
All the three bus services leave the bus interchange at the same time at 7 am.

(a) At what time will the three bus services next leave the interchange at the same time? [3]

(b) Andrew arrived at the interchange at 4.09 pm.
Which is the first bus service he can board? [1]

(c) Benny arrived at the interchange at 5 pm to take Bus C service.
What is the next departure time of Bus C? [2]

---

2. Josh took 42 minutes to cycle from his house to Robert's house.
The distance between their houses is 10 km.

(a) Josh left his house at 11 53.
At what time did he reach Robert's house? [1]

(b) Find Josh's cycling speed in km/h.
Give your answer correct to 3 significant figures. [2]

(c) Josh left Robert's house at 13 00.
After travelling for 25 minutes, he stopped over at a supermarket to purchase a drink.
After which, he took another 10 minutes to travel home.
Given that average speed for the whole journey is 15 km/h, find the amount of time he spent in the supermarket. [3]

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3. Jaslyn jogged x hours per week.
Pearlyn jogged 4 hours less than Jaslyn.
Queenie jogged twice as much as Pearlyn.

(a) Write down an expression, in terms of x for the number of hours spent on jogging for

(i) Pearlyn,

(ii) Queenie. [2]

(b) The three of them spent a total of 16 hours on jogging per week.

(i) Form an equation in terms of x and solve the equation. [2]

(ii) Find the number of hours that Jaslyn spent on jogging per week. [1]

(iii) In a particular week, the number of hours Jaslyn spent on jogging increased by 40%.
Calculate the number of hours spent on jogging by Jaslyn in that particular week. [1]

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4. Each diagram in the sequence below consists of a number of dots to form a square.

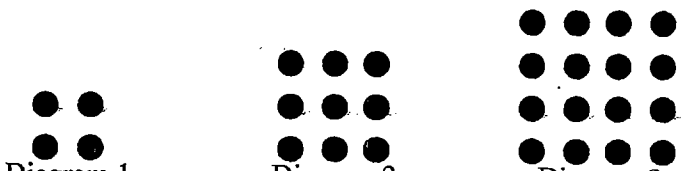


Diagram 1 Diagram 2 Diagram 3

(a) Draw Diagram 4 of the sequence. [1]

(b) The table below shows the total number of dots in each diagram.
Write down the values of p and of q. [2]

Diagram number	1	2	3	4			q
Number of dots	4	p	16	25			81

(c) Write down an expression, in terms of n, for the number of dots in Diagram n.
Hence or otherwise, find the number of dots in Diagram 100. [2]

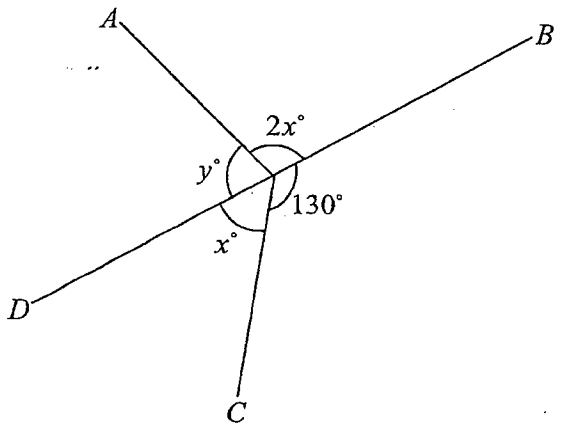
(d) Janice claims that a square can be formed using 250 dots.
Do you agree with her? Explain your answer. [1]

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5. (a) In the diagram, BD is a straight line.
Find the value of

(i) x, [1]

(ii) y. [1]

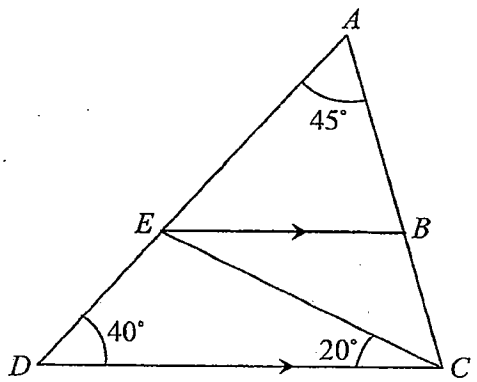


(b) In the diagram, BE is parallel to CD, $\angle ADC = 40°$, $\angle DAC = 45°$ and $\angle DCE = 20°$.
Find

(i) $\angle BEC$, [1]

(ii) $\angle AEB$, [1]

(iii) $\angle EBC$. [2]



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6. In a fund raising, the cost of making a bookmark is \$0.50.
A total of 600 bookmarks are made.

(a) Find the total cost of the 600 bookmarks. [1]

(b) 480 of the bookmarks are sold at \$0.70 each, 90 of them are sold at the cost price and the remaining is sold at a discount of 20%.
Calculate

(i) the overall profit or loss, [3]

(ii) the overall profit or loss as a percentage of the cost price. [1]

(c) An addition of 100 bookmarks is made.
These bookmarks are sold at \$53.50 inclusive of 7% GST.
Calculate the amount of GST charged. [2]

---

7. Mrs Tay bought a total mass of $7\frac{3}{8}$ kg of flour to make bread, cookies and cupcakes.

She used $\frac{1}{3}$ of the mass to make bread and $\frac{1}{4}$ of the remaining mass to make cookies.

(a) Find the mass of the flour used to make bread. [1]

(b) Find the mass of the flour used to make cupcakes.
Give your answer correct to 3 significant figures. [2]

(c) The mass of the flour used in making bread, cookies and cupcakes is in the ratio $x : y : z$.
Find the value of x, y and z. [2]

(d) Mrs Tay bought an additional 1.5 kg of flour to make bread.
What fraction of the total mass of the flour was used to make bread? [2]

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8. (a) (i) Factorise $xy - xz$. [1]

(ii) Hence evaluate $59 \times 7138 - 49 \times 7138$ without the use of calculator. [2]

(b) The admission fee, F, to a museum for x adults and y children is given by

$$F = 28.50x + 12y.$$

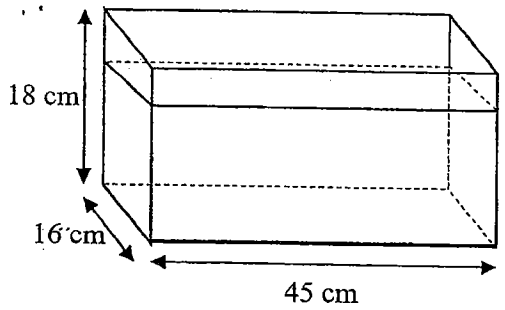
(i) Find the admission fee for 5 adults and 3 children. [2]

(ii) What does the coefficient of x and y represent? [2]

(iii) The admission fee for x adults and 4 children is \$133.50. Find the value of x. [1]

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9. (a) The figure shows an open fish tank measuring 45 cm by 16 cm by 18 cm.
The tank is $\frac{7}{9}$ filled with water.



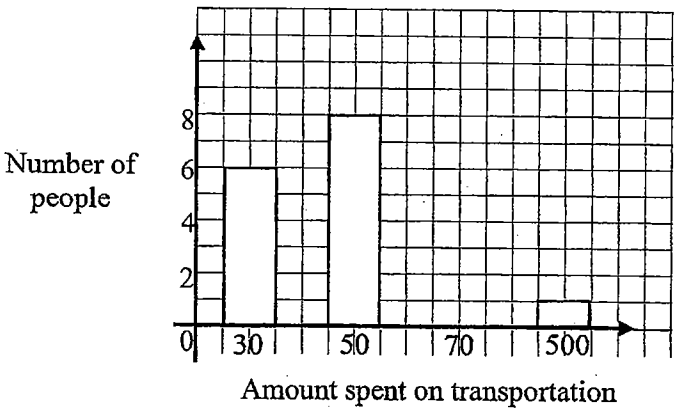
(i) Find the height of the water in the tank. [1]

(ii) Find the volume of the water in the tank. [1]

(iii) Water is poured into the tank.
Find the volume of water needed to fill the tank completely. [1]

(iv) The water in the tank is then poured into glasses with a capacity of 600 ml each.
Find the maximum number of complete glasses that can be filled. [2]

(b) In a survey, 20 workers were asked how much they spent on transportation.
Part of the results of the survey is shown in the bar chart below.



(i) Find the number of workers that spent $70 on transportation. [1]

(ii) Calculate the average amount spent on transportation by 20 workers. [2]

End of paper

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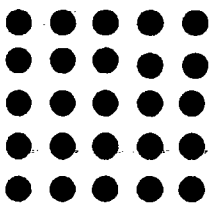
Answers

1. (a) 4.20 pm
   (b) Bus A
   (c) 5.08 pm

2. (a) (i) 12.35 pm
   (ii) 14.3 km/h
   (b) 5min

3. (a) (i) no. of hours Pearlyn spent = $x-4$
   (ii) no. of hours Queenie spent = $2(x-4)$
   (b) $x=7$
   (c) 9.8 hr

4. (a) Diagram 4



   (b) $p=9$ and $q=8$
   (c) number of dots = $(n+1)^2$
   No. of dots in diagram 100 = 10201
   (d) I do not agree because 250 is not a perfect square.

5. (a) $x=50^\circ$
   $y=80^\circ$
   (b) (i) $\angle BEC=20^\circ$
   (ii) $\angle AEB=40^\circ$
   (iii) $\angle EBC=85^\circ$

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6. (a) \$300

(b) (i) Profit = \$93

(ii) Percentage of profit $= \frac{\$93}{\$300} \times 100$

$= 31\%$

(c) GST charged = \$3.50

7. (a) weight of flour used to make bread $= 2\frac{11}{24}$ kg

(b) weight of flour used to make cupcakes ≈ 3.69 kg

(c) $x = 2, y = 1$ and $z = 3$

(d) $\frac{95}{213}$

8. (a) (i) $xy - xz = x(y - z)$

(ii) 71380

(b) (i) $F = \$178.50$

(ii) the coefficient of x represents the admission fee for per adult

the coefficient of y represents the admission fee for per child

(iii) 3

9. (a) (i) height of water = 14 cm

(ii) Vol. of water in tank = 10080 cm^3

(iii) Vol. of water = 2880 cm^3

(iv) no. of cups = 21.6

≈ 21

(b) (i) 5

(ii) average amount = \$71.50

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Answer Scheme to 2012 Sec 1 Express MYE Maths Paper 1

No.	Answer	Marks	Remarks
1(a)	$4\frac{1}{2}\% = 4.5\%$ $= \frac{4.5}{100}$ $= 0.045$	B1	
(b)	$\frac{23}{25} \times 100\% = 92\%$	B1	
2	17.5kg = 17500g 650g to 17.5kg = 650:17500 = 13:350	M1 A1	
3(a)	39 mins $= \frac{13}{20}h$ 4 *h* 39 mins $= 4\frac{13}{20}h$ or 4.65 *h*	B1	
(b)	1km = 1000m 320.50km = 320.50 ×1000 = 320500 m	B1	
4(a)	$-\pi = -3.142.....$ $0.\dot{6}\dot{3} = 0.6363636363636363...$ $1 = 1$ $\sqrt{3} = 1.732050...$ $-9^2 = -81$ $\sqrt[3]{8} = 2$ In descending order, we have the following: $\sqrt[3]{8}, \sqrt{3}, 1, 0.\dot{6}\dot{3}, -\pi, -9^2$	B2	Award B1 for any 3 terms in descending order
(b)(i)	Prime Number = $\sqrt[3]{8}$	B1	
(b)(ii)	Irrational number = $-\pi$ and $\sqrt{3}$	B1	Award B1 only if 2 answers are shown.

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5(a)	Required fraction $= \dfrac{\frac{3}{5}+\left(-\frac{3}{10}\right)}{2}$ $= \dfrac{\frac{3}{10}}{2}$ $= \dfrac{3}{20}$	B1	No marks awarded if answers are given in decimal.
5(b)	4 units represent \$6.80 1 unit represent \$1.70 5 units represent $\$1.70 \times 5 = \$8.50$	B1	
6	$\dfrac{\sqrt{9}+p^3}{pz} = \dfrac{\sqrt{9}+(-5)^3}{(-5)(\frac{1}{3})}$ $= \dfrac{3-125}{-\frac{5}{3}}$ $= \dfrac{-122}{-\frac{5}{3}}$ $= 73\frac{1}{5}$ or 73.2	M1 A1	Award M1 if all the values are changed to one significant figure.
7(a)	Difference between two temperatures $= 18^\circ C - (-3^\circ C)$ $= 18^\circ C + 3^\circ C$ $= 21^\circ C$	B1	
7(b)	7 hours represent $21^\circ C$ temperature rise $\frac{7}{21}$ hours represent $1^\circ C$ temperature rise $12^\circ C$ temperature rise represent $\frac{7}{21} \times 12 = 4$ hours Time when temperature is $9^\circ C = 09\ 30h$	M1 A1	Award A1 if student gave answer as 9.30am

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8(a)	$17x-40<8x-6$ $9x<-6+40$ $9x<34$ $x<\frac{34}{9}$ $x<3\frac{7}{9}$	M1 A1	
8(b)	3	B1	
9(a)	$1\frac{1}{3}:7=\frac{3}{4}t:21$ $4:21=\frac{3}{4}t:21$ $\frac{3}{4}t=4$ $t=5\frac{1}{3}$	 B1	
(b)	2 units represent \$150 1 unit represent $\frac{150}{2}$ 17 units represent $\frac{150}{2}\times 17=\$1275$	M1 A1	
10	$\frac{2p}{9}-\frac{3p+2}{2}$ $=\frac{2(2p)}{18}-\frac{9(3p+2)}{18}$ $=\frac{4p-27p-18}{18}$ $=\frac{-23p-18}{18}$	 M1 M1 A1	
11(a)	Area of border $=(32\times 23)-(21\times 12)$ $=736-252$ $=484\text{ cm}^2$	M1 A1	
11(b)	Total cost $=484\times\$0.20$ $=\$96.80$	B1	

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12(a)	$\dfrac{\sqrt{121.42}-2.512^2}{1.821\times1.01^3}$ $=\dfrac{\sqrt{100}-3^2}{2\times1^3}$ $=\dfrac{10-9}{2\times1}$ $=\dfrac{1}{2}$	M1 A1	
12(b)	$\dfrac{\sqrt{121.42}-2.512^2}{1.821\times1.01^3}$ $= 2.5098524$ $= 2.5099$ (correct to 5 sig. fig)	 B2	Award B1 for 2.50985
13(a)	$(x+2)^2-2(x+2)$ $=(x+2)(x+2)-2(x+2)$ $=(x+2)[(x+2)-2]$ $=x(x+2)$	 M1 A1	
13(b)	$2bg-3cg+6bf-9cf$ $=g(2b-3c)+3f(2b-3c)$ $=(2b-3c)(g+3f)$	 M1 A1	
14(a)	Greatest number of bags = HCF of 120,160 and 280 $120=2^3\times3\times5$ $160=2^5\times5$ $280=2^3\times5\times7$ $HCF=2^3\times5$ $=40$	 M1 M1 A1	
14(b)	Number of sandwiches = 280/40 $=7$	 B1	
15(a)	$765=3^2\times5\times17$	B1	
15(b)	Greatest integer = HCF of 3400 and 765 $765=3^2\times5\times17$ $3400=2^3\times5^2\times17$ $HCF=5\times17$ $=85$	 B1	

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15(c)	765n = LCM of 3400 and 765 $765 = 3^2 \times 5 \times 17$ $3400 = 2^3 \times 5^2 \times 17$ $LCM = 2^3 \times 3^2 \times 5^2 \times 17$ $= 30600$ $765n = 30600$ $n = 40$	M1 A1	
16(a)	Perimeter $= (p - \frac{3}{4}q) + (q + 2) + (2p - 3q) + (\frac{2}{3}q + 2) + 1.6$ $= p + 2p - \frac{3}{4}q + q - 3q + \frac{2}{3}q + 2 + 2 + 1.6$ $= (3p - \frac{25}{12}q + 5.6)\text{m}$	M1 A1	
16(bi)	y grams cost 89 cents 1 gram cost $\frac{89}{y}$ cents 100 gram cost $\frac{89}{y} \times 100 = \frac{8900}{y}$ cents The cost is $\frac{8900}{y}$ cents.	B1	
16(bii)	89 cents represent y grams 1 cent represents $\frac{y}{89}$ grams 4450 cents represent $\frac{y}{89} \times 4450 = 50y$ grams $50y$ grams could be bought.	M1 A1	
17(a)	$12h - \frac{1}{4}k + h - 8k$ $= 13h - \frac{33}{4}k$	B1	

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17(b)	$\frac{2}{3}x^2+(-\frac{x}{2})^2-\frac{4}{5}x^2$ $=\frac{2}{3}x^2+\frac{x^2}{4}-\frac{4}{5}x^2$ $=\frac{7}{60}x^2$	M1 A1	
17(c)	$3d+2[3a-(12a-8d)]$ $=3d+2[3a-12a+8d]$ $=3d+2[-9a+8d]$ $=3d-18a+16d$ $=19d-18a$	M1 A1	
18(a)	$\frac{5}{6x}=2$ $12x=5$ $x=\frac{5}{12}$	B1	
18(b)	$5p-20=31-3p$ $5p+3p=31+20$ $8p=51$ $p=\frac{51}{8}$ $p=6\frac{3}{8}$ or 6.375	B1	
18(c)	$\frac{12}{3k+1}=-\frac{3}{2k}$ $12(2k)=-3(3k+1)$ $24k=-9k-3$ $24k+9k=-3$ $33k=-3$ $k=-\frac{3}{33}$ $k=-\frac{1}{11}$	M1 M1 A1	

- End of Marking Scheme -

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Solutions for MYE 2012 (1 Express)

1. (a) $10 = 2\times5$, $14 = 2\times7$ and $16 = 2^4$ ---- [M1, o.e.]
LCM = 560 ---- [M1]
Time = 7 am + 560 min
= 4.20 pm ---- [A1]

(b) Bus A. ---- [B1]

(c) 4.20pm + (16×3)min ---- [M1]
= 5.08 pm ---- [A1]

2. (a) He reached Robert's house at 12.35 pm. ----- [B1]

(b) speed $= \dfrac{10}{42/60}$ ----- [M1]

≈ 14.3 km/h ----- [A1]

(c) Time $= \dfrac{10}{15}$h ----- [M1]

= 40 min ----- [M1]

Time in supermarket = $40-25-10$

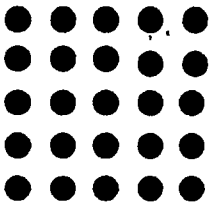
= 5min ----- [A1]

3. (a) (i) no. of hours Pearlyn spent = $x-4$ ---- [B1]
(ii) no. of hours Queenie spent = $2(x-4)$ ---- [B1]

(b) (i) $x+x-4+2(x-4)=16$ ----- [M1]
$x=7$ ----- [A1]
(ii) 7 hours ---- [B1]
(iii) 9.8 hr ---- [B1]

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4. (a) Diagram 4



----- [B1]

(b) $p = 9$ ----- [B1]

$q = 8$ ----- [B1]

(c) number of dots $= (n+1)^2$ ----- [B1]

No. of dots in diagram 100 = 10201 ----- [B1]

(d) I do not agree because 250 is not a perfect square. ----- [B1, o.e.]

5. (a) $x = 50^\circ$ ----[B1]

$y = 180^\circ - 2(50^\circ)$

$= 80^\circ$ ----[B1]

(b) (i) $\angle BEC = 20^\circ$ ----[B1]

(ii) $\angle AEB = 40^\circ$ ----[B1]

(iii) $\angle EBC = 40^\circ + 45^\circ$ ----[M1]

$= 85^\circ$ ----[A1]

6 (a) total cost $= \$0.50 \times 600$

$= \$300$ ----- [B1]

(b) (i) Total money from sale

$= \$0.70 \times 480 + \$0.50 \times 90 + \$0.50 \times 0.8 \times 30$ ----- [M1, any 2 set]

$= \$393$ ----- [M1]

Since the total money from **sale is more than the total cost, a profit is made through the sale.**

Profit = \$93 ----- [A1]

(ii) Percentage of profit $= \dfrac{\$93}{\$300} \times 100$

$= 31\%$ ----- [B1]

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(c) GST charged $= \$\left(\frac{53.50}{107}\times 7\right)$ ----- [M1]

$= \$3.50$ ----- [A1]

7. (a) weight of flour used to make bread $= 7\frac{3}{8}\times\frac{1}{3}$

$= 2\frac{11}{24}$ kg (2.46kg or 2460g, o.e.) ---- [B1]

(b) weight of flour used to make cupcakes $= \left(7\frac{3}{8}-2\frac{11}{24}\right)\times\frac{3}{4}$ ----- [M1]

$= 3\frac{11}{16}$ kg

≈ 3.69 kg ----- [A1]

(c) $2\frac{11}{24}:1\frac{11}{48}:3\frac{11}{16}$

$\frac{118}{48}:\frac{59}{48}:\frac{177}{48}$ ----- [M1]

$118:59:177$

$2:1:3$

$x=2$

$y=1$

$z=3$ ----- [A1]

(d) Fraction $= \dfrac{1.5+2\frac{11}{24}}{7\frac{3}{8}+1.5}$ ----- [M1]

$= \dfrac{95}{213}$ ----- [A1]

8 (a) (i) $xy-xz=x(y-z)$ ---- [B1]

(ii) $59\times 7138-49\times 7138=7138(59-49)$ ---- [M1]

$=71380$ ---- [A1]

(b) (i) $F=28.50(5)+12(3)$ ---- [M1]

$F=\$178.50$ ---- [A1]

(ii) the coefficient of x represents the admission fee for per adult
the coefficient of y represents the admission fee for per child

(iii) 3

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8. (a) (i) height of water $= \frac{7}{9} \times 18$

$= 14$ cm ---- [B1]

(ii) Vol. of water in tank $= 45 \times 16 \times 14$

$= 10080 \text{ cm}^3$ ---- [B1]

(iii) Vol. of water $= 45 \times 16 \times 4$

$= 2880 \text{ cm}^3$ ---- [B1]

(iv) no. of cups $= (10080 + 2880) \div 600$ ---- [M1]

$= 21.6$

≈ 21 ---- [A1]

(b) (i) 5 ---- [B1]

(ii) average amount $= \frac{30 \times 6 + 50 \times 8 + 70 \times 5 + 500}{20}$ ---- [M1]

$= \$71.50$ ---- [A1]

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