Class	Candidate Name	Register Number

FIRST TOA PAYOH SECONDARY SCHOOL

END-OF-YEAR EXAMINATION 2010

Secondary One Express

Mathematics
Paper 1

12 October 2010

1 hour

Additional Materials: Nil

READ THESE INSTRUCTIONS FIRST

Write your class, name and register number in the spaces at the top of this page.

Answer **all** questions.

Write your answers in the spaces provided on the question paper.

If working is needed for any questions, show it in the space below that question.

Omission of essential working will result in loss of marks.

Use only **black** or **dark blue** ink ball pen.

Correction fluid or tape must not be used in this paper.

ELECTRONIC CALCULATORS MUST NOT BE USED IN THIS PAPER.

INFORMATION FOR CANDIDATES

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

The total marks for this paper is 50.

You should not spend too much time on any one question.

50

This paper consists of 8 printed pages.

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1 (a) Express $\frac{13}{40}$ as a percentage.

(b) A rope is cut into two pieces in the ratio 3 : 2.
The longer piece is 9.6 m long.
Find the length of the shorter piece.

Answer (a) _____ [1]

(b) _____ m [2]

---

2 On four occasions, a bus takes the following times to complete a journey.

$1\frac{2}{3}$ hours, 1.7 hours, 1 hour 39 minutes, $1\frac{3}{4}$ hours.

By first expressing these times in minutes, list them in ascending order, starting with the smallest.

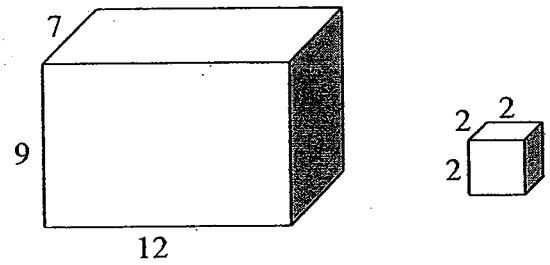
Answer _____ minutes < _____ minutes < _____ minutes < _____ minutes [3]

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3 A rectangular block of wood has dimensions 12 cm by 9 cm by 7 cm. It is cut up into children's bricks. Each brick is a cube of side 2 cm.

(a) Find the largest number of bricks that can be cut from the block.

(b) Find the volume of wood that is left.



Answer (a) _____ bricks [2]

(b) _____ cm^3 [2]

---

4 Andy has $2x$ books.
Bill has 4 more books than Andy.
Carol has half as many books as Bill.

(a) Write down an expression, in terms of x, for the number of books that Carol has.

(b) The total number of books is 121.
Find the number of books that Bill has.

Answer (a) _____ books [2]

(b) _____ books [2]

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5 Solve the equations.

(a) $3x-8(x-3)=-6$,

(b) $\frac{3y-1}{5}=\frac{y-1}{3}$.

Answer (a) $x=$ _____ [3]

(b) $y=$ _____ [3]

---

6 Find the value of

(a) $(-9)^2+54\div(-3)$,

(b) $\frac{4}{5}-1\frac{3}{5}\div 2\frac{1}{3}$,

(c) $\sqrt{0.0081}$.

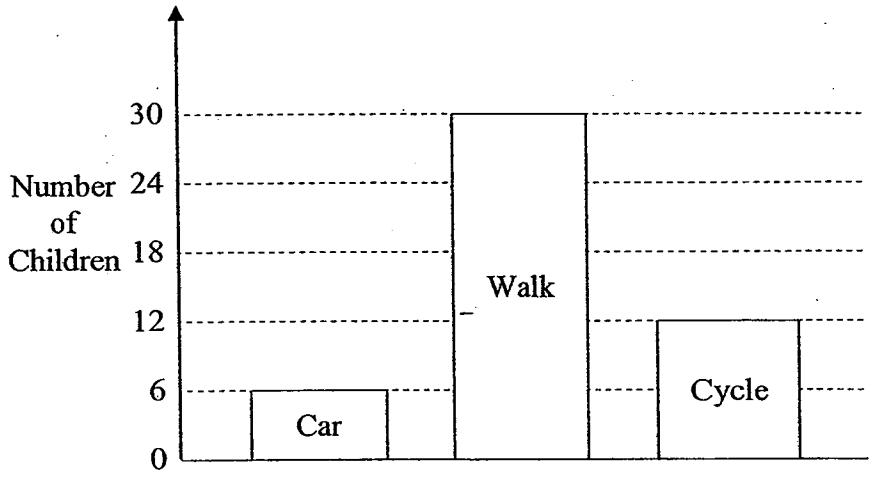
Answer (a) _____ [2]

(b) _____ [2]

(c) _____ [1]

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7 In a survey, 48 children were asked how they travelled to school.
The results of the survey are shown in the bar chart.



(a) Express the total number of children who walked or cycled as a fraction of the total number of children.
Give your answer in its lowest terms.

(b) The same information is to be shown in a pie chart.
Find the angle which represents the children who travelled by car.

(c) Calculate the percentage of children who walked to school.

Answer (a) _____ [2]

(b) _____ ° [2]

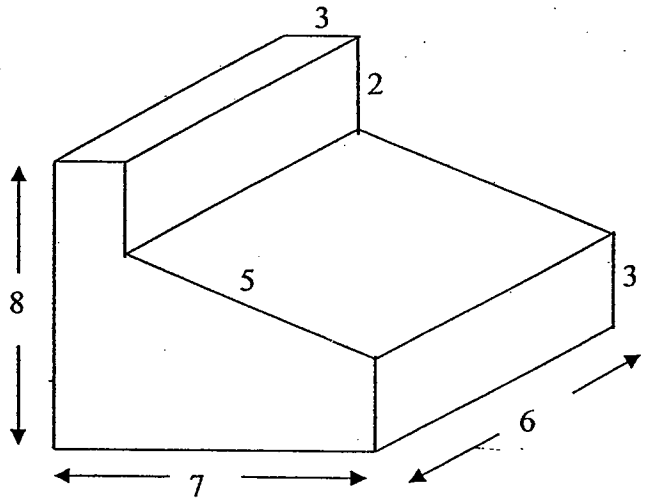
(c) _____ % [2]

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8 In the figure, all dimensions are given in cm. Calculate

(a) the total surface area,

(b) the volume of the solid.



Answer (a) _____ cm^2 [4]

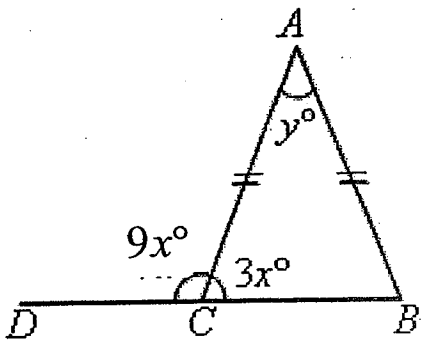
(b) _____ cm^3 [2]

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9 Given that $AB = AC$, $\angle ACD = 9x°$, $\angle BCA = 3x°$ and $\angle BAC = y°$, calculate the value of

(a) x,

(b) y.



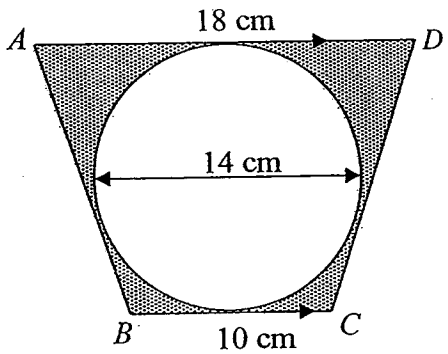
Answer (a) $x =$ _____ [2]

(b) $y =$ _____ [2]

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10 A circle with diameter 14 cm is inscribed in a trapezium $ABCD$.

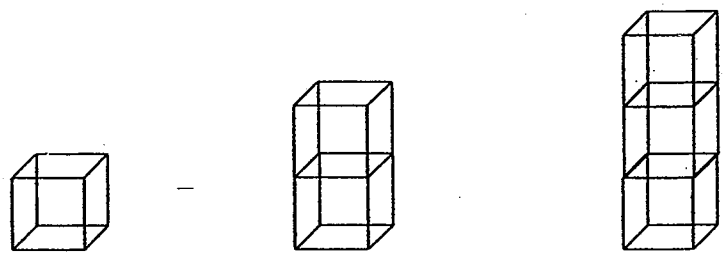
Take π to be $\frac{22}{7}$, Calculate the area of the shaded region in the given figure.



Answer _____ cm^2 [4]

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11 Each of the shapes represents a 3-dimensional structure formed by joining identical sticks.



1st shape 2nd shape 3rd shape

(a) Write down the number of sticks required to form each shape.

Answer

Order of shapes	Number of sticks
1st shape	
2nd shape	
3rd shape	

[1]

(b) What is the number of sticks required for the 4^{th} shape?

(c) How may sticks will be required to form a shape with 20 cubes?

(d) Find a rule for obtaining the number of sticks for the n^{th} shape.

Answer (b) _____ sticks [1]

(c) _____ sticks [1]

(d) _____ [2]

~~~~~End of Paper~~~~~

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END-OF-YEAR EXAMINATION 2010
Secondary One Express

MATHEMATICS PAPER 1 (Marking Scheme)

Question	Marking Point	Mark Awarded		Remarks
1(a)	32.5%	B1		
1(b)	$9.6\text{ m}\times\frac{2}{5}$	M1	3	
	3.84 m	A1		
2	$1\frac{2}{3}$ hours = 100 minutes 1.7 hours = 142 minutes 1 hour 39 minutes = 99 minutes $1\frac{3}{4}$ hours = 145 minutes	B2	3	
	99 min < 100 min < 142 min < 145 min	B1		
3(a)	3 layers, 6 columns and 3 rows	M1		
	$4\times6\times3=72$ bricks	A1	4	
3(b)	$7\times9\times12-72\times8$	M1		
	180 cm^3	A1		
4(a)	Bill has $(2x+4)$ books	B1		
	Carol has $(x+2)$ books	B1		
4(b)	$2x+2x+4+x+2=121$	M1	4	
	$5x=115$			
	$x=23$			
	Bill has 50 books	B1		
5(a)	$3x-8x+3=-6$	M1		
	$-5x=-9$	M1		
	$x=1\frac{4}{5}$	A1	6	
5(b)	$3(3y-1)=5(y-1)$	M1		
	$9y-3=5y-5$			
	$4y=-2$	M1		
	$y=-\frac{1}{2}$	A1		
6(a)	$81+(-18)$	B1		
	63	A1		
6(b)	$\frac{4}{5}-\frac{24}{35}$	B1	5	
	$\frac{4}{35}$	A2		
6(c)	0.09	B1		

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Question	Marking Point	Mark Awarded		Remarks
7(a)	$\frac{42}{48}$	B1		
	$\frac{7}{8}$	A1	6	
7(b)	$\frac{6}{48}\times 360°$	M1		
	$45°$	A1		
7(c)	$\frac{30}{48}\times 100\%$	M1		
	62.5%	A1		
		B1		
8(a)	Area of the front and back			
	$=2\times[8\times 3+\frac{1}{2}\times(3+6)\times 4]$	M2		
	$=84\ \text{cm}^2$			
	Lateral surface area			
	$=(8+7+3+5+2+3)\times 6$	B1	6	
	$=168\ \text{cm}^2$			
	Total surface area $=252\ \text{cm}^2$	A1		
8(b)	$42\ \text{cm}^2\times 6\ \text{cm}$	M1		
	$252\ \text{cm}^3$	A1		
9(a)	$9x°+3x°=180°$ (adj.$\angle$s on a line)	M1		
	$x=15$	A1		
	$3x°+3x°+y°=180°$($\angle s$ sum of a Δ)	M1	4	
	$y=90$	A1		
10	Area of trapezium $ABCD$			
	$=\frac{1}{2}\times(18+10)\times 14$	M1		
	$=196$	A1		
	Area of circle		4	
	$=\frac{22}{7}\times 7^2$			
	$=154$	A1		
	Area of the shaded region			
	$=42\ \text{cm}^2$	B1		
11(a)	12, 20, 28	B1		No mark awarded if anyone answer is incorrect
11(b)	36 sticks	B1		
11(c)	164 sticks	B1	5	acept any methods
11(d)	$12+(n-1)\times 8$	A1		
	$8n+4$	A1		
		Total	50	

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MATHEMATICS PAPER 2 (Marking Scheme)

Question	Marking Point	Mark Awarded		Remarks
1(a)	$\sqrt{0.615011952}$ or 0.784226977	B1		
	0.784 (correct to 3 decimal places)	B1		
(d)	$2\frac{1}{3}$	B2	6	
(c)	52985	B2		
2(a)	$\frac{6(6x-y)-25(x-2)}{30}$	M1		
	$\frac{36x-6y-25x+50}{30}$	M1		
	$\frac{11x-6y+50}{30}$	A1	6	
2(b)	$7x+14-5x+30=12x+60$	M1		
	$-10x=16$	M1		
	$x=-1\frac{3}{5}$	A1		
3	$\frac{2\times4-4\times(-3)+5\times2\times(-3)}{(4+2)(4-2)}$	M1		
	$-\frac{10}{12}$	A1	3	
	$-\frac{5}{6}$	A1		
4(a)	any relevant method shown	M1		
	$x=109$	A1	4	
4(b)	any relevant method shown	M1		
	$y=65$	A1		
5(a)	3360 cm^3	B1		
5(b)	$3.142\times3.5^2\times28$	M1		
	1077.71 cm^3	A1	5	
5(c)	$3360-1077.71$	M1		
	2282.3 cm^3	A1		
6(a)	120 grams	B1		
6(b)(i)	6.8 kilograms	B1		
6(b)(ii)	$6800\div17\div15$	M1		
	26 packets 10 biscuits left	A1	6	
6(b)(iii)	$(260-15\times17)\div260$	M1		
	1.92%	A1		

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Question	Marking Point	Mark Awarded		Remarks
7	$p=17$	B1		
	$q=36$	B1	4	
	$r=125$	B1		
	$s=178$	B1		
8	Correct scale and range on both axes	B1		
	Plot points P, Q and R correctly	B2		
(a)	$S(4, 4)$	B1	6	
(b)	$\frac{1}{2}$	B1		
(c)	20 sq. units	B1		
9(a)	time for travelling in car			
	$\frac{153}{54}=2\frac{5}{6}$ hours	M1		
	resting $\frac{20}{60}$ hours			
	time taken by motorcyle			
	$\frac{29}{87}=\frac{1}{3}$ hours	M1		
	Total time taken $=3\frac{1}{2}$ hours	A1	6	
9(b)	1425 or 2.25 p.m.	A1		
	182 km $\div 3\frac{1}{2}$ hours	M1		
	52 km/h	A1		
10(a)	$x=44$	B1		
10(b)	$\frac{66}{88°}\times 360°$	M2	4	
	270	A1		
		Total	**50**	

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Class	Candidate Name	Register Number

FIRST TOA PAYOH SECONDARY SCHOOL

END-OF-YEAR EXAMINATION 2010

Secondary One Express

Mathematics
Paper 2

14 October 2010

1 hour 30 min

Additional Materials: 1 Sheet of graph paper

READ THESE INSTRUCTIONS FIRST

Write your name, register number and class in the spaces at the top of this page and 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 correction fluid.

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 with the answer.

Omission of essential working will result in loss of marks.

At the end of the examination, fasten all your work securely together.

You are expected to use an electronic calculator to evaluate explicit numerical expressions

INFORMATION FOR CANDIDATES

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

The total marks for this paper is 50.

You should not spend too much time on any one question.

50

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Answer **all** questions.

1 Use a calculator to evaluate each of the following.

(a) $\sqrt{\dfrac{1.34\times5.76}{8.96+3.59}}$, giving your answer correct to 3 decimal places. [2]

(b) $\dfrac{2\frac{3}{4}+1\frac{5}{16}\times\frac{4}{9}}{2\frac{1}{7}\div1\frac{1}{2}}$, giving your answer as a fraction in its lowest terms. [2]

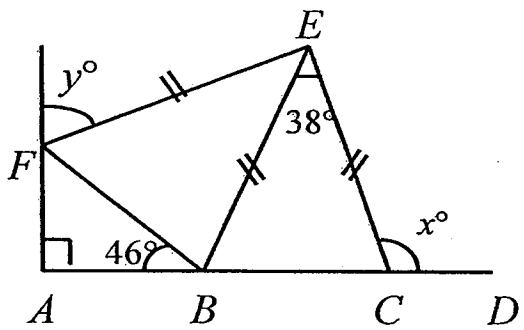
(c) $59.6^3 \div \sqrt[3]{63.79}$, correct your answer to the nearest whole number. [1]

2 (a) Simplify $\dfrac{6x-y}{5}-\dfrac{5(x-2)}{6}$. [3]

(b) Solve $7(x+2)-5(x-6)=12(x+5)$. [3]

3 If $a=2$, $b=-3$ and $c=4$, evaluate $\dfrac{2c-4b+5ab}{(c+a)(c-a)}$. [3]

4 In the diagram, $\angle BAF=90°$, $\angle ABF=46°$, $\angle BEC=38°$ and $EF=EB=EC$.



Calculate

(a) the value of x, [2]

(b) the value of y. [3]

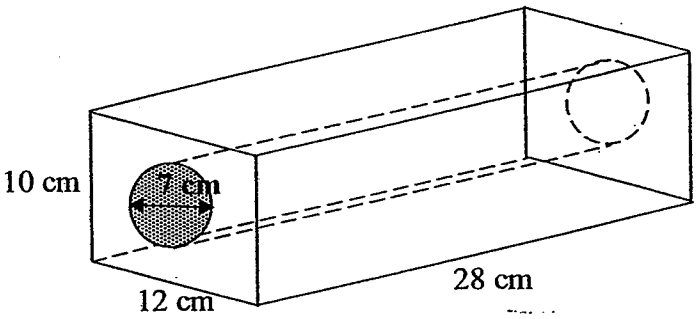
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5 The diagram below shows a rectangular block of wood with a cylindrical block of diameter 7 cm cut out from it.

(a) Find the original volume of the wooden block. [1]

(b) Find the volume of the cylindrical block cut out from it. [2]

(c) What is the volume of the remaining block of wood? [2]



6 A company manufactures biscuits.

(a) One batch of biscuits contains 300 grams of dried fruit. [1]
This consists of almonds and raisins, with masses in the ratio 2 : 3.
Find the mass of the almonds.

(b) The mixture used to make one batch of biscuits has a mass of 8 kg. The mixture loses 15% of its mass when it is cooked to make the biscuits

(i) Calculate the mass of one batch of biscuits. [1]

(ii) Each biscuit has a mass of 17 grams. [2]
One patch of biscuits is put into packets.
Each packet contains 15 biscuits.
Find how many packets can be filled, and the number of biscuits remaining.

(iii) The total mass of each packet, including packaging is 260 grams. [2]
Express the mass of the packaging as a percentage of the total mass of a packet.

7 Part of a pattern of numbers in the table below.

1	2	3	4	5
5	8	11	14	p
4	9	16	25	q
1	8	27	64	r
10	25	54	103	s

Study the patterns and write down the values of p, q, r and s. [4]

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

Take 1 cm represent 1 unit on both axes. $-4 \le x \le 9$ and $-1 \le y \le 5$, [3]
$PQRS$ is a parallelogram, Plot $P(-4, 0)$, $Q(1, 0)$ and $R(9, 4)$ on the graph

(a) Find the coordinates of S. [1]

(b) Find the gradient of line QS. [2]

(c) Calculate the area of the parallelogram $PQRS$. [1]

9 A boy cycles from home for x km at 9 km/h to the MRT station. He waited 3 minutes before catching the next MRT train. The MRT train travels at an average speed of 60 km/h. He walks for $\frac{1}{2}$ km at an average speed of 6 km/h before reaching his school. The distance from his home to the school by the above route is 12 km and the total time he spent is 28 minutes.

(a) Express, in terms of x, the time he spent cycling.. [1]

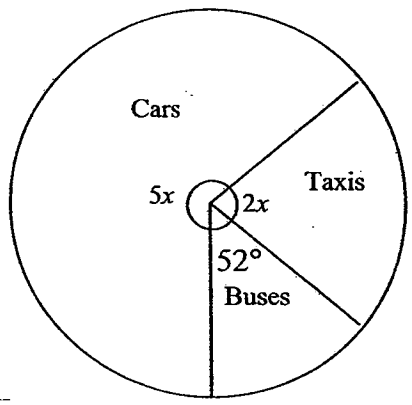
(b) The distance traveled by the MRT train. [1]

(c) Form an equation in x and solve it. [3]

10 In a survey, the number of cars, t axis and buses arriving at a traffic junction were noted and the results represented by the given pie chart.

(a) Calculate the values of x. [1]

(b) If the number of taxis was 66, calculate the total number of vehicles included in the survey. [3]



~~~~~~~End of Paper~~~~~~~

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