Broadrick
Secondary School
61 Dakota Crescent S399935.
Tel:63445025

Marks	
	50

MATHEMATICS (PAPER 1)
SECONDARY ONE EXPRESS
MID-YEAR EXAMINATION 2010
1 HOUR

Name : _____ ( )

Class : 1A_____

Date : 12th October 2010

Time : 08 00 – 09 00

INSTRUCTIONS TO CANDIDATES

Answer **all** questions.

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

If working is needed for any question, it must be shown in the space below that question.

Omission of essential working will result in loss of marks.

Unless the question requires the answer in terms of π, the calculator value of π or π = 3.142 should be used.

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.

SCIENTIFIC CALCULATORS ARE ALLOWED IN THIS PAPER.

*This paper consists of **11** printed pages including this cover page.*

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Answer **all** the questions.

1 **(a)** Find the lowest common multiple of 18, 15 and 42.

(b) Express 0.0012345, giving your answer correct to

(i) 4 decimal places,

(ii) 3 significant figures.

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

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

(ii) ..... [1]

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2 Rearrange the following numbers in ascending order.

$$-3.33 \ , \ 3\frac{1}{3} \ , \ -3.\dot{3} \ , \ -3 \ , \ 3.33333$$

Answer ..... [1]

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3 Represent the numbers π, $\sqrt{25}$, $\sqrt[3]{-125}$, $\frac{22}{7}$ on a number line. [2]

4 Bus A reaches the bus stop every 25 minutes while Bus B reaches the bus stop every 40 minutes. The two buses reach the bus stop together at 6 a.m.. When will they next reach the school bus stop together again? Give your answer in 12-hour clock notation.

Answer ..... [3]

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5 Estimate the value of

$$\sqrt{105} \div \sqrt[3]{505} + (15.0375 \times 0.251)$$

leaving your answer correct to 1 significant figure.

Answer ..... [3]

---

6 **(a)** Solve the inequality $\frac{3}{5}y \leq 567.25$.

(b) **Hence** state the greatest possible integer value of y.

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

(b) ..... [1]

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7 **(a)** Factorise $24ax - 56ay - 3bx + 7by$.

(b) **(i)** Light takes 2.5 seconds to travel a distance of 750 000 km.
Calculate the speed of light.

(ii) Light takes 0.6 seconds to travel from Mars to Earth.
Calculate the distance, in kilometres, from Mars to Earth.

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

(b) (i) ..... km/s [1]

(ii) ..... km [1]

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8 Given that $p = -3$ and $q = 4$, find the value of

(a) $\dfrac{p^2 - q}{q^3 - (-4)}$,

(b) $3p - 5(-q^2)$.

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

(b) ..... [1]

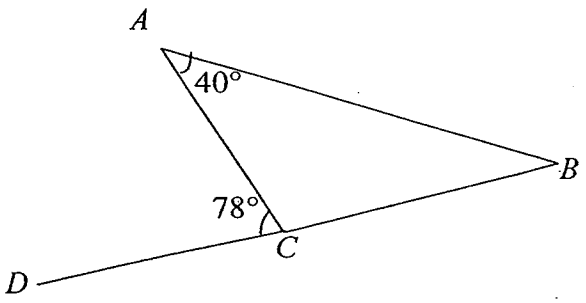
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9 A regular polygon has n sides. The size of each interior angle is 11 times the size of each exterior angle. Find n.

Answer $n =$ ..... [3]

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10 Find $\angle ABC$ and $\angle ACB$, stating all geometric properties and reasons.



Answer $\angle ABC =$ .....° [2]

$\angle ACB =$ .....° [2]

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11 Solve

(a) $3x = -16$,

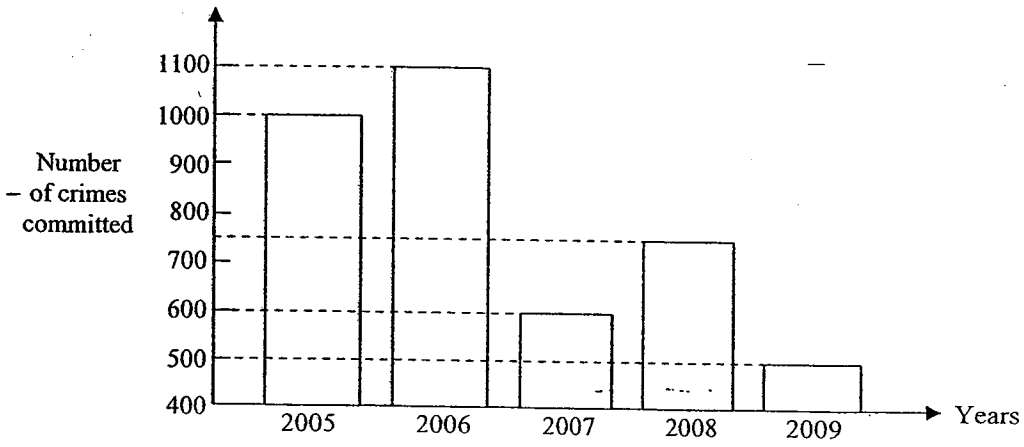
(b) $\frac{3}{4}y - 5 = 0.5y$.

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

(b) $y =$ ..... [2]

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12 An article in a newspaper reported that the number of crimes has been reduced over the last five years from 2005 to 2009. The article contained the bar chart shown below.



(a) Calculate the total number of crimes committed from 2005 to 2009.

(b) State the year that has twice the number of crimes committed compared to 2009.

(c) Express the number of crimes committed in 2006 as a percentage of the total number of crimes committed over the last five years.

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

(b) ..... [1]

(c) ..... % [2]

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13 The marked price of a printer before a 20% discount is $200.

Calculate

(a) the selling price during the sale.

(b) the amount of discount given.

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

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

---

14 Mrs Tan baked 50 chicken pies. After her children ate 20% of the pies, she gave away 25% of the remaining pies to her neighbour.

(a) How many pies did Mrs Tan give her neighbour?

(b) Express the remaining number of pies as a percentage of the number of pies her children ate.

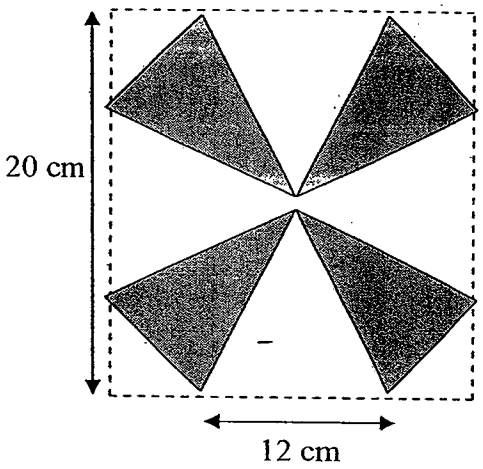
Answer *(a)* ..... pies [2]

(b) ..... % [2]

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15 The figure is made up of 4 identical isosceles triangles in a square.

Calculate the area of the shaded part.



Answer ..... cm^2 [4]

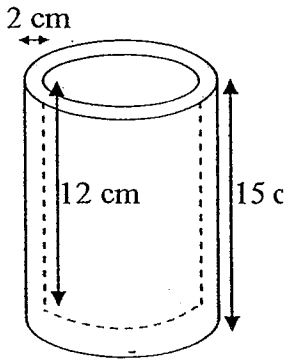
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16 The figure shows an open metal cylindrical container. The external height of the container is 15 cm and the internal depth of the container is 12 cm. The thickness of the container is 2 cm. The container can hold 700 cm^3 of liquid.

Find

(a) the internal radius of the container,

(b) the volume of metal required to make the container.

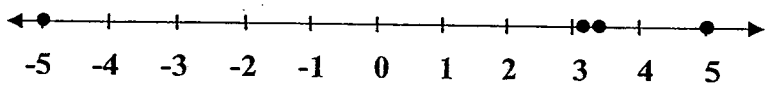


Answer *(a)* ..... cm [2]

(b) ..... cm^3 [2]

~ End of Paper 1 ~

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Question	Answer
1a	630
1bi	0.0012
1bii	0.00123
2	$-3.\dot{3}, -3.33, -3, 3.33333, 3\frac{1}{3}$
3	$\sqrt[3]{-125}$ $\pi\ \frac{22}{7}$ $\sqrt{25}$ 
4	9.20 a.m.
5	5
6a	$y \le 945\frac{5}{12}$ or 945
6b	945
7a	$(3x-7y)(8a-b)$
7bi	300 000
7bii	180 000
8a	$\frac{5}{68}$ or 0.0735
8b	71
9	24
10	38 ; 102
11a	$-5\frac{1}{3}$ or -5.33
11b	20
12a	3950
12b	2005
12c	27.8 or $27\frac{67}{79}$
13a	160
13b	40
14a	10

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14b	300
15	128
16a	4.31
16b	1180

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Marks	
	50

MATHEMATICS (PAPER 2)
SECONDARY ONE EXPRESS
MID-YEAR EXAMINATION 2010
1 HOUR 30 MINUTES

Name : _____ ( )

Class : 1A_____

Date : 14th October 2010

Time : 08 00 – 09 30

INSTRUCTIONS TO CANDIDATES

Answer **all** questions.

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

If working is needed for any question, it must be shown in the space below that question.

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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.

SCIENTIFIC CALCULATORS ARE ALLOWED IN THIS PAPER.

*This paper consists of **8** printed pages including this cover page.*

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Answer **all** the questions.

1 **(a)** Showing all necessary workings clearly, find the values of the following, without the use of a calculator.

(i) $\left[-\frac{1}{5}-\left(-\frac{1}{6}\right)\right]\div\left[\frac{1}{3}+\left(-\frac{1}{4}\right)\right]$,

(ii) $(-6)^3\div(-12)+[(-8)-(-3)]^2\times(-2)$.

(b) Write the next two terms of the following sequence.

(i) $-1, 8, -27, 64, \ldots\ldots$

(ii) $\frac{1}{2}, \frac{2}{3}, \frac{3}{4}, \frac{4}{5}, \ldots\ldots$

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

(ii) ..... [3]

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

(ii) ..... , ... [1]

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2 **(a)** Simplify $\frac{3}{4}b+(-3)-\left(-\frac{2}{3}b\right)^2-\left[\frac{3}{4}-\left(-\frac{b}{2}\right)^2\right]$.

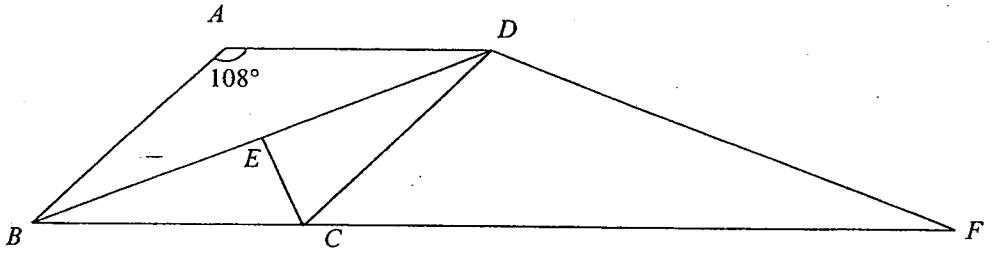
(b) The admission fee to a theme park for an adult is \$80. The admission fee for a child is $\frac{7}{16}$ that of the adult. Write down an expression for the total admission fee to the theme park, for x adults and y children.

Answer *(a)* ..... [4]

(b) ..... [2]

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3 In the diagram below, $ABCD$ is a rhombus, E is the midpoint of BD and $BD = DF$.



Stating clearly all geometric reasons and properties, calculate

(a) $\angle DCF$,

(b) $\angle DBC$,

(c) $\angle CED$,

(d) $\angle DFC$.

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

(b) ..... [2]

(c) ..... [1]

(d) ..... [1]

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4 **Answer the whole of this question in the space provided below.**

(a) Using your ruler, compasses, protractor and set squares, construct a polygon $ABCD$ such that $AB = 8$ cm, $BC = 5.5$ cm and $\angle ABC = 115°$. In this polygon, CD is parallel to AB and AD is parallel to BC. [3]

(b) Name the polygon $ABCD$.

(c) E is the midpoint of AB. Mark E on your drawing and measure the length CE.

(d) Measure and write down the value of $\angle AEC$.

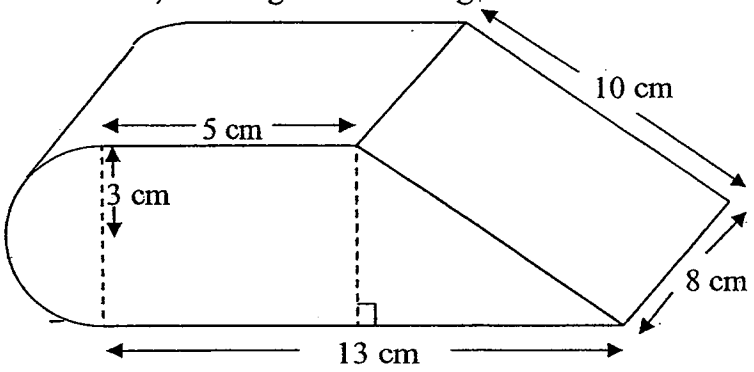
Answer *(b)* ..... [1]

(c) ..... [2]

(d) ..... [1]

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5 The diagram below shows a composite prism. Its base area is made up of a semicircle of radius 3 cm, a rectangle and a triangle.



Calculate the

(a) cross-sectional area of the prism,

(b) perimeter of the cross-sectional area of the prism,

(c) volume of the prism,

(d) total surface area of the prism.

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

(b) ..... [2]

(c) ..... [1]

(d) ..... [2]

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6 Mrs Tan has some money to buy fruits. She can buy x oranges at a price of 3 for \$1.00 and she would be left with \$0.80. Alternatively, she can buy $(x+9)$ apples at \$0.20 each and she would be left with \$0.60.

(a) Write down an expression in terms of x for

(i) the amount of money Mrs Tan spent buying oranges in terms of x,

(ii) the amount of money Mrs Tan spent buying apples in terms of x.

(b) **Hence** form an algebraic equation in terms of x and solve for the value of x.

(c) How much money does Mrs Tan have for buying fruits?

(d) Now Mrs Tan decides to buy 6 oranges and some grapes with her money instead. Given that 1 kg of grapes cost \$5.60, calculate, **using inequalities**, the maximum amount of grapes Mrs Tan can buy.

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

(ii) ..... [1]

(b) ..... [2]

(c) ..... [2]

(d) ..... [3]

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

The points $A(2, 4)$, $B(3, 5)$ and $C(5, 7)$ lie on line L.

(a) Using a scale of 2 cm to represent 1 unit on both axes, plot the points A, B and C. Hence, draw the graph of line L for $0 \leq x \leq 5$. [3]

(b) Does the point (3, 4.5) lie on line L? [1]

(c) State the coordinates of the point where line L cut the y-axis. [1]

(d) Calculate the gradient of line L. [2]

~ End of Paper 2 ~

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Question	Answer
1ai	$-\frac{2}{5}$ or -0.4
1aii	-32
1bi	-125 , 216
1bii	$\frac{5}{6}, \frac{6}{7}$
2a	$-\frac{7}{36}b^2+\frac{3}{4}b-3\frac{3}{4}$ or $\frac{-7b^2+27b-135}{36}$
2b	$\$\ (80x+35y)$
3a	72°
3b	36°
3c	90°
3d	36°
4a	Parallelogram
4c	8.1 cm ±0.1 cm
4d	142° ± 3°
5a	68.1 cm^2
5b	37.4 cm
5c	545 cm^3
5d	436 cm^2
6ai	$\$\left(\frac{x}{3}\right)$
6aii	$\$\ (0.2x+1.8)$
6b	12
6c	$ 4.80
6d	0.5 kg
7b	No.
7c	(0 , 2)
7d	1

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