

121/1
 MATHEMATICS ALT A
 PAPER 1
 TIME: 2½ HRS
 JULY/AUGUST 2014

DATE

WESTLANDS FORM 4 JOINT EXAMINATION

Kenya Certificate of Secondary Education

MATHEMATICS

Paper 1
 JULY/AUGUST 2014
 Time: 2½ hours

INSTRUCTIONS TO CANDIDATES

1. Write your name and index number in the spaces provided above.
2. Sign and write the date of examination in the spaces provided above.
3. This paper consists of **two** sections: **I** and **II** -
4. Answer **all** the questions in Section **I** and any **five** questions from Section **II**.
5. Show all the steps in your calculations giving your answers at each stage in the spaces below each question.
6. Marks may be given for correct working even if the answer is wrong.
7. Non programmable silent electronic calculators and K.N.E.C mathematical tables may be used, except where stated otherwise.
8. This paper consists of 16 printed pages.
9. Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.

FOR EXAMINER'S USE ONLY

SECTION I

QUESTION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	TOTAL
MARKS																	

SECTION II

QUESTION	17	18	19	20	21	22	23	24	TOTAL
MARKS									

GRAND TOTAL

(MM) MATHEMATICS I

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SECTION I (50 MARKS)

(Answer all the questions in this Section in the spaces provided)

1. Use logarithm tables to evaluate

$$\sqrt{\frac{0.52 \times 0.312}{2.12^2}}$$

(4 mks)

2. 200cm^3 of acid is mixed with 300cm^3 of alcohol. If the densities of acid and alcohol are 1.08g/cm^3 and 0.8g/cm^3 respectively, calculate the density of the mixture.

(3 mks)

3. Given that $\cos 3(\theta - \frac{2}{5}) = \sin \frac{1}{3}(\theta + 35)$

(3 mks)

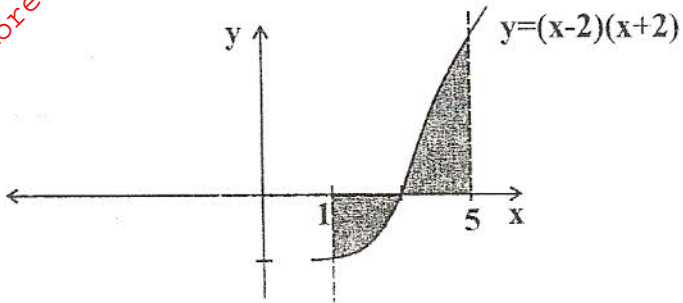
nearest 2dp did he receive. Use the rates below:

(3 mks)

	Buying (sh)	Selling (shs)
1 US dollar	96.20	96.90
1 Euro	112.32	112.98

5. Calculate the exact area of the shaded region.

(4 mks)



6. A polygon of n sides has half the interior angles as 150° each and the rest as 170 each. Find the sum of interior angles of the polygon.

(3 mks)

8. Given that $p = \begin{pmatrix} 12 \\ -9 \end{pmatrix}$, $q = \begin{pmatrix} -4 \\ 8 \end{pmatrix}$, $r = \begin{pmatrix} -2 \\ 1 \end{pmatrix}$ and $b = \frac{2}{3}p + \frac{1}{2}q - 3r$. Express as a column vector. (2 mks)

9. The masses of two similar building blocks are 2.7kg and 800 grams respectively. Find the surface area of the larger block if the surface area of the smaller block is 120cm^2 (3 mks)

ICES with 20/0 of his salary. Find a game drive
Calculate his total monthly earnings.

(3 mks)

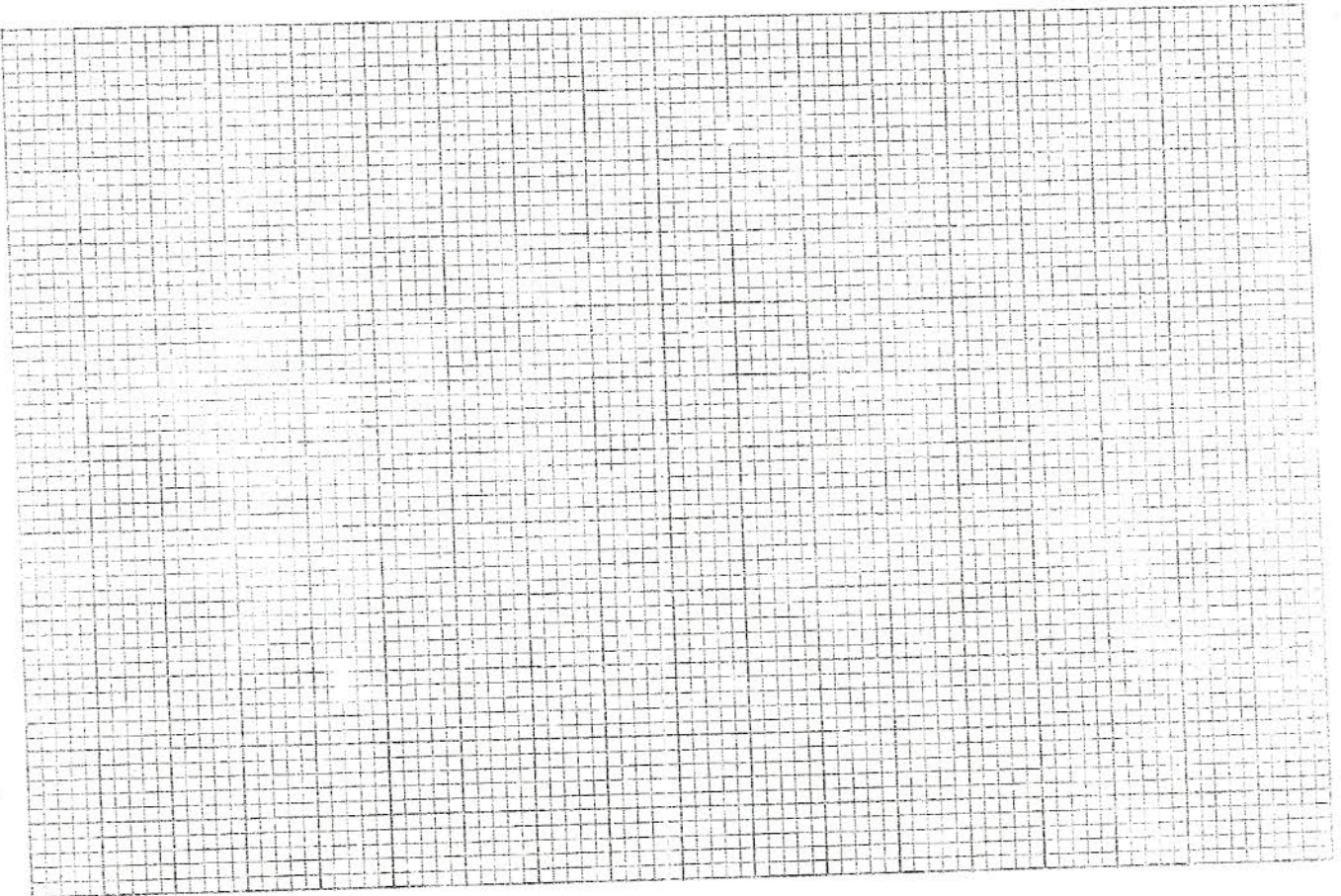
11. By shading the unwanted region, represent the region which satisfy the following inequalities

(3 mks)

$$y \leq x + 2$$

$$y \geq -2x + 2$$

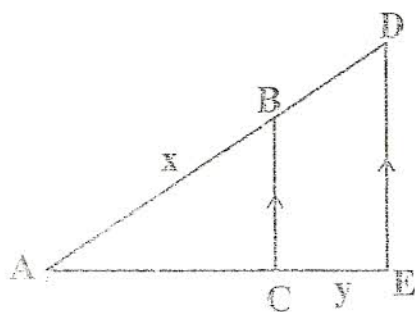
$$x > 3$$



13. Simplify without using tables or calculator leaving your answer in the form $\frac{p}{q}$ (3mks)

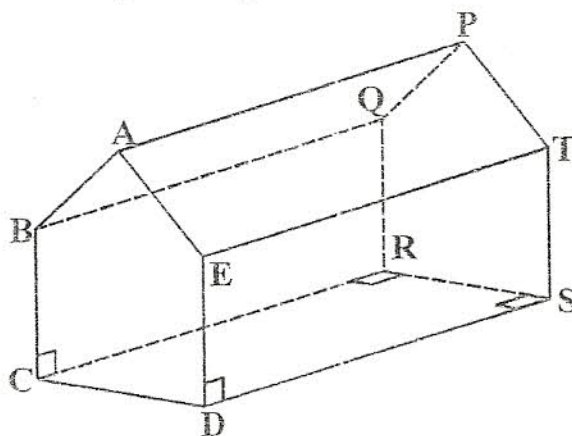
$$\frac{(625)^{\frac{1}{4}} \times (4)^{\frac{3}{2}} \times 0.4^2}{(12^2)^{\frac{1}{2}} \times 3^{\frac{1}{2}}}$$

14. BC is parallel to DE. Given that BD = 6.4cm DE=12cm BC= 4cm and AC = 1.8cm. Find the value of x and y. (3 mks)



16. The figure below represents a prism length 5.5cm. $AB = AE = CD = 2.5\text{cm}$ and $BC = ED = 1.5\text{cm}$

(4 mks)



a) Draw the net of the prism

b) Calculate the volume of the prism.

17. Using a ruler and compass only construct a trapezium ABCD in which AB is parallel to CD, AB = 9cm and AD = 5cm, angle DAB = 75° and angle ABC = 60° . (4 mks)

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- b) Measure CD and BC (2 mks)

- c) At B construct a line perpendicular to AB meeting DC produced at F (1 mk)

- d) Measure BF and hence calculate to one decimal place the area of the Trapezium. (3 mks)

a) Determine the number of each item she bought.

(5 mks)

b) The trader sold all the items at a profit of 25% per blouse and 30% per skirt. Calculate the total profit she made.

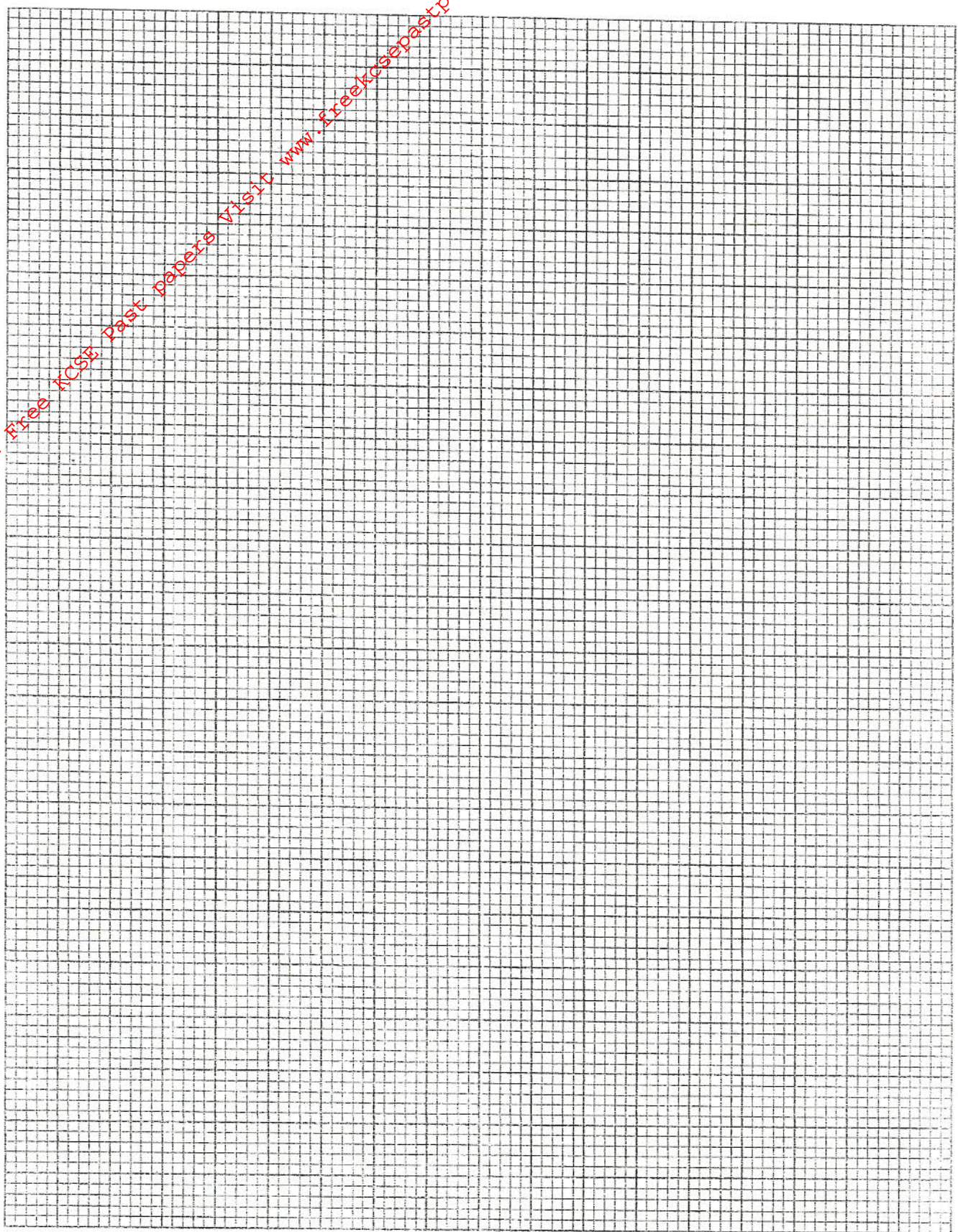
(5 mks)

- ... of the bearing of A and the bearing of C from D is $S45^{\circ}W$.
- a) Make a scale drawing showing the relative positions of A, B, C and D using the scale of 1cm to represent 5km. (5 mks)

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- b) Use your drawing to determine:
- i) the bearing of B from D (1 mk)
 - ii) the distance between B and D (2 mks)
 - iii) the distance between C and D (2 mks)

b) Triangle $A^1B^1C^1$ is mapped onto a triangle $A^{11}B^{11}C^{11}$ where $A^{11}(0, 0)$, $B^{11}(0,4)$ and $C^{11}(10, 4)$. On the same axes as (a) above draw $A^{11}B^{11}$ and $A^{11}B^{11}C^{11}$. Describe fully this transformation. (5 mks)



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x	-2	-1.5	-1	-0.5	0	0.5	1	1.5	2	2.5	3
y		-2.5					5				

b) Draw the graph of $y = 5 + 2x - 2x^2$.

(2 mks)

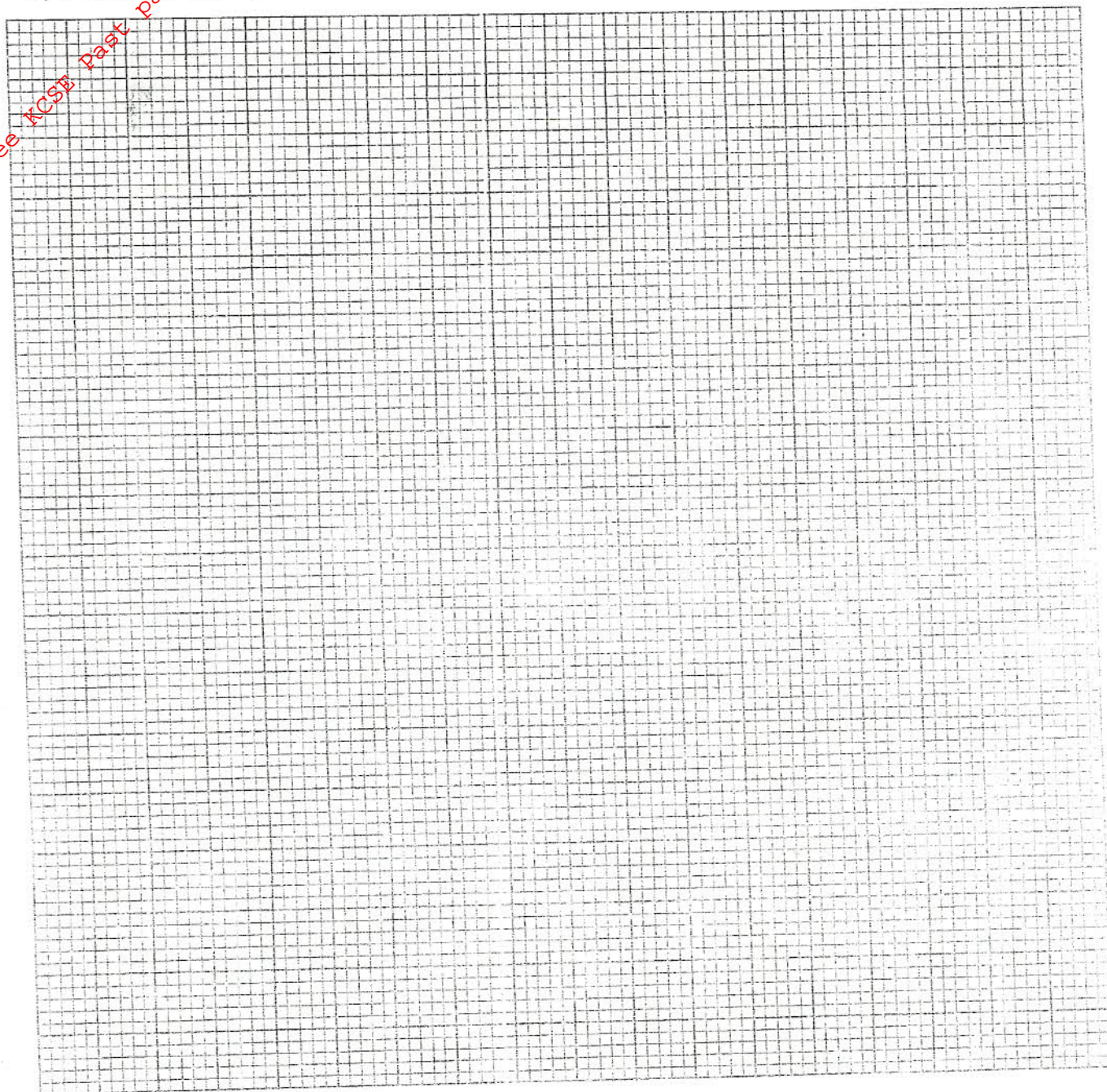
c) Use your graph to:

i) determine the integral values of x in the graphs range which satisfy the inequality

$$5 + 2x - 2x^2 \leq 2$$

(3 mks)

d) Use the graph to solve $3 + x - 2x^2 = 0$



Marks	1-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100
No. of students	1	10	13	17	18	14	10	6	6	4

a) Using an assumed mean of 45.5, calculate

i) the mean

(4 mks)

ii) the standard deviation

(4 mks)

b) Calculate the upper quartile

(2 mks)

The vertical distance between the faces is 22cm.

Determine;

a) The surface area of the stone.

(5 mks)

b) The volume of the stone.

(5 mks)

(1 MK)

x	-4	-3	-2	-1	0	1	2	3	4
y	-7			8	9				

b) Find

i) the area enclosed by the x-axis and the curve $y = 9 - x^2$ between $x = -4$ and $x = 4$ using trapezium rule with 8 trapezia. (3 mks)

ii) the exact area enclosed above.

(3 mks)

c) Calculate the percentage error in finding the area using trapezium rule in (b) (i) above. (3 mks)