SECONDARY SCHOOLS ANNUAL EXAMINATIONS - 2000

Educational Assessment Unit - Education Division

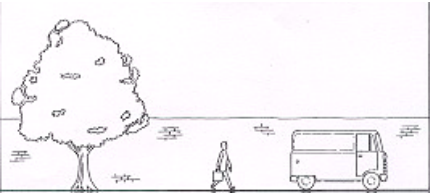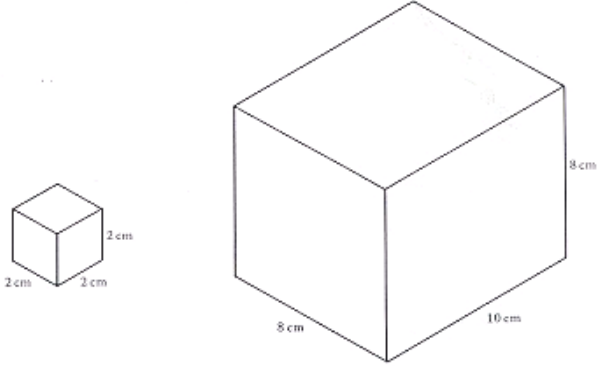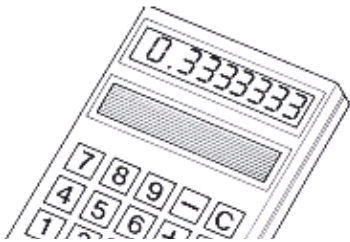| FORM 4	MATHEMATICS (MENTAL)	TIME: 15 minutes

Name _____

Class _____

Mark

- ANSWER ALL QUESTIONS.
- EACH QUESTION CARRIES 1 MARK.
- CALCULATORS, RULERS, PROTRACTORS AND OTHER MATHEMATICAL INSTRUMENTS ARE NOT ALLOWED.
- WRITE DOWN YOUR ANSWER ONLY IN THE SPACE PROVIDED.

DO NOT WRITE IN THIS SPACE

Question	Answer
1. Study the diagram. Assuming that the man is 1.8m tall, estimate the height of the wall.	
2. Which is the smaller: 5^2 or 2^5 ?	
3. What must be added to 9×8 to make 75?	
4. Give the next arrangement in the following pattern.	
5. The reading on a thermometer is $-4°C$. If the temperature falls by $4°$, what is the new temperature?	
6. Write down 9,9399 correct to the nearest 1,000	
7. Estimate $\dfrac{100.3}{4.97 \times 2.1}$	
8. Are Lm10 enough to buy 4 litres of paint at Lm2.30 per litre?	
9. Plastic cubes, measuring 2cm $\times$ 2cm $\times$ 2cm, are stored in a box measuring 10cm $\times$ 8cm $\times$ 8cm. How many of the cubes can be stored in this box?	
10. A calculator was used to divide two numbers. The answer shown on the display was 0.3333333. What could the two numbers be?	

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FORM 4　　　　　　　**MATHEMATICS (Main Paper)**　　　　**TIME: 1 h 45 min**

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total Main	Mental	Global Mark
Mark																		

DO NOT WRITE ABOVE THIS LINE

Name _____　　　　　Class _____

1.　What is the cost of 1kg of sugar if 250g cost 30c?

(4 marks)

2.　The angles of a triangle are in the ratio 1 : 3 : 5.　Find each angle.
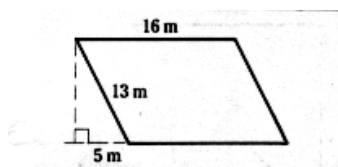
(4 marks)

3.　A bicycle costs Lm240 when new. If its value decreases by 5% each year, what is it worth after:
　(a)　1 year?　　　　　　　　(b)　2 years?

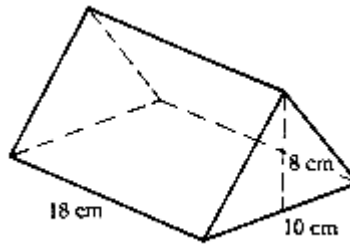(4 marks)

4.　Find the area of the parallelogram shown.

(4 marks)

5. If 2x – 3y = 5, make
    (a) x the subject of the formula;

    (b) y the subject of the formula.

<div align="right">(4 marks)</div>

6. (a) A scout's tent has the shape of a triangular prism shown.
        Find the volume of the tent.

    (b) Solve the equation $\dfrac{6}{x}$ = 2.

18 cm 8 cm 10 cm

<div align="right">(6 marks)</div>

7. a) Simplify $4(3x + 4) - 3(x - 7)$.

    b) The scale of a model of a ship is 1 to 500. The length of the model is 15cm. What is the length of the ship in metres?

<div align="right">(6 marks)</div>

8. Mark worked 50 hours last week, 10 of which were overtime at time - and - a half. If the basic hourly rate is Lm2.75, find his gross pay for the week.
    Mark paid Lm15.125 of his gross salary as income tax. What fraction is this of his gross salary?
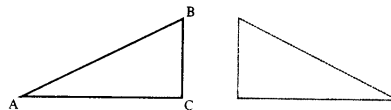
<div align="right">(6 marks)</div>

9. (a) A farmer employs 6 men to harvest his tomato crop. They take 2 days to do the job. If he had employed just 4 men, how long would it have taken them?

(b) The triangles in the diagram are congruent and triangle ABC is mapped to the other triangle by reflection.
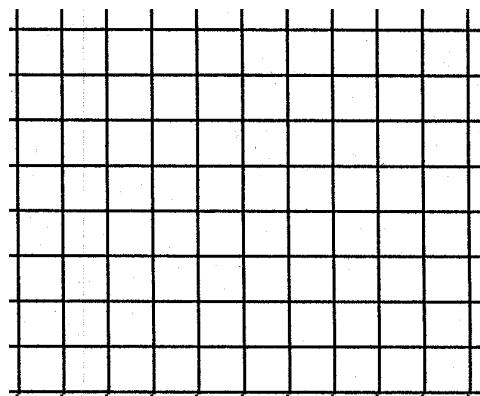
Copy the diagram and
   (i)   Draw the line of reflection;

   (ii) Label the vertices of the reflected triangle A', B', C' to correspond with the vertices of triangle ABC.

(6 marks)

10. If $\underline{a} = \begin{pmatrix} 2 \\ 4 \end{pmatrix}$, draw diagrams to represent $\underline{a}$, and $-\underline{a}$ on the grid provided.

Given that $\underline{b} = \begin{pmatrix} 1 \\ -3 \end{pmatrix}$ find $\underline{a} + \underline{b}$ and $\underline{a} - \underline{b}$.

(6 marks)

11. Consider the equations $y = x + 3$ and $y = -x + 6$.

a) Complete the following tables for each of these equations:

$y = x + 3$

| x	0	3	5
y	3		

$y = -x + 6$

x	1	2	6
y		4	

b) Draw, on the graph paper provided, axis for x and y between 0 and 8 taking 2cm to 1 unit on both axes.
c) Draw the two graphs.
d) Write down the coordinates of the point of intersection.

(8 marks)

12. In the given diagram PS and PT are tangents to the circle with centre O. $\angle$ TPS, the angle between the two tangents is equal to 58°.
    a) What is $\angle$ OTP equal to? Why?
    b) Hence calculate the value of x.
    c) Deduce the value of y. (Give reason)
    d) Calculate $\angle$ PTS.
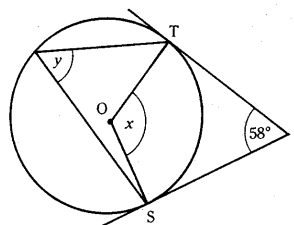
(8 marks)

13. The table gives the marks obtained by a number of children in a mathematics examination.

Mark	1-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100
Frequency	0	2	3	4	5	8	6	5	3	1

    a) How many children obtained a mark less than or equal to 50?
    b) How many children obtained a mark greater than 80?
    c) What is the total number of children that sat for the examination?
    d) Draw a barchart to illustrate the information given in the table.

(8 marks)

14. The larger triangle is an enlargement of the smaller one.
    a) What is the scale factor?
    b) Find the length of BC.
    c) Work out the ratio of the area of the smaller triangle to that of triangle ABC.
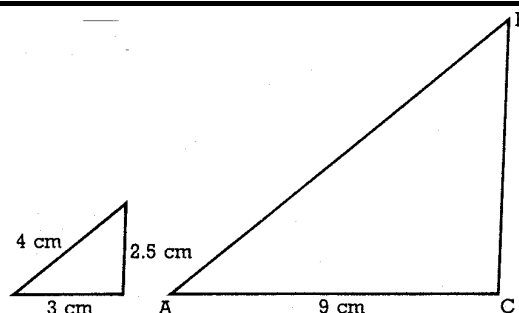
(8 marks)

15. Two ordinary six-sided dice are tossed. Complete the possibility space shown to include all the possible combinations in which the dice may land.

1ˢᵗ dice

2ⁿᵈ dice

	1	2	3	4	5	6
1	1,1	1,2	1,3	1,4	1,5	1,6
2	2,1	2,2	2,3	2,4		2,6
3		3,2	3,3	3,4	3,5	3,6
4	4,1		4,3	4,4	4,5	4,6
5	5,1	5,2		5,4		5,6
6	6,1	6,2	6,3	6,4	6,5	
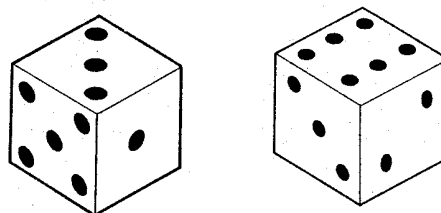
Use the possibility space above to calculate the probability that:
    a) the outcome is two sixes,
    b) at least one six is thrown,
    c) the total score is 6.

(8 marks)