

# SECONDARY SCHOOLS ANNUAL EXAMINATIONS - 2002

Educational Assessment Unit - Education Division

**FORM 4**

**MATHEMATICS (Non Calculator Paper)**

**TIME: 20 min.**

Name \_\_\_\_\_

Class \_\_\_\_\_

Mark

**ANSWER ALL QUESTIONS. THERE ARE 20 QUESTIONS TO ANSWER.**

**EACH QUESTION CARRIES 1 MARK.**

**CALCULATORS, RULERS, PROTRACTORS AND OTHER MATHEMATICAL INSTRUMENTS ARE NOT ALLOWED.**

**ON YOUR DESK YOU SHOULD HAVE NOTHING EXCEPT FOR PEN, PENCIL AND EXAMINATION PAPER.**

**TO ANSWER QUESTIONS INVOLVING NUMERICAL CALCULATIONS YOU ARE ADVISED TO CHOOSE AND USE THE MORE EFFICIENT TECHNIQUES (MENTAL OR PENCIL-AND-PAPER)**

**YOU ARE NOT REQUIRED TO SHOW YOUR WORKING. HOWEVER, SPACE FOR WORKING IS PROVIDED IF YOU NEED IT**

DO NOT

WRITE

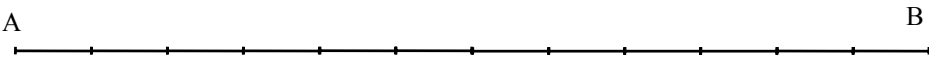
IN

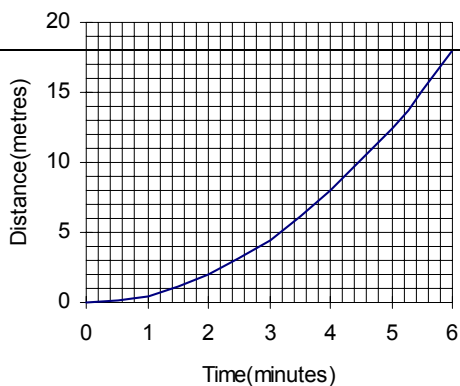
THIS

SPACE

**Question**

**Space for working if**

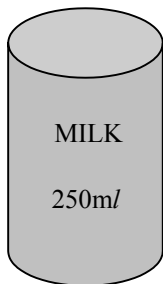
	necessary
<p>1. Which of the following is the largest? (a) <math>\frac{3}{4}</math> (b) 0.75 (c) 0.8</p> <p>Ans _____</p>	
<p>2. Calculate: <math>34 + 100 + 66</math>.</p> <p>Ans _____</p>	
<p>3. Give a rough estimate of: <math>198 \times 302</math> ?</p> <p>Ans _____</p>	
<p>4. 100 floppy discs cost Lm 20. What is the cost of one disc?</p> <p>Ans _____</p>	
<p>5. Which of the following numbers is the same as <math>7^{-2}</math> ? (a) 49 (b) 9 (c) <math>\frac{1}{49}</math> (d) 14</p> <p>Ans _____</p>	
<p>6. A student wants to draw a <b>regular hexagon</b> using <b>LOGO</b>. Fill in the missing command: <b>REPEAT 6 [FD 100 RT _____ ]</b></p> <p>Ans _____</p>	
<p>7. The line AB is 12cm long. Put a mark on the line so that the line is divided in the ratio <b>2 : 1</b></p> 	
<p>8. John receives a salary of Lm 400 monthly. He is given a rise of 10%. What is his new salary?</p> <p>Ans _____</p>	
<p>9. Lm1 is equivalent to US\$2.2. What is the value of Lm12 in US\$?</p> <p>Ans _____</p>	
<p>10.</p>	



Mary took part in a race. This is a graph for the first part of her race.  
Use the graph to find the distance she ran in the first 4 minutes.

Ans \_\_\_\_\_

11.



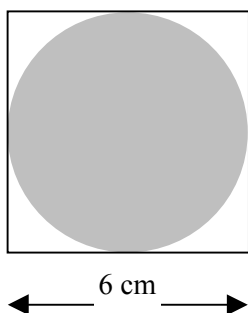
The label on a tin of milk reads:

Contents : 250 ml.

How many such tins are needed to fill a jug whose volume is 1.5 l ?

Ans \_\_\_\_\_

12.



The diagram shows a square of side 6cm. The central part is shaded.  
Estimate a value for the shaded area.

Ans \_\_\_\_\_

13. Which of the following numbers is exactly divisible by 5?

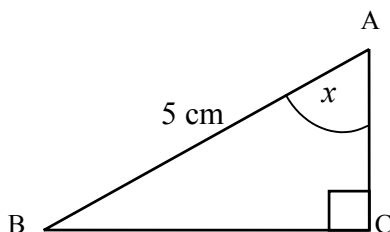
17554, 550343, 12790, 54557

Ans \_\_\_\_\_

14. ABC is a right-angled triangle.

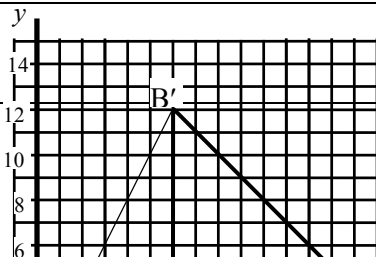
$$\sin x \text{ is } \frac{4}{5}.$$

What is the length of BC?



Ans \_\_\_\_\_

15. Describe fully the transformation that



maps ABC to A'B'C'.

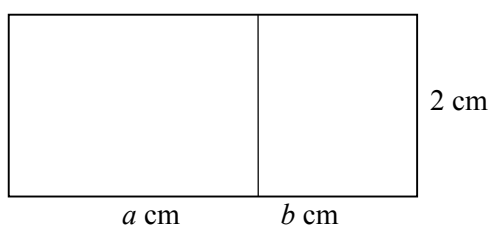
**Ans** \_\_\_\_\_

16. Make  $b$  the subject of the formula:

$$4a + b = c$$

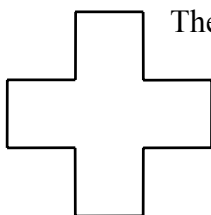
**Ans** \_\_\_\_\_

17. Write a formula for the total area of this shape.



**Ans** \_\_\_\_\_

18.

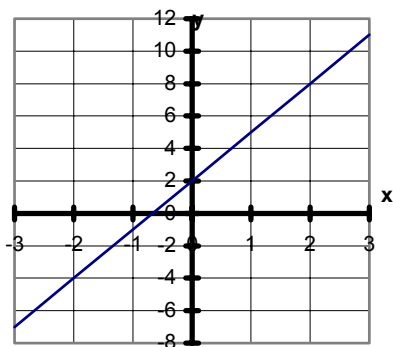


The perimeter of this cross is 36 cm.

If all the sides are equal, what is the length of each side?

**Ans** \_\_\_\_\_

19.



The equation of this straight-line graph is:

$$y = \_\_\_ x + 2$$

20. A box contains 12 cards each with the name of a month printed on it. If I choose one card at random, what is the probability that the month on the card has 30 days?

**Ans** \_\_\_\_\_

# SECONDARY SCHOOLS ANNUAL EXAMINATIONS 2002

Educational Assessment Unit - Education Division

**FORM 4**

**MATHEMATICS (Main Paper)**

**TIME: 1 h 40 min**

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

**DO NOT WRITE ABOVE THIS LINE**

Name \_\_\_\_\_

Class \_\_\_\_\_

**CALCULATORS ARE ALLOWED BUT ALL NECESSARY WORKING  
MUST BE SHOWN**

**ANSWER ALL QUESTIONS.**

1. (a) Write down all the prime numbers between 12 and 20.

(b) Work out : 
$$\frac{14.13 \times 53.22}{7.45}$$

giving your answer (i) to 3 significant figures,  
(ii) to 2 places of decimal.

**(6 marks)**

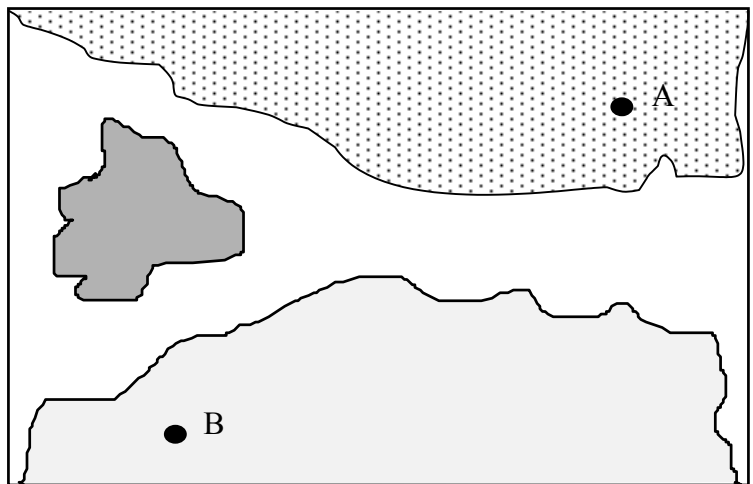
2. (a) Divide:  $5\frac{5}{6}$  by  $2\frac{1}{3}$  and give your answer as a mixed fraction.

(b) Work out :  $5^{-2} \times 25^2$ .

- (c) If  $p = 3(11 - 2q)$ , find  $p$  when  $q = 4$ .

**(10 marks)**

3. This is a map of Noland:  
A and B are towns on this map.  
The map ratio is 1: 100 000.  
(i) Measure the map distance  
from A to B.  
Distance in cm: \_\_\_\_\_



- (ii) What is the actual distance  
from A to B in

centimetres \_\_\_\_\_

metres \_\_\_\_\_

kilometres \_\_\_\_\_

(4 marks)

4. (a) Tom drives 60 kilometres in 2 hours. What is his speed in km/h?
- (b) Mary travels a distance of 80 kilometres at 40 km/h. How long does she take to travel this distance?

(4 marks)

5. AC and BC are tangents from C to the circle  
centre O. Fill in:

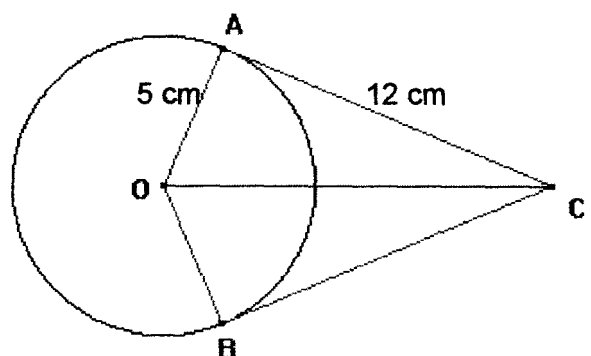
- (i) Size of angle OAC: \_\_\_\_\_

Reason: \_\_\_\_\_

- (ii) Length of BC: \_\_\_\_\_

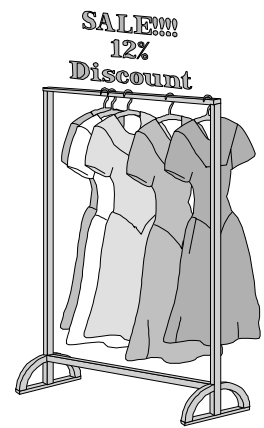
Reason: \_\_\_\_\_

- (iii) Find the length of OC.



(7 marks)

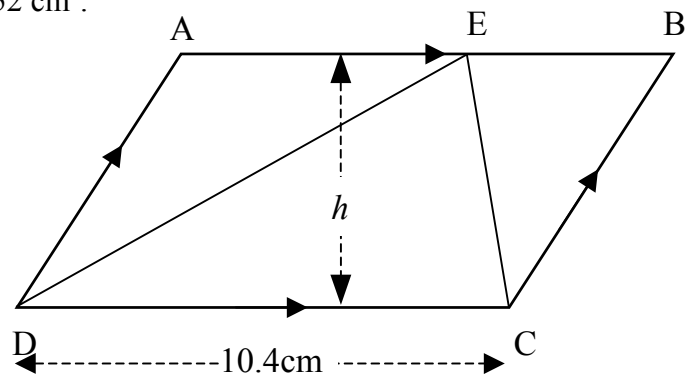
6. (a) A shop is offering a Trade Fair discount of 12% on all marked prices. How much shall I spend to buy a suit that is marked Lm72?



- (b) Anna puts Lm950 in a fixed account at 4.75% per annum simple interest. How much interest does she earn in 4 years?

(5 marks)

7. (i) The parallelogram ABCD has an area of  $52 \text{ cm}^2$ . What is the height  $h$  of the parallelogram?



- (ii) What is the area of triangle CDE?

(6 marks)

8. A tank weighs 40kg when empty. I fill it with oil. The tank now weighs 1090kg.  
(i) What is the weight of oil in the tank?

The oil weighs  $700 \text{ kg/m}^3$ .

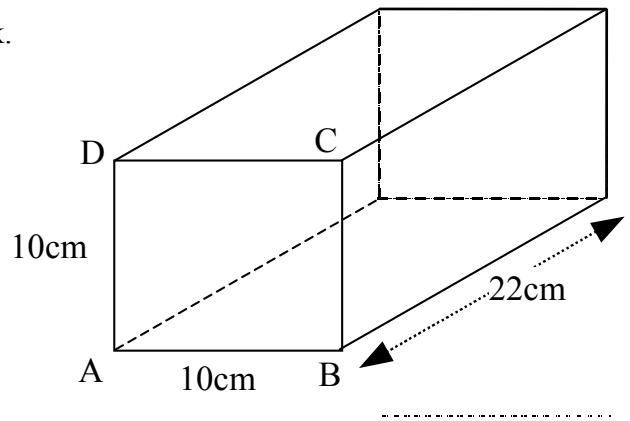
- (ii) How many  $\text{m}^3$  of oil are there in the tank?

(4 marks)

9. This is a block of metal.

(i) Find the area of the face ABCD of the block.

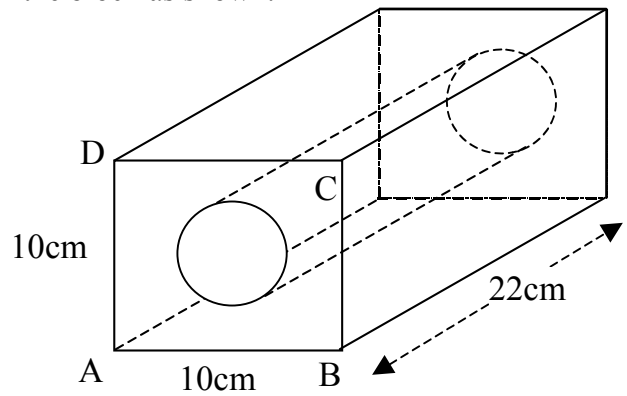
(ii) Find the volume of the block.



(iii) A hole of radius 3 cm is now drilled through the block as shown.

Find the volume of material left.

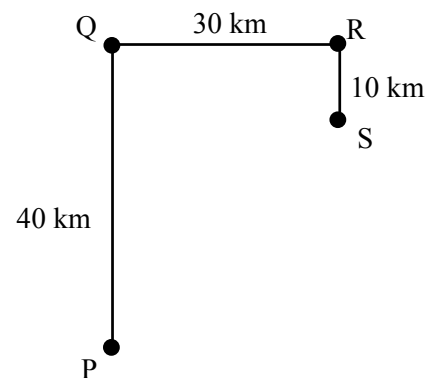
Give your answer to the nearest  $\text{cm}^3$ .



**(10 marks)**

10. (a) A boat leaves P and sails to Q 40km due North of P. It then travels to R which is 30km away and on a bearing of  $090^\circ$ . From R it goes to S which is 10km from R on a bearing of  $180^\circ$ .

What is the bearing of S from P?

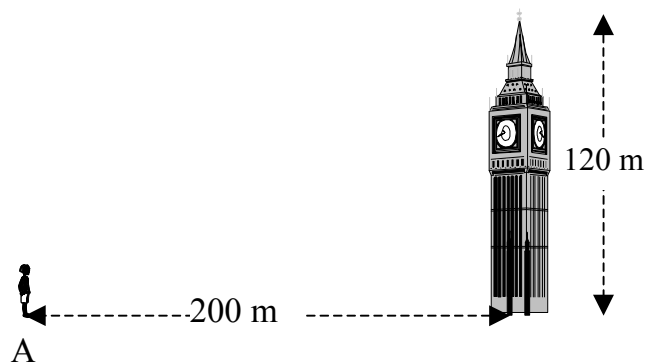




(b) A boy stands at A, 200 m away from a high tower.

Draw a scale diagram and use it to measure the angle of elevation of the top of the tower from A.

(You are advised to start your diagram from the point marked X)



X

-----

(8 marks)

11. 15 students in a class were asked the number of cousins they had. The frequency table shows the result.

Frequency Table:

Number of Cousins	1	2	3	4	5
Frequency (number of students)	1	4	6	2	2

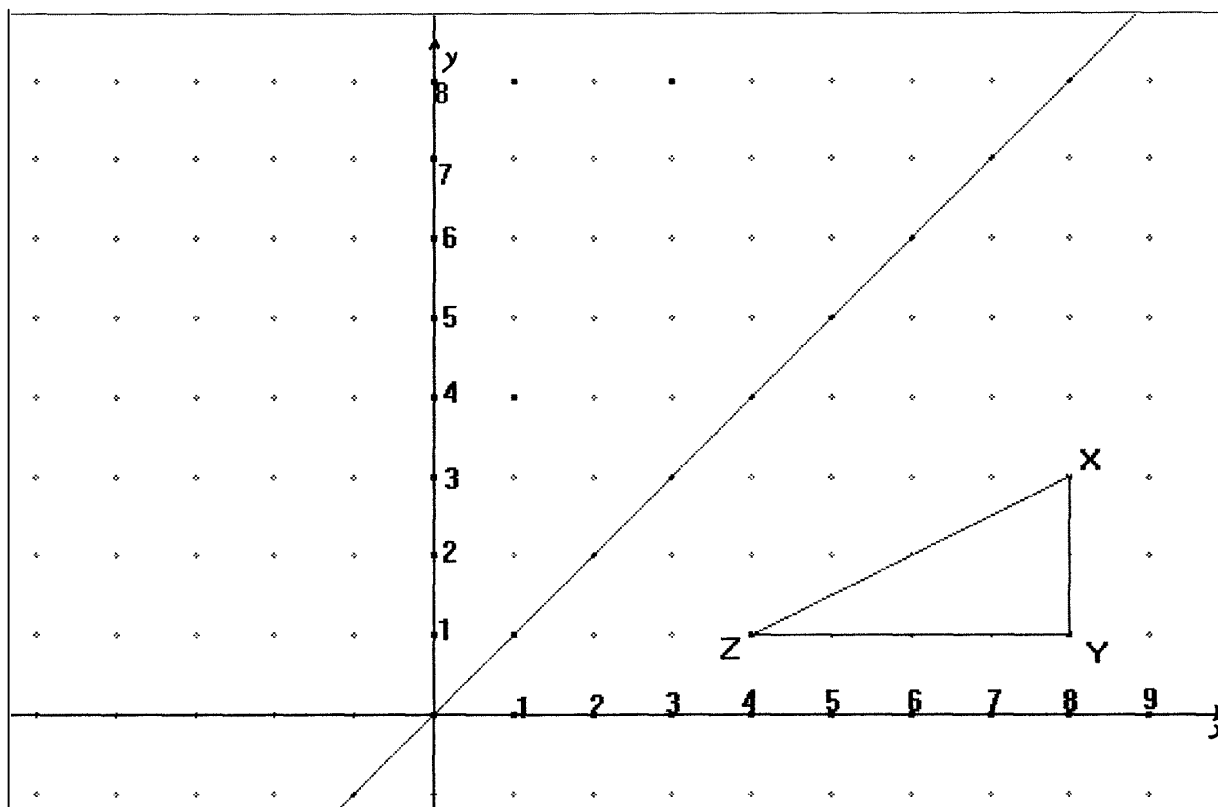
Use this table to calculate:

- (i) the total number of cousins,
- (ii) the mean,
- (iii) the median,
- (iv) the mode.

(7 marks)

12. (i) Draw the reflection of the triangle XYZ in the line  $y = x$ . Label your new triangle PQR.  
Write down the coordinates of P,Q and R:

P(     ,     )                  Q(     ,     )                  R(     ,     )



- (ii) A,B and C are the images of P,Q and R after a translation described by  $\begin{pmatrix} -4 \\ -1 \end{pmatrix}$ .

Work out the coordinates of A, B and C.

A(     ,     )                  B(     ,     )                  C(     ,     )

- (iii) Now draw the triangle ABC.

**(9 marks)**