Class	Register No	Name

Bukit Merah Secondary School
End-of-Year Examination 2015
Secondary 1 Express

E

MATHEMATICS

1 Oct 2015

Paper 1

1 hour 15 minutes

Candidates answer on the Question Paper.

READ THESE INSTRUCTIONS FIRST

Write your class, register 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 when 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.

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 **50**.

For Examiner's Use

Calculator Model:

Setter: Mdm CHOR O.M. Christina
Vetter: Ms Stella TOH Y.M.

87

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Answer **all** the questions

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1 **(a)** Given that $48 = 2^4 \times 3$ and $954 = 2 \times 3^2 \times 53$, find the

(i) HCF of 48 and 954, and

(ii) LCM of 48 and 954.

(b) Round off 30993 to the nearest 100.

(c) Express 1.2855, correct to 3 decimal places.

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

(ii) ..... **[1]**

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

(c) ..... **[1]**

2 **(a)** Fill in the blanks with '+', '−', '×', '÷' or '=' to form a correct mathematical statement.

You may use the signs more than once.

$-8 _____ 7 = 112 _____ 168 = -56$

[1]

(b) State the irrational number(s) from the list of numbers given below.

$\sqrt[3]{8}$, $\sqrt{5}$, π^2, $\sqrt{225}$

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

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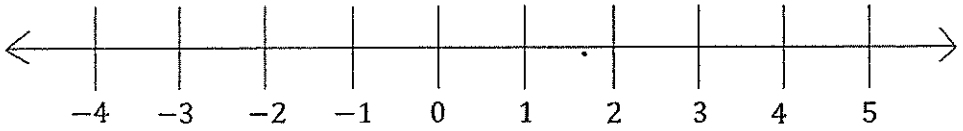
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3 **(a)** Solve the inequality $11x < 33$.

(b) Hence, represent the solution from **(a)** on the number line given below.

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

Answer *(b)*



[1]

4 **(a)** Rewrite each of the following as an algebraic expression.

(i) Subtract 3 from the product of $2ab$ and $5c$.

(ii) Divide twice the sum of 4 and $7p$ by the cube of q.

(b) Evaluate $\frac{a^2 + b}{2ab}$ when $a = -3$ and $b = 11$.

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

(ii) ..... **[1]**

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

5 **(a)** Convert 280.8 km/h to m/s.

(b) A washing machine takes 40 minutes to wash a laundry load of 2.5 kg.

Find

(i) the rate of washing in kg/min, and

(ii) the time required to wash a laundry load of 26 kg.

Answer *(a)* ..... m/s **[1]**

(b) *(i)* ..... kg/min **[1]**

(ii) ..... minutes **[1]**

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6 **(a)** Simplify $16d^2 - 8d \times 2d + 5(-3d)$.

(b) Solve the equation $-5x - 3 = 18 + 2x$.

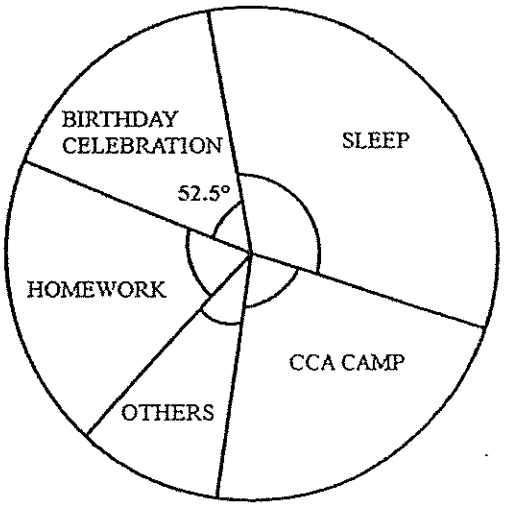
Answer *(a)* ..... [2]

(b) x = ... [2]

7 The pie chart below shows the proportion of time spent on various activities on a particular Sunday (24 hours) by Miley, a secondary one pupil.

(a) Find the number of hours she spent on the birthday celebration.

(b) 40 % of the time at the CCA camp is spent on learning survival skills.
Find the size of the angle represented by the CCA camp, if the time spent on learning survival skills is 2 hours.



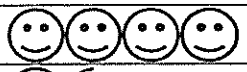
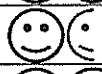
Answer *(a)* .....hours [1]

(b) ..... [2]

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8 The pictogram below shows the number of students who like different types of kendama: Digital kendama (type A), Baseball kendama (type B) and Wooden-doll kendama (type C).

Digital kendama (type A)	
Baseball kendama (type B)	
Wooden-doll kendama (type C)	
 represents 20 students	

(a) Find the ratio of the number of students who like type A to the number of students who like type C.

(b) Express the number of students who like type B as a percentage of the number of students who like type A.

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

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

9 **(a)** Given that $(3, a)$ lies on the graph of $y = -4 + 3x$, find the value of a.

(b) The graph of $y = \frac{5}{4}x + 1$ cuts the x – axis at point A.

Find the coordinates of A.

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

(b) (..... , ...) [2]

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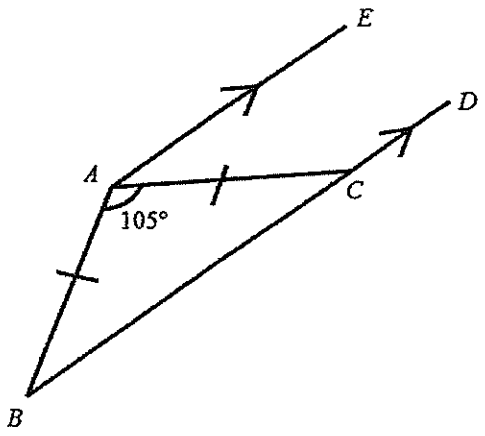
10 In the diagram below, AE and BCD are parallel lines.

$AB = AC$ and $\angle BAC = 105°$.

Find, by stating your reason(s) clearly in the space below,

(a) $\angle CAE$, and

(b) reflex $\angle ACD$.



Answer *(a)* $\angle CAE =$ .....° [2]

(b) Reflex $\angle ACD =$.....° [1]

11 **(a)** Express 2.75 years as a percentage of 15 months.

(b) Find the value of the unknown in the following expression: 215 % of x is 6.88.

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

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

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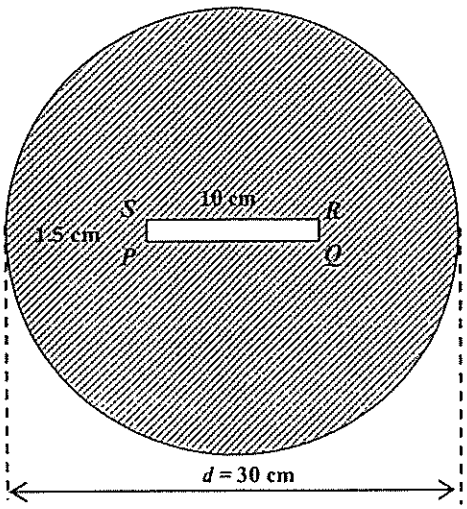
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12 **(a)** Given that the sum of two parallel sides in a trapezium is 16 m and its perpendicular height is 3 m, calculate the area of the trapezium.

(b) The diagram below shows the top surface of a cylindrical ballot box.

The top surface has a rectangular slit $PQRS$ in the centre for voters to drop their ballot papers into the box.

Given that the diameter, d, of the top surface is 30 cm, RS = 10 cm and PS = 1.5 cm, calculate the area of the shaded region in m^2.



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

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

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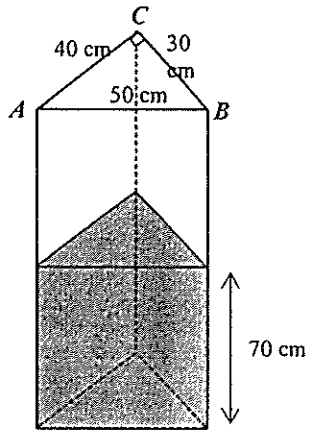
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13 The diagram below shows a triangular prism that is a designer's flower vase.
It is filled up with water to a height of 70 cm.
$AB = 50$ cm, $BC = 30$ cm and $AC = 40$ cm.

(a) Find the volume of water in the vase.

(b) If 3468 cm^3 of water is drained from the vase, find the new water level.



Answer *(a)* ..... cm^3 [2]

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

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14 Lines AB and BC have been drawn for you in the diagram below.

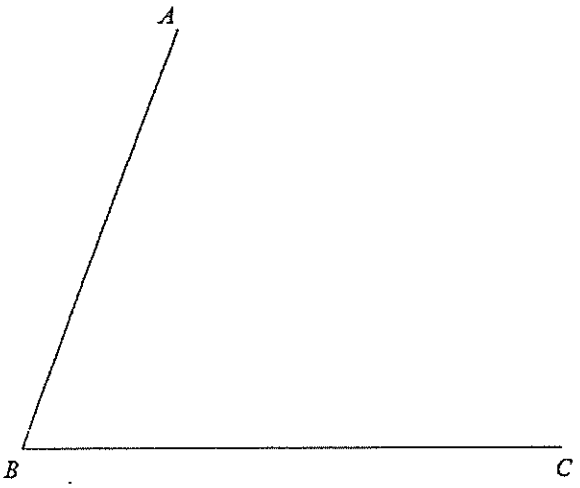
(a) Given that $AD = 4.8$ cm and $CD = 6.2$ cm, construct the quadrilateral $ABCD$. **[2]**

(b) Draw the angle bisector of $\angle ADC$. **[1]**

(c) Draw the perpendicular bisector of BC. **[1]**

(d) The bisectors from parts **(b)** and **(c)** intersect at point X.

Measure and write down the length of BX.



Answer (d) ..... cm **[1]**

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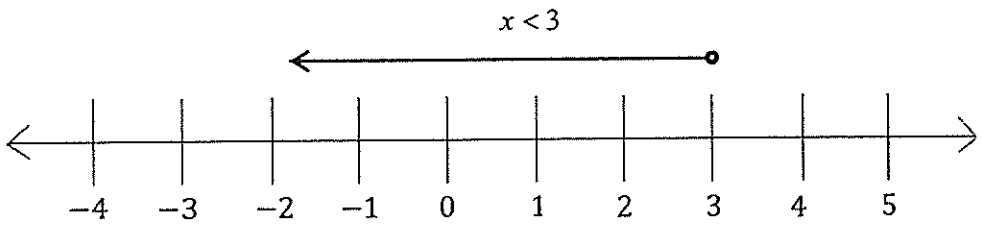
End-of-Paper 1

91

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Sec 1 Express EOY Examinations 2015 Mathematics Paper 1
Marking Scheme

Question	Solution	Mark
1(a)(i)	6	B1
1(a)(ii)	7 632	B1
1(b)	31 000	B1
1(c)	1.286	B1
2(a)	$\times$, $-$	B1
2(b)	$\sqrt{5}$, π^2	B1
3(a)	$x < 3$	B1
3(b)		B1 Ecf, only for solutions showing inequalities
4(a)(i)	$10abc - 3$	B1 Accept (2ab×5c)-3
4(a)(ii)	$\frac{2(4+7p)}{q^3}$	B1
4(b)	$-\frac{10}{33}$ or $-0.\dot{3}\dot{0}$ Reject: -0.303 (3 s. f.)	B1
5(a)	78	B1
5(b)(i)	0.0625 or $\frac{1}{16}$	B1
5(b)(ii)	416	B1
6(a)	$16d^2 - 16d^2 - 15d$	M1 for either $-16d^2$ or $-15d$
	$-15d$	A1
6(b)	$-5x - 2x = 18 + 3$ $-7x = 21$	M1 (all working must be correct)
	-3	A1
7(a)	3.5 or $3\frac{1}{2}$	M1
7(b)	$\frac{100\%}{40\%} \times 2$ hours = 5 hours $\frac{5}{24} \times 360^\circ$	M1
	75	A1
8(a)	80 : 45	M1
	16 : 9	A1

92

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8(b)	$\frac{1.5\times 20}{80}\times 100\%$	M1
	37.5 or $37\frac{1}{2}$	A1
9(a)	5	B1
9(b)	$0=\frac{5}{4}x+1$	M1
	$\left(-\frac{4}{5},0\right)$ or $(-0.8,0)$	A1
Note: For question 10(a) below, overall maximum deduction of 1 mark applies if <u>all</u> working is correct but the respective reason(s) is/are missing or wrong.		
10(a)	$\angle ACB=\frac{180^\circ-105^\circ}{2}$ (base $\angle$s of isos. Δ) $=37.5^\circ$ $\angle CAE=37.5^\circ$ (alt. $\angle$s, $AE \mathbin{//} BCD$)	M1 Marks deducted for not writing BASE $\angle$s and $AE \mathbin{//} BCD$
	37.5 or $37\frac{1}{2}$	A1
10(b)	217.5 or $217\frac{1}{2}$	B1
11(a)	$\frac{2.75\times 12}{15}\times 100\%$	M1
	220	A1
11(b)	$\frac{215}{100}x=6.88$	M1
	3.2 or $3\frac{1}{5}$	A1
12(a)	$\left(\frac{1}{2}\times 16\times 3\right)m^2$	M1
	24	A1
12(b)	$\left(\pi\times 15^2\right)cm^2-\left(1.5\times 10\right)cm^2$ $=692cm^2(3s.f.)$ or 691.85... cm^2 (-1mark for premature rounding)	M1 (for $\pi\times 15^2$) M1 (answer in cm^2)
	0.0692	A1
13(a)	$\left(\frac{1}{2}\times 30\times 40\right)cm^2\times 70cm$	M1
	42 000	A1
13(b)	$3468cm^3\div 600cm^2$ $=5.78cm$	M1
	$(70-5.78)cm$	M1
	64.22 Reject: 64.2 (3 s.f.)	A1
14	(a) – (d) answers: (marker to advise) (d) 4.2 ± 0.1 cm (marked according to student's drawing.)	B1 ×5

----- The End -----

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Class	Register No	Name

Bukit Merah Secondary School
End-of-Year Examination 2015
Secondary 1 Express

E

MATHEMATICS

8 Oct 2015

Paper 2

1 hour 30 minutes

Additional Materials: Writing Paper (4 sheets)
Graph Paper (1 sheet)

READ THESE INSTRUCTIONS FIRST

Write your class, register 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/tape.

Answer **all** questions on writing papers.
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 when 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.

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**.

Begin each question on a fresh page.

Calculator Model:

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Setter: Mdm CHOR O.M. Christina
Vetter: Ms Stella TOH Y.M.

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93

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Answer **all** the questions

1 **(a)** **(i)** The number 1071, expressed in index notation, is $1071 = 3^a \times 7 \times 17$. Find the value of a. **[2]**

(ii) Given that $8748 = 2^2 \times 3^7$, find the smallest value of k such that $8748k$ is a perfect cube. **[2]**

(b) **(i)** Without using a calculator, find the value of $8 + (-2)^3 \div 4$. **[2]**

(ii) Mei Xi thinks that a fraction cannot be expressed as a recurring decimal. Do you agree or disagree with her?
Support your answer with an example of a fraction that can or cannot be expressed as a recurring decimal. **[2]**

---

2 **(a)** In a supermarket, a 300-*ml* bottle of Shampoo *A* costs \$11.80 and a 350-*ml* bottle of Shampoo *B* costs \$13.98.
Without the use of a calculator and by using only estimation, decide which shampoo is better value for money. **[3]**

(b) A black pen costs x cents.
A pink pen costs 5 cents more than twice the cost of a black pen.

(i) Express the cost of a pink pen in terms of x. **[1]**

(ii) Express the total cost of ten black pens and two pink pens in terms of x. **[2]**

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3 **(a)** Solve the equation $\frac{2x-1}{4} + \frac{x+4}{8} = \frac{1}{2}$. **[3]**

(b) Find the greatest odd integer value of x that satisfies the inequality $-7x \geq -112$. **[2]**

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4 **(a)** If $a : b = 11 : 8$ and $b : c = 5 : 11$, calculate

(i) $a : b : c$, and [2]

(ii) $a : c$. [1]

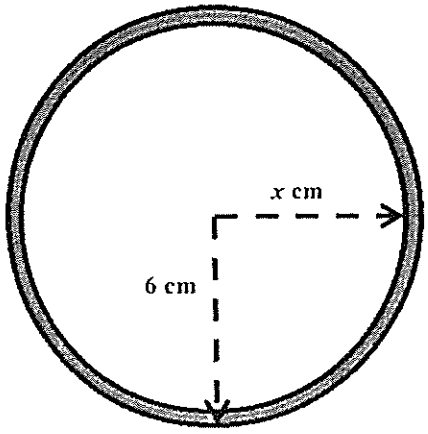
(b) Nick drove a car at a speed of 75 km/h for 15 minutes and then stopped the car for $\frac{1}{4}$ hour. He then continued to drive at 120 km/h for 10 minutes on an expressway.

Find the average speed of his entire journey in km/h. [3]

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5 The diagram below shows the cross-section of a hollow circular pipe.

The outer radius is 6 cm while the inner radius is x cm.



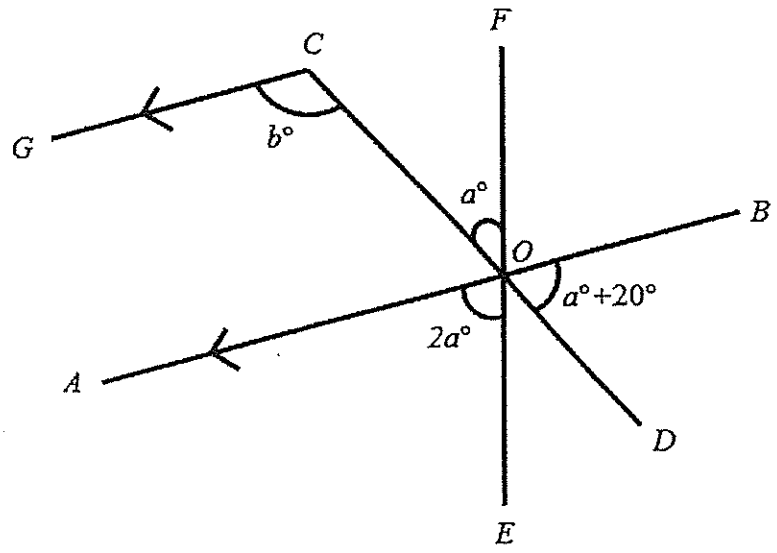
(a) Write an algebraic expression for the shaded area of the diagram in terms of π and x, and then completely factorise it. [2]

(b) Given that the shaded area of the diagram is 28 cm^2, form an algebraic equation and solve it to find the value of x. [3]

94

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6 **(a)** In the diagram below, AOB, COD and EOF are straight lines.
CG and AOB are parallel lines.



By stating your reason(s) clearly, find the values of

(i) a, and [2]

(ii) b. [2]

(b) **(i)** Find the size of an interior angle of a regular octagon. [2]

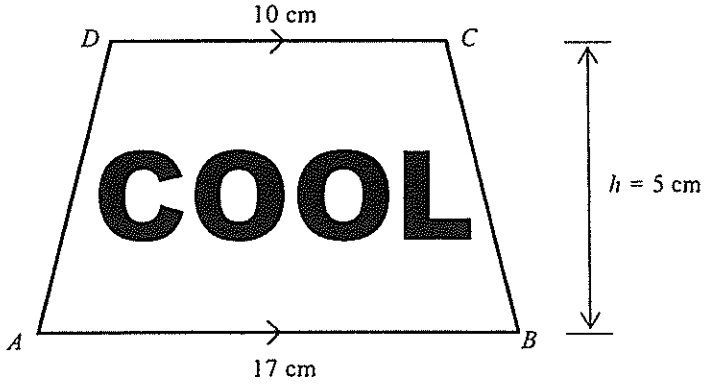
(ii) Two of the exterior angles of a n-sided polygon are 25° and 23°, and the remaining exterior angles are 24° each.
Find the value of n. [2]

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7 The diagram below shows a trapezoidal sticker $ABCD$ with 'COOL' printed on it.

The shaded area of 'COOL' is 15 cm^2.

AB = 17 cm, CD = 10 cm and the perpendicular height, h, of $ABCD$ is 5 cm.



(a) Find the area of the unshaded region, in cm^2. [2]

(b) If the shaded area is reduced by 18 %, calculate the new shaded area, in cm^2. [2]

(c) The cost of printing 300 stickers after a discount of 10 % is \$711.

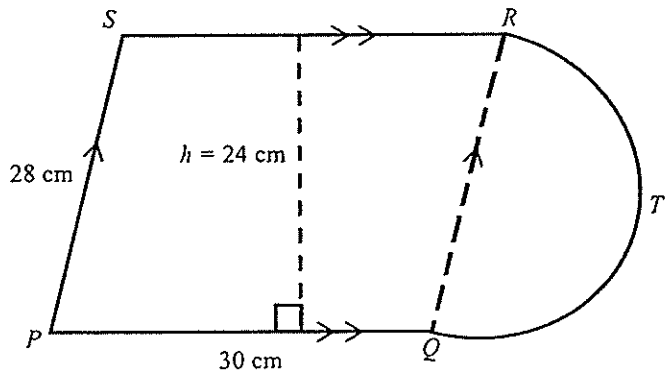
Find the cost of printing one sticker before discount, giving your answer to the nearest cent. [2]

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8 The diagram shows the base, $PQTRS$, of a metal prism.

The base is made up of a parallelogram $PQRS$ and a semicircle RTQ. $PQ = RS = 30$ cm, $PS = RQ = 28$ cm, and the height of the parallelogram, $h = 24$ cm.



Find

(a) the area of $PQTRS$, in cm^2, [3]

(b) the total surface area of the metal prism, in cm^2, given that the vertical height of the solid from its base is 50 cm, and [3]

(c) the length of one side of a cube, in cm, given that the metal prism is recast into a cube. [2]

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9 **Answer the whole of question 9 on a piece of graph paper.**

(a) Given that $y = 3x - 3$, find the values of a and b.

x	-3	1	5
$y = 3x - 3$	-12	a	b

[2]

(b) Plot the pairs of values of (x, y) from the table and draw the graph of $y = 3x - 3$ using the scale of 1 cm to 1 unit on the x – axis and 1 cm to 2 units on the y – axis. [3]

(c) Using the graph, find the value of x when $y = -6$. [1]

(d) Find the gradient of a line drawn from (3, 6) and the point of origin. [2]

End-of-Paper 2

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Sec 1 Express EOY Examinations 2015 Mathematics Paper 2
Marking Scheme

Overall deduction of maximum 1 mark applies for the entire Paper 2 if there is any missing or wrong unit in a student's solutions or answer.		
Question	**Solution**	**Mark**
1(a)(i)	$3^a = \dfrac{1071}{7 \times 17}$ Accept: • $1071 \div 7 \div 17$ • $3^2 \times 7 \times 17 = 1071$ • Prime factorisation or tree diagram of 1071	M1
	$a = 2$	A1
1(a)(ii)	$k = 2 \times 3^2$ Accept: $k = \dfrac{2^3 \times 3^9}{2^2 \times 3^7}$	M1
	$k = 18$	A1
1(b)(i)	$8 + (-2)$ or $8 - 2$	M1 Note: 1. Deduction of 1 mark for no bracket: $8 + -2$. 2. If $8 + -2$ is written first before $8 - 2$, and final answer is correct, deduction of 1 mark applies for the lack of brackets.
	$= 6$	A1
1(b)(ii)	Disagree. Reject: "Yes" or "No" single answers.	B1
	$\dfrac{1}{3} = 0.\dot{3}$ Accept: other fractions that can be expressed as a recurring decimal.	B1 Note: Examples must be well-supported by showing a recurring decimal.
2(a)	1st estimate: \$11.80 ≈ \$12, and 2nd estimate: \$13.98 ≈ \$14	M1 (show either 1st or 2nd estimate)
	50 m*l* – \$2 (Shampoo *A* and *B*) Accept: \$1 – 25 m*l* (Shampoo *A* and *B*) Or \$(14 – 12) = \$2, and Shampoo *B* (300 ml) : \$(14 – 2) = \$12 > \$11.80 (*Shampoo A*) Or Shampoo *A* (350 ml): \$(12 + 2) = \$14 > \$13.98 (Shampoo *B*) Reject if student showed only \$(14 – 12) = \$2, which is merely the difference of 1st and 2nd estimates.	M1
	Shampoo *A* Reason: \$12 - \$11.80 = \$0.20. and \$14 - \$13.98 = \$0.02	A1 96

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Note: For question 2(b)(i) and 2(b)(ii) below, overall maximum deduction of 1 mark applies if final answers are correct but no brackets are used.		
2(b)(i)	$(2x+5)$ cents Accept: $\$(2x+0.05)$	B1
2(b)(ii)	$10x+2(2x+5)$ $=10x+4x+10$ Accept: $10x+4x+0.10$ or $10x+4x+0.1$	M1 (show $10x+4x$)
	$(14x+10)$ cents Accept: $\$(14x+0.10)$ or $(14x+0.1)$	A1
3(a)	$\frac{4x-2+x+4}{8}=\frac{1}{2}$	M1 (correct fraction on LHS, after multiplying both sides by LCM or by re-writing a fraction so that both fractions have the same denominator)
	$4x-2+x+4=4$ Or $5x+2=4$ Or $5x=2$	M1 (no fractions on both sides, correct LHS and correct RHS)
	$x=\frac{2}{5}$ or 0.4	A1
Note: For question 3(b) below, overall deduction of 1 mark applies if a student did not solve the inequality as taught during Maths lessons.		
3(b)	$-7x \geq -112$ $\frac{-7x}{-7} \leq \frac{-112}{-7}$ $x \leq 16$ Accept but not preferred: $-7(15) \geq -112$ [trial and error method] Or $-7x=-112$ $\frac{-7x}{-7}=\frac{-112}{-7}$ [equation method] $x=16$	M1 (show $\frac{-7x}{-7} \leq \frac{-112}{-7}$ or $x \leq 16$)
	Greatest odd integer is 15.	A1
4(a)(i)	$a : b : c$ $=11\times5 : 8\times5 : 11\times8$	M1 (show 8×5 or 40)
	$= 55 : 40 : 88$	A1
4(a)(ii)	5 : 8	B1
4(b)	Total distance $=75km/h\times\frac{15}{60}h+120km/h\times\frac{10}{60}h$ $=38.75km$	M1 (total distance)
	Total time taken $=\left(\frac{15+10}{60}+\frac{1}{4}\right)h$ $=\frac{2}{3}h$ Accept: (15+10+15) mins = 40 mins	M1 (total time taken)

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	Average speed $= \dfrac{38.75km}{\frac{2}{3}h}$ $= 58\dfrac{1}{8} km/h$ Accept: 58.125 km/h Reject: 58.1 km/h (3 s.f.)	A1
5(a)	$\pi(6)^2 - \pi x^2$	M1 (show both $\pi(6)^2$ and πx^2)
	$= \pi(36 - x^2)$	A1
Note: For question 5(b) below, • **no marks awarded if a student did not form a correct equation in any part of the working to solve it,** • **deduction of 1 mark applies if a student wrote 3.142 or $\frac{22}{7}$ in any part of the working, and** • **deduction of 1 mark applies if there is premature approximation in any part of the working, given that the final answer in 3 s.f. is correct.**		
5(b)	$\pi(36 - x^2) = 28$	M1 (show a correct equation) Note: allow e.c.f. from previous algebraic expression obtained from **5(a)**
	$36 - x^2 = \dfrac{28}{\pi}$ $x^2 = 36 - \dfrac{28}{\pi}$ or $x^2 = 27.087...$ Accept: $36 - \dfrac{28}{\pi} = 27.087...$	M1
	$x = \sqrt{36 - \dfrac{28}{\pi}}$ $= 5.20$ (3 s.f.)	A1
Note: For question 6 below, overall maximum deduction of 1 mark applies if <u>all</u> working is correct but the respective reason(s) is/are missing or wrong.		
6(a)(i)	$\angle DOE = a^\circ$ (vert. opp. $\angle$ s) $2a^\circ + a^\circ + a^\circ + 20^\circ = 180^\circ$ (adj. $\angle$ s on a st. line) Accept: $4a^\circ + 2a^\circ + 2a^\circ + 40^\circ = 360^\circ$ ($\angle$ s at a point)	M1 (show a correct equation) Deduction of 1 mark if student writes this: $360^\circ - 40^\circ = 320^\circ$ $320^\circ \div 8a = 40^\circ$ Reason: presentation error. It should have been $a^\circ = 320^\circ \div 8 = 40^\circ$.
	$a = 40$	A1
6(a)(ii)	$b^\circ = \angle AOD$ (corr. $\angle$ s. $CG//AOB$) $= \angle AOE + \angle DOE$ $= 2 \times 40^\circ + 40^\circ$	M1 (correct last step of working) Note: 1. Students are not penalised if there is no mention of vert. opp. $\angle$ s in their working this time. 2. Allow e.c.f. from the value of a obtained from **6(a)(ii)** 3. Accept other workings that are supported by (alt. $\angle$ s. $CG//AOB$)

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		or (int. $\angle$ s, $CG//AOB$). Deduction of 1 mark if student writes this: $60^\circ - 180^\circ = 120^\circ$ $b = 120$ Reason: presentation error. It should have been $180^\circ - 60^\circ = 120^\circ$.
	$b = 120$	A1
6(b)(i)	$\frac{(8-2)\times 180^\circ}{8}$ Accept: $360^\circ \div 8 = 45^\circ$ $180^\circ - 45^\circ$	M1 (formula to find sum of interior angles) Note: Deduction of 1 mark if student writes $8 - 2 \times 180^\circ$ without any use of brackets, given that the student obtains the correct final answer. This is an unacceptable presentation error.
	135°	A1
6(b)(ii)	$25^\circ + 23^\circ + (n-2) \times 24^\circ = 360^\circ$ $24n^\circ = 360^\circ$ $n = 15$	M1 (accept other methods)
	Number of sides = 15	A1
7(a)	Total area $= \left[\frac{1}{2}(10+17)(5)\right] cm^2$	M1 (formula to find area of trapezium) Note: Deduction of 1 mark if student writes $\frac{1}{2} \times 10 + 17 \times 5$ without any use of brackets. This is an unacceptable presentation error.
	Unshaded area $= \left[\frac{1}{2}(10+17)(5) - 15\right] cm^2$ $= 52.5 cm^2$	A1
7(b)	$\frac{82}{100} \times 15 cm^2$ Or $0.82 \times 15 cm^2$ Or $18\% - 2.7 cm^2$	M1
	$12.3 cm^2$	A1
7(c)	$90\% - \$711$ Or $90\% - \frac{\$711}{300}$ Reject: $110\% - \$711$	M1
	$100\% - \$790$ Cost per sticker $= \frac{\$790}{300}$ $= \$2.63$ (nearest cent) Accept 263 cents (nearest cent) Reject: \$2.60 or 260 cents.	A1

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Note:

1. **For whole of question 8, overall deduction of 1 mark applies if a student did not correct a final answer to 3 s.f. given that the respective final answer is correct.**
2. **For whole of question 8, overall deduction of 1 mark applies if a student wrote 3.142 or $\frac{22}{7}$ in any part of their working given that the required working is correct.**
3. **For questions 8(b) and 8(c), overall deduction of 1 mark applies if a student used 1030 cm^2 in their working, given that their final answers for 8(b) and 8(c) are correct.**

8(a)	$\left[(30\times 24)+\frac{1}{2}\pi\left(\frac{28}{2}\right)^2\right]cm^2$	M1 (show 30×24 to find the area of a paralleogram) M1 (show $\frac{1}{2}\pi\left(\frac{28}{2}\right)^2$ to find the area of a semi-circle)
	$=1027.87...cm^2$ $=1030cm^2$ (3 s.f.)	A1
8(b)	$2(1027.87...)cm^2+\left[(28+30+30+\frac{1}{2}\pi(28)\right]cm\times 50cm$	M1 (show $\frac{1}{2}\pi(28)$ to find half the circumference of a circle) M1(show 2 x base areas + perimeter of base area x height, and correct method to find the perimeter of base area) Note: Deduction of 1 mark if student writes $28+30+30+\frac{1}{2}\times\pi\times 28\times 50$ to calculate lateral surface area, without any use of brackets. This is an unacceptable presentation error.
	$=8654.8...cm^2$ $=8650cm^2$ (3 s.f.)	A1
8(c)	$\sqrt[3]{1027.87...\times 50}$ cm	M1 (show cube root of the product of base area and height)
	$=37.179...cm$ $=37.2cm$ (3 s.f.)	A1

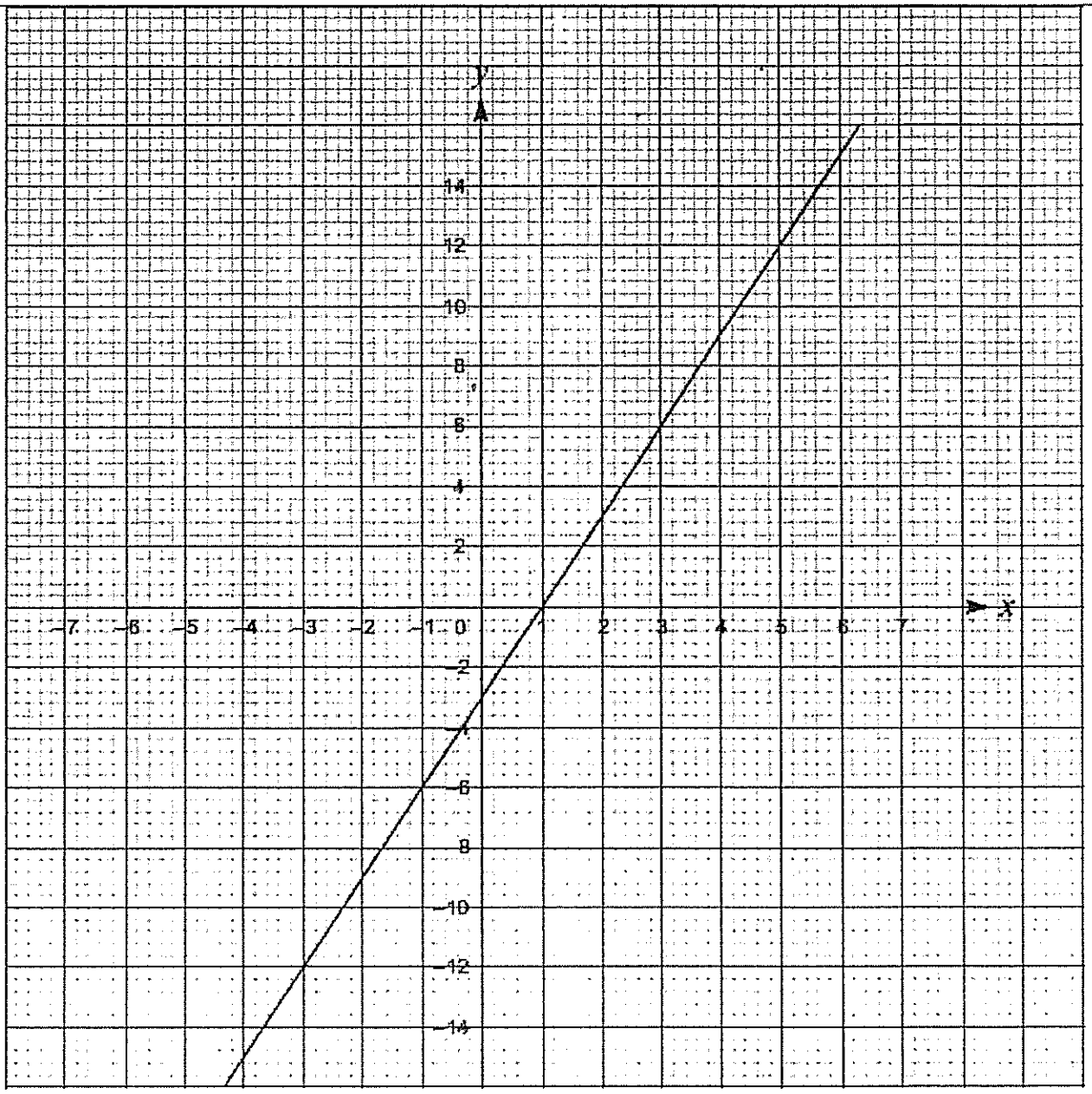
Note:
For whole of question 9, overall deduction of 1 mark applies if

1. **a student did not draw both axes on the grid line of the graph paper, and/or**
2. **a student showed negative y values above x-axis and negative x values to the right of the y-axis**

given that the student showed the correct scale i.e. 1 cm to 1 unit on the $x-$ axis and 1 cm to 2 units on the $y-$ axis.

9(a)	$a=3(1)-3=0$ $b=3(5)-3=12$	B1 B1
9(b)	1. Correct plotting of all points from the table. 2. Straight line passing through all points only if there is correct plotting of points. 3. Correct scales for both axes are drawn.	B1 B1 B1

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9(c)	Using the graph, $x = -1$ when $y = -6$	B1
9(d)	Point of origin = (0, 0) As given, the other point is (3, 6). Gradient $= \frac{6-0}{3-0}$ or $\frac{0-6}{0-3}$ $= 2$	 M1 A1

----- The End -----

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