

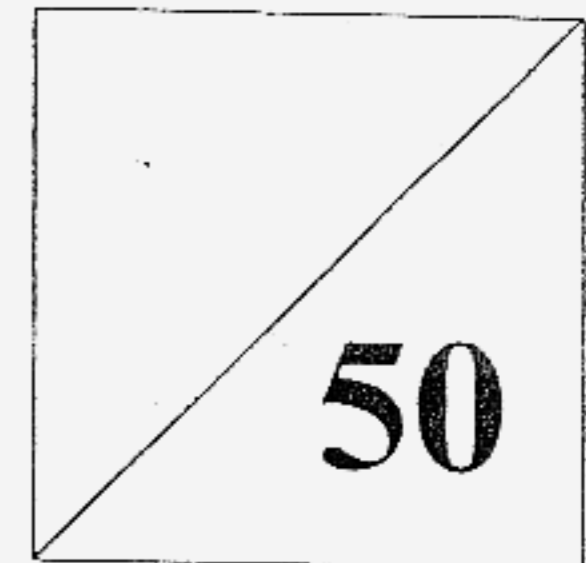


海星天主教中学  
**HAI SING CATHOLIC SCHOOL**

9 Pasir Ris Drive 6, Singapore 519421 Tel: 5827864 Fax: 5822543

**End-Of-Year Exam 2006**  
 Secondary One Express

**MATHEMATICS**  
 Paper 1



Name : \_\_\_\_\_

Date : 10<sup>th</sup> Oct 2006

Index Number : \_\_\_\_\_

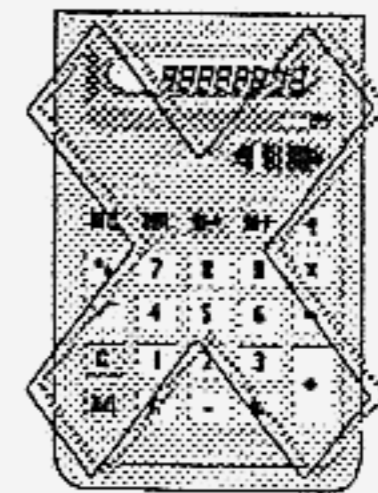
Time : 8.30am to 9.30am

Class : \_\_\_\_\_

Duration : 1 hr

**Instructions :**

- 1 Answer all the questions in this paper.
- 2 The use of Calculator is strictly prohibited
- 3 Working and answers must be neatly shown in the space below each question.
- 4 Omission of essential working will result in loss of marks.
- 5 The intended mark for each question or each part of a question is given in brackets.



This question paper consists of 99 printed pages, excluding this cover page

**Paper 1 – Answer all the questions.**

1. Evaluate the following:

(a)  $3 \times 2 - 4 \times 5 + 10$

(b)  $[(12 \times 4) \div (3 \times 2) - (2 - 6)] \times 3$

Ans: a) \_\_\_\_\_ [1]

b) \_\_\_\_\_ [1]

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2. a) Write down the next term in the sequence.

1, 2, 5, 10, 17, 26, ...

b) Arrange the following three numbers in descending order.

0.19,  $\frac{1}{5}$ , 0.189

Ans: a) \_\_\_\_\_ [1]

b) \_\_\_\_\_ [1]

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3. Find the Highest Common Factor and Lowest Common Multiple of 36 and 42

Ans: HCF = \_\_\_\_\_ [1]

LCM = \_\_\_\_\_ [1]

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4. Simplify the following:

a)  $\left(\frac{1}{3} - \frac{2}{5}\right) \times \left(\frac{1}{5} + \frac{1}{2}\right)$

b)  $\frac{1}{5} \times \frac{5}{6} \div \frac{4}{9}$

Ans: a) \_\_\_\_\_ [1]

b) \_\_\_\_\_ [1]

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5. Convert:

- i) 32060 cm to km
- ii)  $2\frac{3}{5}$  hours to minutes

Ans: i) \_\_\_\_\_ [1]

ii) \_\_\_\_\_ [1]

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6. (a) State the number of significant figures in each of the following:

(i) 60.70

(ii) 0.008 9

(b) Estimate, correct to one significant figure, the value of the following:

(i)  $\frac{8.97}{3.03}$

(ii) 52.976 03 – 31.321 86

(c) Express 0.003 549 correct to 3 decimal places

Ans: a i) \_\_\_\_\_ [1/2]

ii) \_\_\_\_\_ [1/2]

b i) \_\_\_\_\_ [1]

ii) \_\_\_\_\_ [1]

c) \_\_\_\_\_ [1]

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7. (a) Simplify the following algebraic expression:

(i)  $3a^2 - 4a + 5a^2 - 7a + 4$

(ii)  $4b - (3b - 4b)$

(b) Find the value of  $\frac{x}{y} - \frac{y}{x}$  when  $x = 2$  and  $y = -3$ .

Ans: a i) \_\_\_\_\_ [1]

ii) \_\_\_\_\_ [1]

b) \_\_\_\_\_ [2]

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8. Solve the following equations:

(a)  $2x - [3 + (x - 5)] = 6$

(b)  $\frac{3z + 4}{2} = z - 2$

(c)  $x = -16 + 3x$

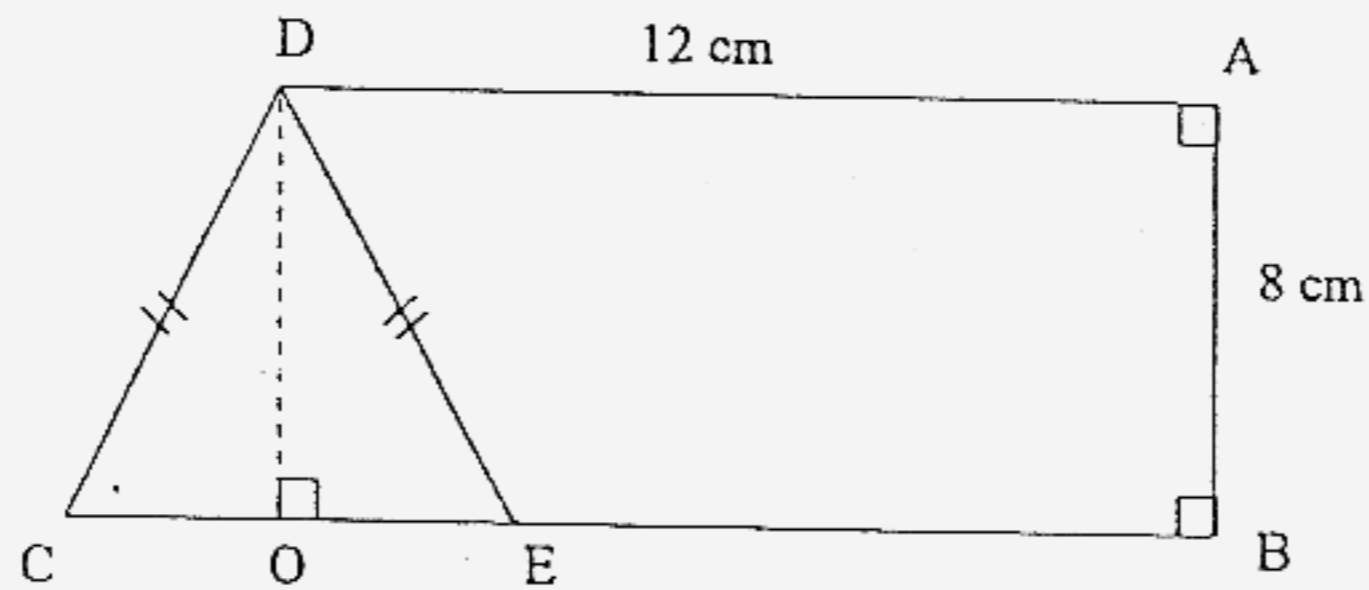
Ans: a) \_\_\_\_\_ [2]

b) \_\_\_\_\_ [2]

c) \_\_\_\_\_ [1]

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9. In the diagram, CDE is an isosceles triangle with an area of  $24 \text{ cm}^2$ . If  $AB = 8 \text{ cm}$  and  $AD = 12 \text{ cm}$ , calculate the area of the trapezium ABED.



Answer: \_\_\_\_\_  $\text{cm}^2$  [3]

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10. A rectangular piece of wood whose density is  $8.4 \text{ g/cm}^3$  weighs 882g.
- (a) Calculate the volume of the wood.
- (b) If this piece of wood is 7 cm long and 5 cm wide, find its thickness.

Answer: (a) \_\_\_\_\_  $\text{cm}^3$  [2]

(b) \_\_\_\_\_ cm [2]

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11. (a) If  $A : B = 3 : 4$  and  $B : C = 2 : 5$ , find  $B : A : C$ .
- (b) If  $P : Q = 5 : 3$  and  $Q : R = 7 : 1$ , find  $P : R$ .
- (c) 18 men can repair "The Esplanade" ceiling in 35 days. How many men are needed if they need to get it repaired in 10 days?

Answer: (a) \_\_\_\_\_ [1]

(b) \_\_\_\_\_ [1]

(c) \_\_\_\_\_ men [2]

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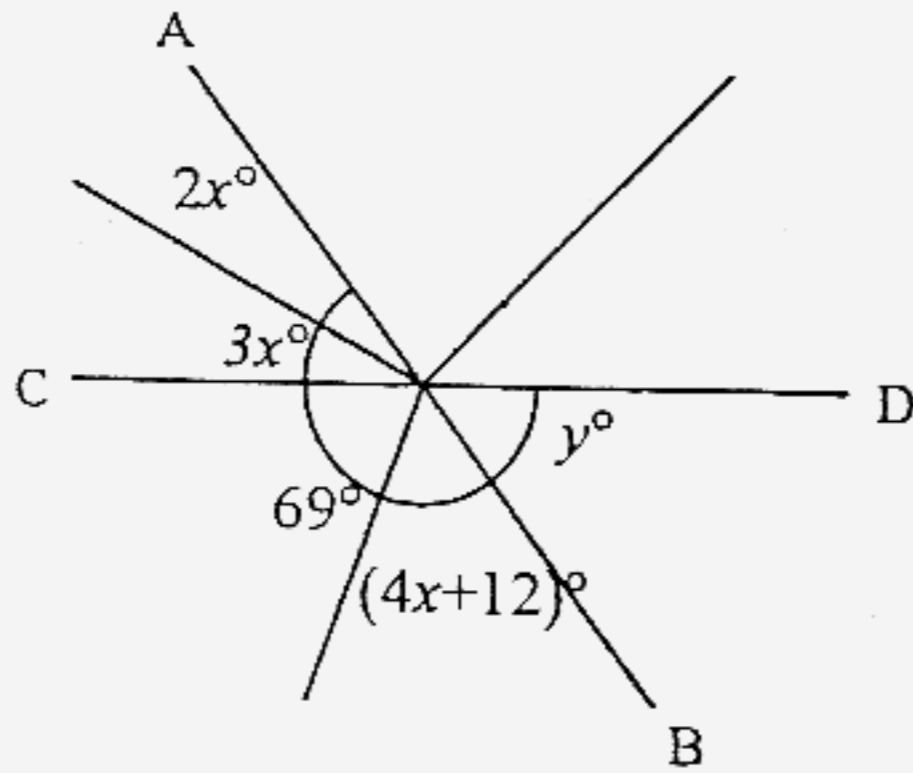
12. The list price of a car is \$98800.
- (a) If a discount of 12% is given for each payment, find the cash price of the car.
- (b) Jack chooses to buy by hire purchase over 12 months and is given a discount of 10%. Calculate his monthly instalment.

Answer: (a) \_\_\_\_\_ [1]

(b) \_\_\_\_\_ [2]

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13. Find the values of  $x$  and  $y$  in the diagram, given that  $AB$  and  $CD$  are straight lines.



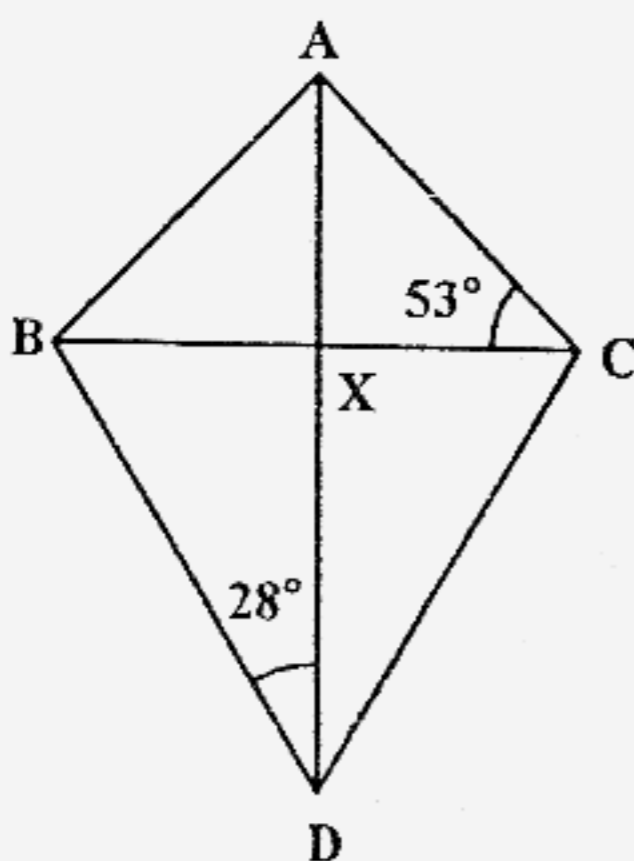
Answer: (a)  $x =$  \_\_\_\_\_ [2]

(b)  $y =$  \_\_\_\_\_ [2]

14. In the diagram  $ABCD$  is a kite in which  $\angle BCA = 53^\circ$  and  $\angle ADB = 28^\circ$ . Find the size of

(a)  $\angle ABX$ ,

(b)  $\angle BAD$ .

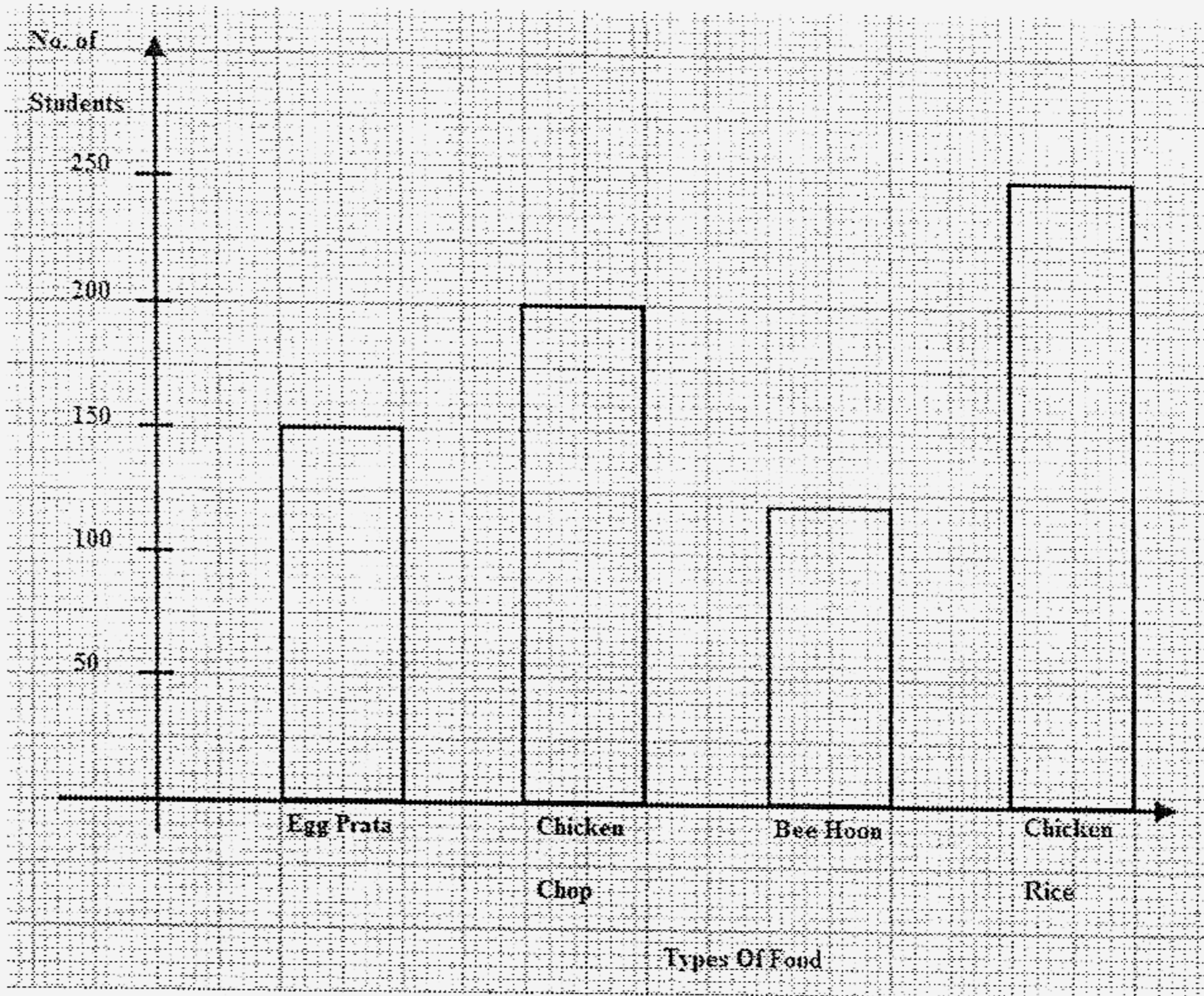


Answer: (a)  $\angle ABX =$  \_\_\_\_\_ [2]

(b)  $\angle BAD =$  \_\_\_\_\_ [2]



15. A survey was carried out to find out which food was most popular among HSC Secondary school students. The results of the survey were presented in the form of a bar chart as shown below.

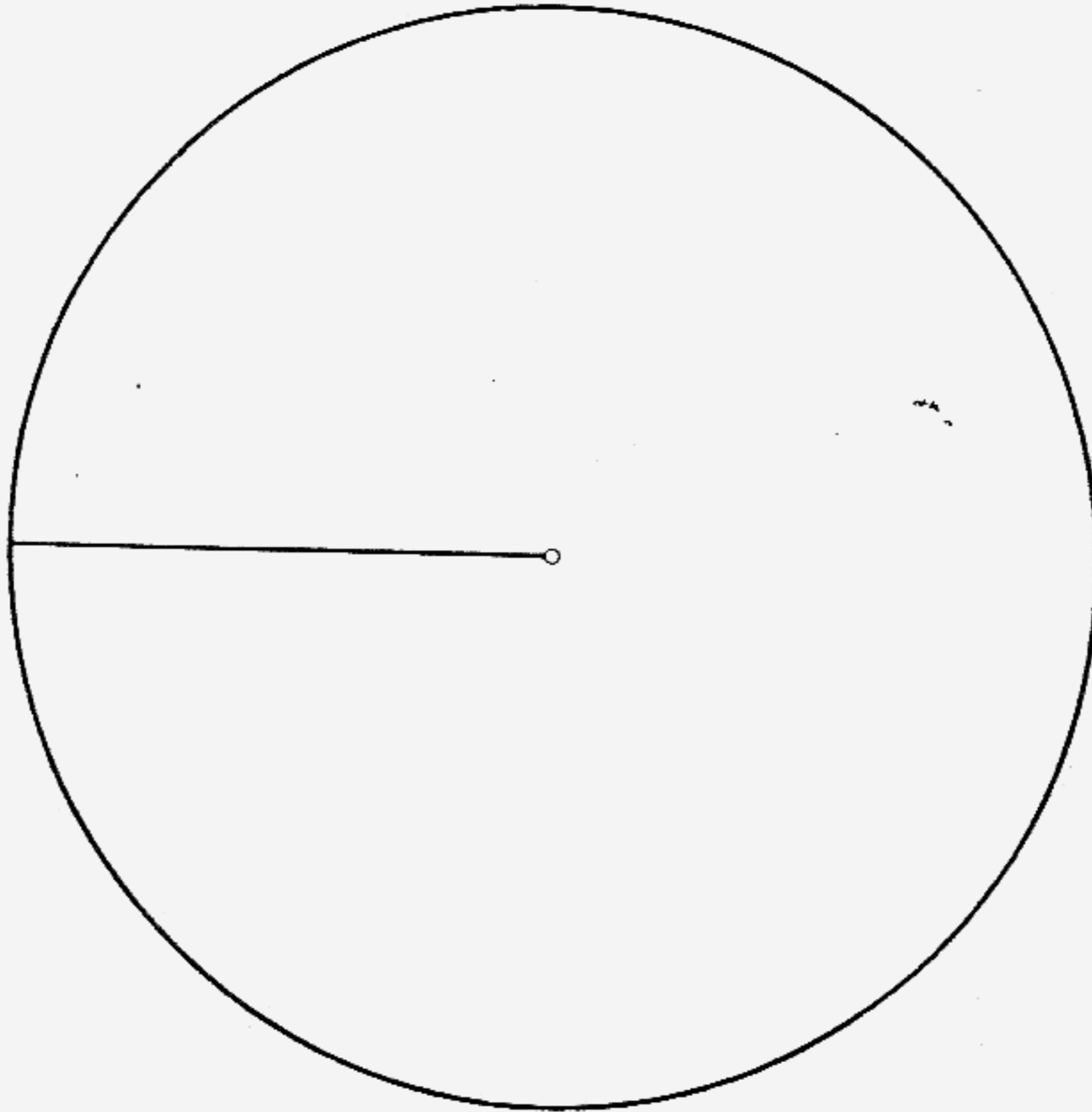


- (a) From the graph, find
- the modal type of food?
  - the fraction of students who like bee hoon.

Ans: a i) \_\_\_\_\_ [1]

a ii) \_\_\_\_\_ [1]

- (b) Represent the findings of the survey in the form of a pie chart. (The circle has been drawn for you below.)



[3]

==== End of Paper 1 =====

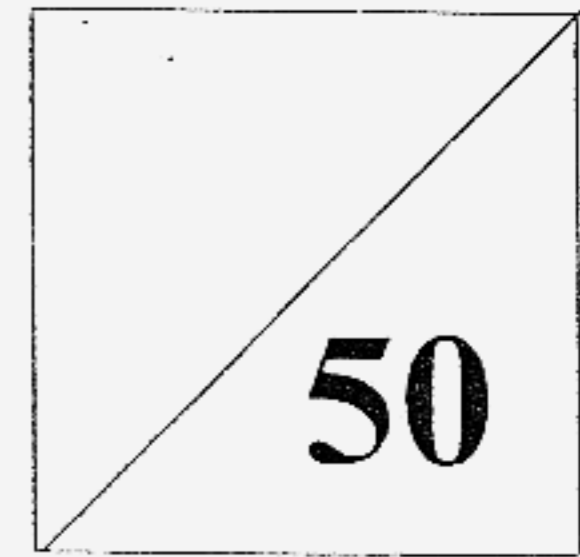


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**End-Of-Year Exam (2006)**  
Secondary One Express

**MATHEMATICS**  
Paper 2



Name : \_\_\_\_\_

Date : 6<sup>th</sup> Oct 2006

Index Number : \_\_\_\_\_

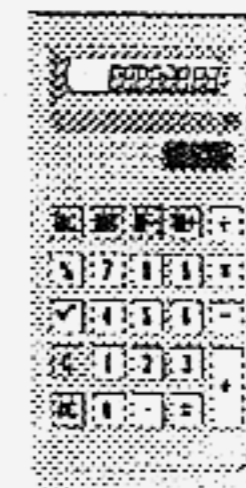
Time : 8.30am – 10.00am

Class : \_\_\_\_\_

Duration : 1 hr 30 min

**Instructions :**

- 1 Answer all the questions on the question paper.
- 2 The use of Calculator is permitted
- 3 Working and answers must be clearly and neatly shown.
- 4 Omission of essential working will result in loss of marks.
- 5 The intended mark for each question or each part of a question is given in brackets.
- 6 There are FOUR sections. Secure and submit each section separately.



This question paper consists of 6 printed pages, excluding this cover page.

**Answer ALL the Questions**  
**Secure and submit each section separately**

**Section ONE**

1. (i) Simplify  $20 \times \left( \frac{3}{4} - \frac{4}{5} \right)$  [1]

(ii) Simplify  $\frac{-2\frac{3}{5} + 1\frac{1}{2}}{-3\frac{2}{3}}$  [2]

(iii) Express 101.964 8 correct to one decimal place. [1]

How many significant figures are there in the answer? [1]

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2. (i) Simplify  $[2(x + 5y) - 3(x - y)] - 7[3x - (x + 6y)]$  [2]

(ii) Adam is 5 times as old as Ben. In 8 years' time, the sum of their ages will be equal to twice Adam's present age. Find their present ages. [2]

(iii) If  $\frac{3x - 5y}{7x - 4y} = \frac{3}{4}$ , find the value of  $\frac{x}{y}$ . [2]

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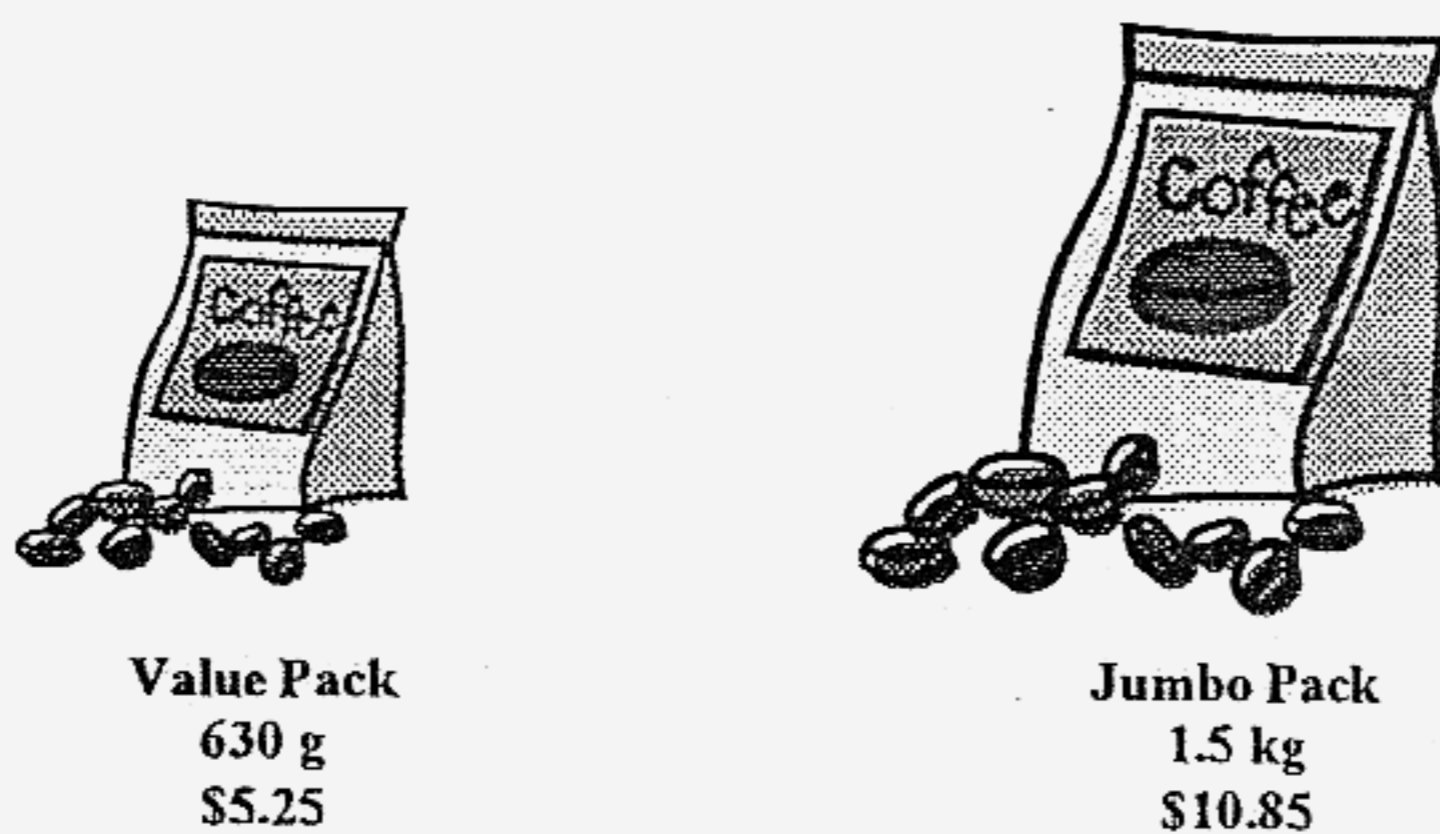
## Section TWO

3. A manufacturer sells coffee beans in two different packets as shown below.

(a) In the Value Pack, how many grams of coffee beans would you get for 90 cents? [1]

(b) In the Jumbo Pack, how much would 300g of coffee beans cost? [1]

(c) Which of the two packs has the better value for money? [2]



4. Betty started driving on a 272 km journey at 11 13.

(a) Calculate the time she will reach her destination given that she travels at an average speed of 64 km/h. [2]

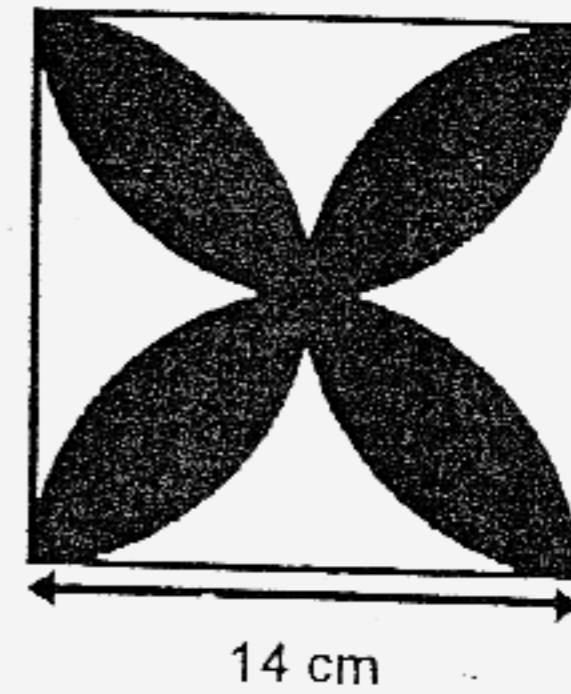
(b) She leaves at 17 55 for the return journey and arrives at the starting point at 23 35. Calculate the average speed for the return journey. [2]

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5. Take  $\pi = \frac{22}{7}$ .

- (a) The diagram below is enclosed in a square of sides 14 cm each. Calculate the shaded area.

[2]



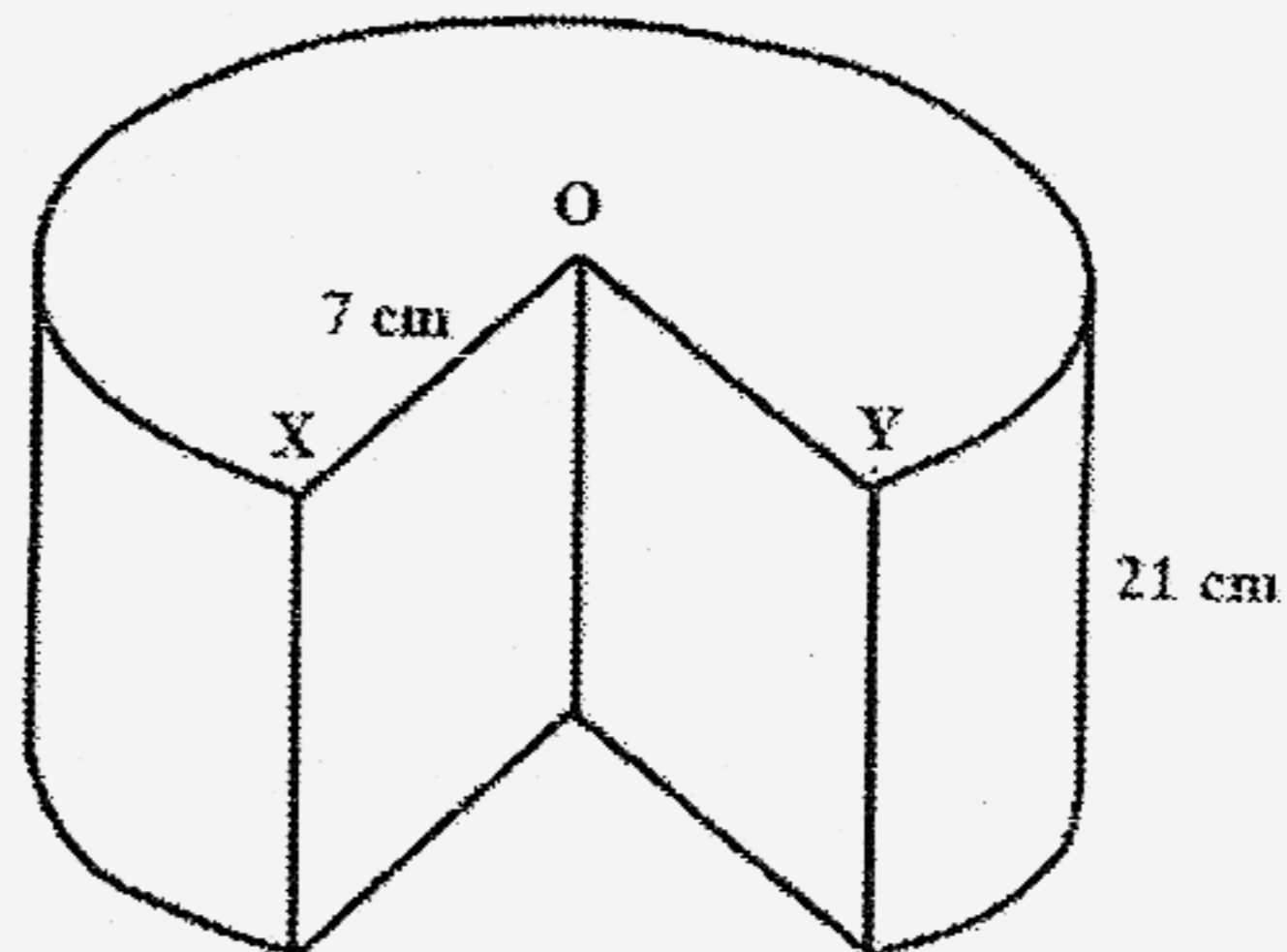
- (b) A solid cylinder of radius 7 cm and height 21 cm stands on a horizontal floor. A slice of it is removed by cutting vertically downwards through the radii OX and OY as shown in the diagram. If the slice is  $\frac{1}{6}$  of the whole volume, find

(i) the volume of the remaining solid, correct to the nearest  $\text{cm}^3$ ,

[2]

(ii) its total surface area, correct to the nearest  $\text{cm}^2$

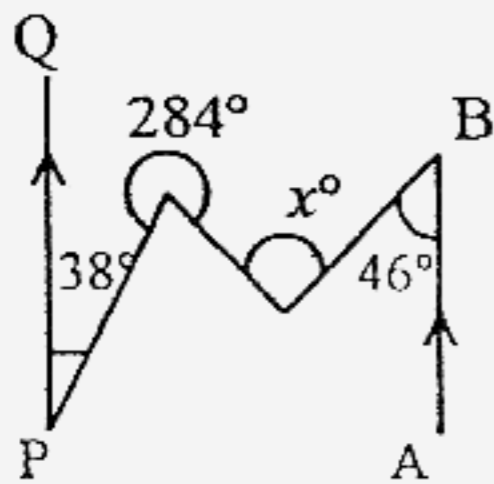
[2]



**Section THREE**

6. (a) A man borrows \$750 and pays off his debt at the end of 7 months by repaying \$785. Calculate the simple interest rate per annum charged on the loan. [2]
- (b) Mr Lum sells a television set for \$918 and thereby makes a profit of 35% on his cost price. The manufacturer who sold the set to Mr Lum made a profit of 36% on his cost price. Find the cost of manufacture. [3]
- 

7. In the diagram  $PQ \parallel AB$ . Find the value of  $x$ . [2]

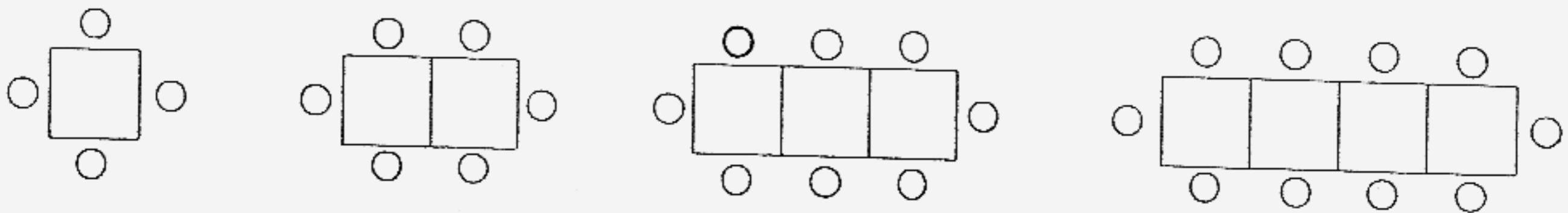


8. Construct a parallelogram PQRS in which  $PQ = 8.6$  cm,  $\angle PQR = 110^\circ$  and  $QR = 5.4$  cm. [1]
- (a) Construct the bisector of  $\angle QRS$ . [1]
- (b) Construct the perpendicular bisector of PQ. [1]
- (c) If the bisector in (a) meets the bisector in (b) at X, measure the length of SX. [1]
-

**Section FOUR**

9. a) The product of two numbers is 64.98. If one number is twice the other, find the value of each number. [2]
- b) i) Find the reciprocal of  $\frac{33}{41}$ . Leave your answer as a fraction. [1]
- ii) Express the answer in i) as a decimal, using the correct notation if it is a recurring decimal. [1]
- 

10. A restaurant has only small tables that can seat only one person on each side. The diagram below illustrates how tables are joined together to accommodate larger groups of people. (each O represents one person, each  $\square$  represents a table).



- (a) Using the information from the diagram above, copy and complete the table below. [1]

No of tables	1	2	3	4
No of people	$2(1) + 2 = 4$	$2(2) + 2 = 6$		

- (b) Using the information presented in table (a), write down a formula that connects  $n$ , the number of people, and  $t$ , the number of tables required. [1]
- (c) How many tables will be needed to seat 16 people? [1]
- (d) How many people can be seated if there are 8 tables? [1]
-



11. **Answer this question on a sheet of graph paper**

A six-faced die was thrown 40 times. The table shows the number of times that each possible score occurred.

Score	1	2	3	4	5	6
Frequency	5	5	7	9	10	4

- (a) Write down the modal score [1]
- (b) Calculate the mean score [2]
- (c) Using a scale of 2 cm to represent 1 unit on each axis, draw a histogram to represent the information in the table above. [3]
- 

**Bonus Question [5 marks]**

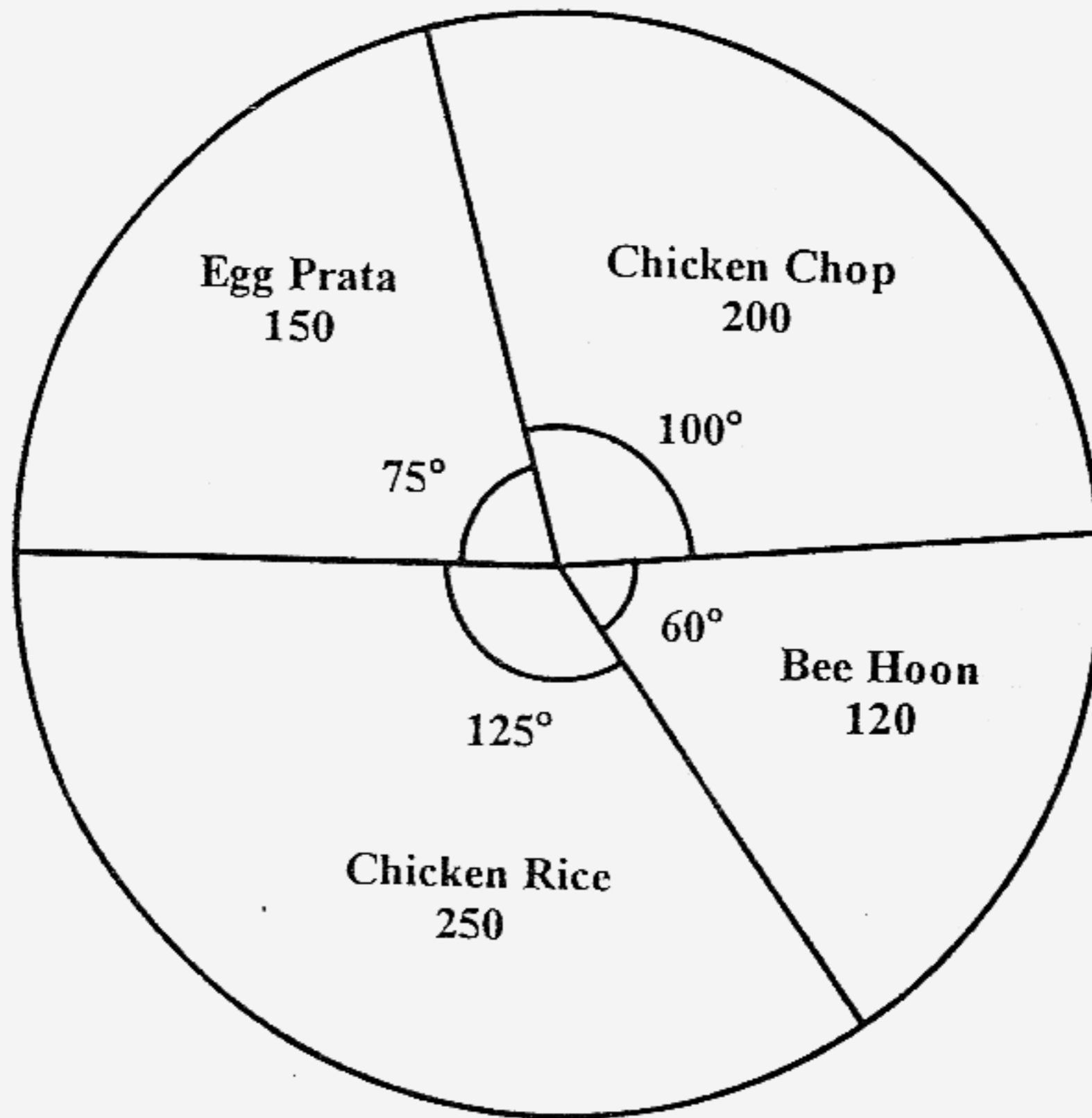
This question is optional. Students may choose to answer this question. Please attach it together with section FOUR.

12. A teacher groups 157 girls and 180 boys equally into as many groups as possible. ONE girl cannot be fitted into any of the groups formed.

- (a) How many groups of boys and girls are formed? [3]
- (b) How many boys and girls are there in each group? [2]

Question No.	Answer	Question No.	Answer
1a	- 4	8a	4
1b	36	8b	- 8
2a	37	8c	8
2b	$\frac{1}{5}$ , 0.19, 0.189	9	84 cm <sup>2</sup>
3	HCF = 6 LCM = 252	10a	105 cm <sup>3</sup>
4a	$\frac{7}{150}$	10b	3 cm
4b	$\frac{3}{8}$	11a	4 : 3 : 10
5 i)	0.3206 km	11b	35 : 3
5 ii)	156 min	11c	63 men
6a i)	4	12a	\$86,944
6a ii)	2	12b	\$7,410
6b i)	3	13a	$x = 11^\circ$
6b ii)	20	13b	$y = 55^\circ$
6c	0.004	14a	$\angle ABX = 37^\circ$
7a i)	$8a^2 - 11a + 4$	14b	$\angle BAD = 115^\circ$
7a ii)	5b	15a i)	Chicken Rice
7b	$\frac{5}{6}$	15 a ii)	$\frac{1}{6}$

15 b



Question No.	Answer	Question No.	Answer
1 i)	- 1	6a	8%
1 ii)	$\frac{3}{10}$	6b	\$500
1 iii)	102.0, 4 sig fig	7	$x = 84^\circ$ $y = 38^\circ$
2 i)	$-15x + 55y$	8c	SX = 4.9 cm ( $\pm 0.2$ cm)
2 ii)	Ben = 4 years old Adam = 20 years old	9a	5.7 and 11.4
2 iii)	$\frac{x}{y} = -\frac{8}{9}$	9b i)	$\frac{41}{33}$
3a	108 g	9b ii)	<del>1.24</del>
3b	\$2.17	10a	8, 10
3c	Jumbo pack - 630g = \$4.557	10b	$n = 2t + 2$
4a	3.28 pm or 15 28 h	10c	7
4b	48 km/h	10d	18
5a	$112 \text{ cm}^2$	11a	5
5b i)	$2695 \text{ cm}^3$	11b	3.65
5b ii)	$1320 \frac{2}{3} \text{ cm}^2$		

