BEATTY SECONDARY SCHOOL
END-OF-YEAREXAMINATION 2014

SUBJECT : Mathematics

PAPER :1

SETTER :MrAnthony Goh

LEVEL : Secondary 1 Express

DURATION : 1 hour 15 minutes

DATE :1 October 2014

CLASS :	NAME :	REG NO :

....

READ THESE INSTRUCTIONS FIRST

Write your name, class and index number in the spaces on the top of this page.
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.
You are expected to use a scientific calculator to evaluate explicit numerical expressions.
If the degree of accuracy is not specified in the question, and if the answer is not exact, give the answer tothree 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 number of marks for this paper is **50**.

For Examiner's Use

50

This paper consists of **12**printed pages (including this cover page)

Answer all questions.

1 **(a)** Evaluate $\dfrac{0.301299}{\sqrt[3]{13.364}+1.292}+0.071265$.

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

(b) Write the following set of numbers in ascending order.

$0.422, \dfrac{3}{7}, -0.422, 0.4\dot{2}$

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

(c) The temperature at the bottom of a mountain is 18°C. The temperature at the top of the mountain is −26°C. Find the difference between the two temperatures.

Answer (c) ....°C [1]

2 **(a)** Express 3150 as a product of its prime factors in index notation.

Answer (a) .... [1]

(b) Hence, express $\sqrt{3150\times14}$ as a product of its prime factors.

Answer (b) .... [2]

3 A football club invested $30 million in a famous footballer. A newspaper reported that the club would have to sell 674 998 tickets to recover their investment.

(a) Correct 674 998 to two significant figures.

Answer (a).. [1]

(b) Use your answer to (a) to estimate the cost of a ticket, correct to the nearest dollar.

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

4 Simplify

(a) $9x - 3(3x + 5y)$

Answer (a) .... [2]

(b) $\dfrac{2x - 5y}{2} - \dfrac{3x - 2y}{3}$

Answer (b) .... [2]

5 Samantha can type an SMS message consisting of 143 words in 2 minutes 36 seconds.

Calculate

(a) the number of words she can type in one minute,

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

(b) the time, in seconds, she uses to type one word.

Answer (b) .... seconds [2]

6 **(a)** Given that $s = \dfrac{v^2 - u^2}{2a}$, find the value of s when $v = 4$, $u = 3$ and $a = 7$.

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

(b) Factorise the following:

(i) $15xy + 10y - 40yz$

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

(ii) $3p(a - 8b) - 7q(8b - a)$

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

7   By selling a sofa for $408, a retailer suffers a loss of 4%.

Find the cost price of the sofa.

Answer $.. [2]
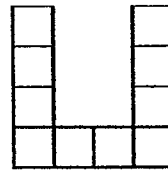
8   Study the pattern below.
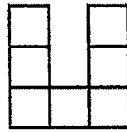
Pattern 1   Pattern 2   Pattern 3

(a)   Draw Pattern 4.   [1]

(b)   Write down an expression, in terms of n, for the number of squares in Pattern n.

Answer (b) .... [1]

(c)   There are 136 squares in Pattern N. Find the value of N.

Answer (c) $N =$ .... [1]

9 Solve

(a) $3x - 5(3 - x) = 41$

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

(b) $\dfrac{x+7}{4} = \dfrac{3x-5}{5}$

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

10 In the diagram below, *ABCD* is a rhombus. *BD* cuts *AC* at *X* and ∠*CAD* = 50°. *Y* is on*AD*and *W* is on *BC*such that *YX* = *AX* and *WXY* is a straight line.
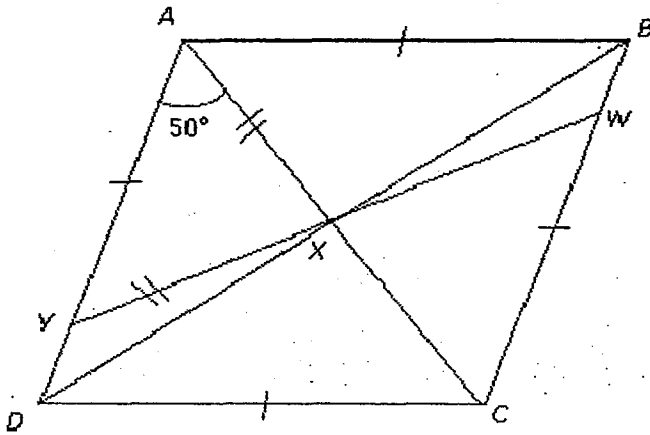
Calculate

(a) ∠*AXY*,

Answer (a) .... °[1]

(b) ∠*DXY*,

Answer (b) .... ° [1]

(c) ∠*BWY*,

Answer (c) .... ° [2]

11 The pie chart illustrates John's expenditure and savings in September.

Stationery

130°

Food

100°

Shopping

Savings
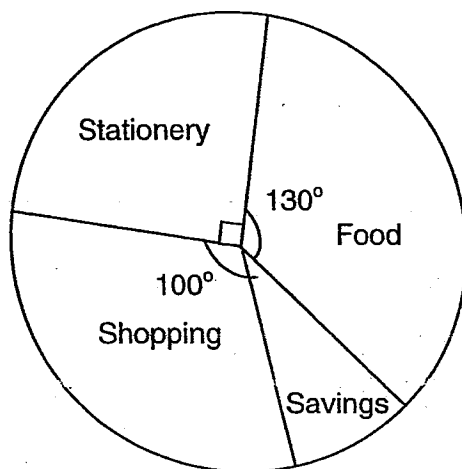
(a) What percentage of his money was spent on shopping?

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

(b) If he spent $70 on shopping, how much money did he spend in total?

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

12 The graph below shows the cost of ataxi fare for a journey up to 5kilometres.

Cost (S)

Distance (km)
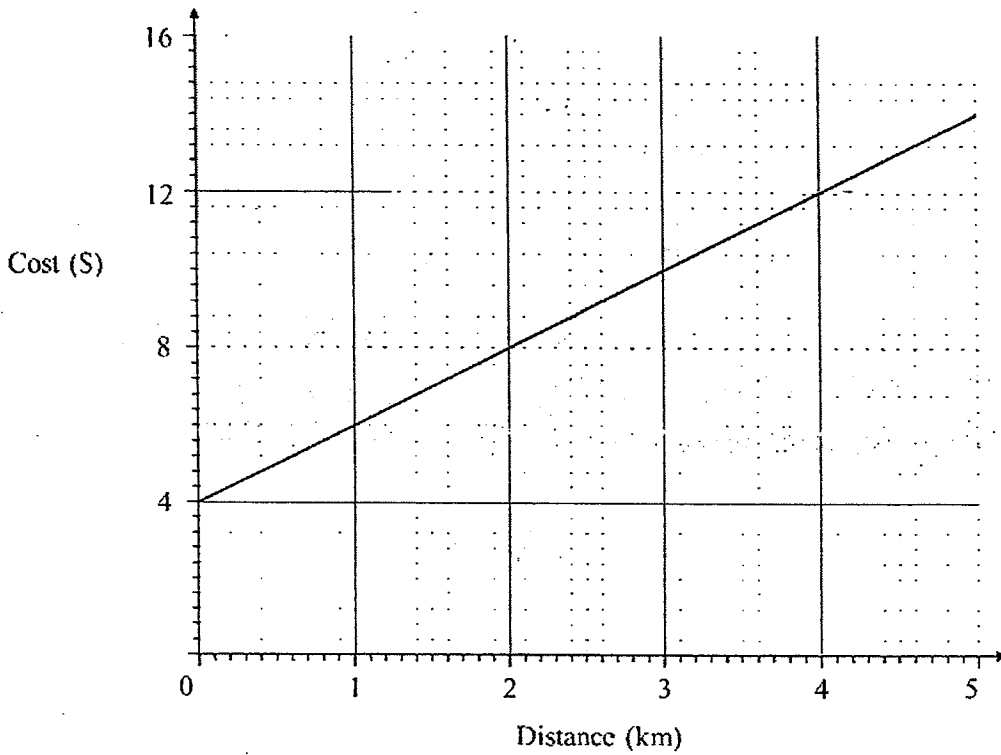
(a) What is the taxi fare for a journey of 1 km?

Answer (a)$... [1]

(b) If the taxi fare was $12, how far was the journey?

Answer (b)... km [1]

(c) Calculate the gradient of the graph.

Answer (c).. [1]

(d) Explain what the gradient means.

....

.... [1]

13
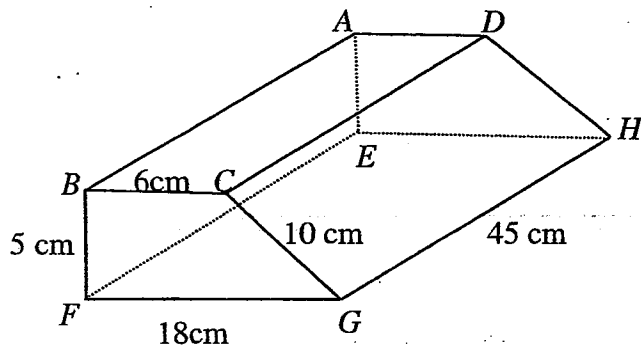
The diagram represents a prism. The faces of *ABCD* and *EFGH* are horizontal.

The faces *ABFE*, *BCGF* and *ADHE* are vertical.

BC = AD = 6 cm, *CG = DH* = 10 cm, *BF = AE* = 5 cm, *FG = EH* = 18 cm and

GH=FE=BA=CD = 45 cm.

Calculate

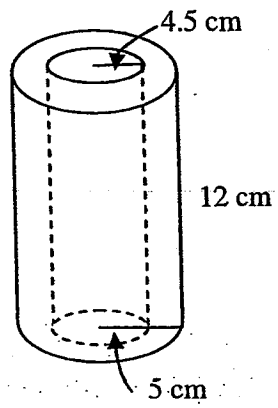**(a)** the volume of the prism,

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

(b) the total surface area of the prism.

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

14 The diagram shows a cylindrical pipe of height measuring 12 cm which has an internal radius of 4.5 cm and external radius of 5 cm.
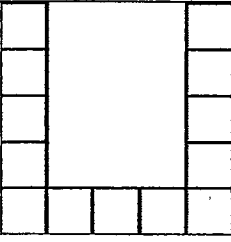
4.5 cm

12 cm

5 cm

Find the total surface area of the pipe.

Answer.. cm^2 [3]

End of Paper

ANSWER KEY

1 a) 0.153	b) -0.422, 0.422, 0.4$\dot{2}$, $\dfrac{3}{7}$	c) 44°C
2 a) $3150 = 2 \times 3^2 \times 5^2 \times 7$	b) 2 x 3 x 5 x 7	
3 a) 670 000	b) $45	
4 a) -15y	b) $-\dfrac{11}{6}y$	
5 a) 55 words	b) $1\dfrac{11}{12}$ seconds	
6 a) $\dfrac{1}{2}$	b i) $5y(3x+2-8z)$	ii) $(3p+7q)(a-8b)$
7) 425		
8 a)	b) 3n + 1	c) 45
9 a) 7	b) $\dfrac{55}{7}$	
10 a) 80°	b) 10°	c) 130°
11 a) $27\dfrac{7}{9}\%$	b) $224	
12 a) $6	b) 4km	c) 2
d) It means the cost increases at $2 per km OR the cost per km OR the rate of change of cost with distance		
13 a) 2700 cm³	b) 1875 cm³	
14) 746 cm²		