

# SECONDARY SCHOOLS FINAL EXAMINATIONS – 2002

Educational Assessment Unit – Education Division.

**FORM 5**

**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.**

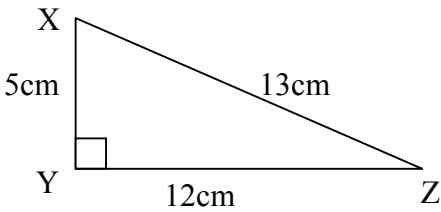
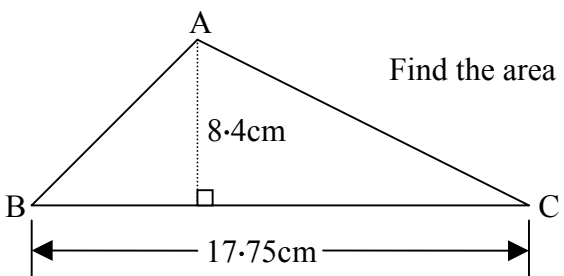
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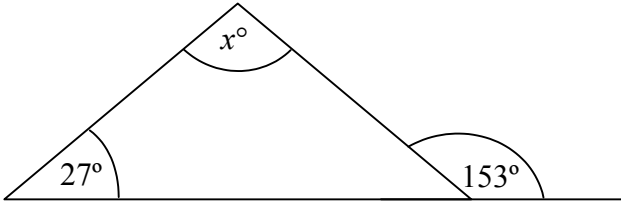
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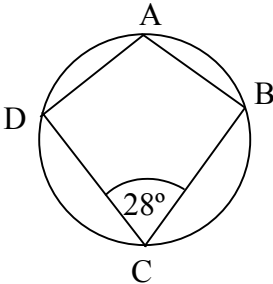
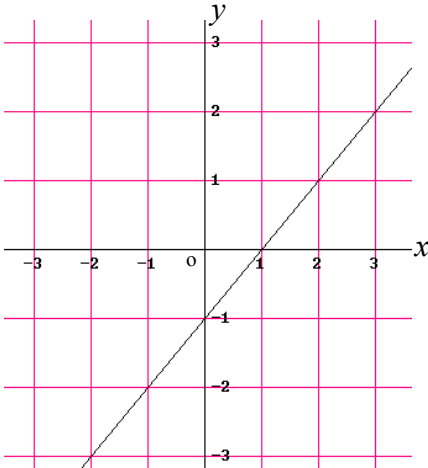
**IN**

**THIS**

**SPACE**

No.	QUESTION	SPACE FOR WORKING (IF REQUIRED)
1.	Write down the next prime number after 23. <div style="text-align: right;">Ans: _____</div>	
2.	Write 60% as a fraction in its lowest terms. <div style="text-align: right;">Ans: _____</div>	
3.	Through how many degrees does the minute hand of a clock turn in 20 minutes ? <div style="text-align: right;">Ans: _____</div>	
4.	3y means..... (A) $3 + y$ (B) $y \times y \times y$ (C) $y + y + y$ (D) $3 \div y$ . <div style="text-align: right;">Ans: _____</div>	
5.	What is the probability of picking at random the letter C from the word CALCULATOR ? <div style="text-align: right;">Ans: _____</div>	
6.	 <p>In triangle XYZ, <math>\tan Z</math> is :</p> <p>(A) <math>\frac{5}{13}</math>    (B) <math>\frac{12}{13}</math>    (C) <math>\frac{5}{12}</math>    (D) <math>\frac{12}{5}</math>.    Ans: _____</p>	
7.	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin-bottom: 10px;"> <math>17.75 \times 8.4 = 149.1</math> </div>  <p>Find the area of triangle ABC.</p> <div style="text-align: right;">Ans: _____</div>	

No.	QUESTION	SPACE FOR WORKING (IF REQUIRED)
8.	<p>The turtle is at the position shown. Make a sketch of what the turtle draws when given these LOGO commands.  <b>LT 90 FD 40 RT 90 FD 80</b></p>	
9.	<p>32% of the children in a primary school are boys.  What percentage are girls?  Ans: _____</p>	
10.	<p>Lm1 = 2.4599 Euros. An estimate for Lm1990 in Euros is:  (A) 800 (B) 5000 (C) 500 (D) 50000.  Ans: _____</p>	
11.	<p><math>2\frac{2}{7}</math> means:  (A) <math>2 \times \frac{2}{7}</math> (B) <math>\frac{22}{7}</math> (C) <math>2 \div \frac{2}{7}</math> (D) <math>2 + \frac{2}{7}</math>.  Ans: _____</p>	
12.	<p><math>5^{-2}</math> is equivalent to:  (A) 25 (B) 10 (C) <math>\frac{1}{25}</math> (D) <math>\frac{1}{52}</math>.  Ans: _____</p>	
13.	<p>A table and 6 chairs together cost Lm120.  A table and 4 chairs together cost Lm 90.  What is the cost of a chair?  Ans: _____</p>	
14.	<p>What is the size of angle <math>x</math>?</p>  <p>Ans: _____</p>	

No.	QUESTION	SPACE FOR WORKING (IF REQUIRED)
15.	<p>On a spreadsheet: the number in cell <b>B2</b> is 200 the number in cell <b>B3</b> is 57. In cell <b>B4</b> there is the formula <math>=(B2-B3) * 5</math> What value is obtained in cell <b>B4</b>?                      Ans: _____</p>	
16.	<p><math>\sqrt{225} = 15</math>. What is the value of <math>\sqrt{2 \cdot 25}</math>?                      Ans: _____</p>	
17.	<p>Use this function machine to obtain the value of <math>y</math> when <math>x = -10</math>.</p> <div style="text-align: center;">  </div> <p style="text-align: right;">Ans: _____</p>	
18.	<div style="display: flex; align-items: center;"> <div style="text-align: center; margin-right: 20px;">  </div> <div> <p>ABCD is a cyclic quadrilateral. Write down the size of <math>\angle BAD</math>.</p> <p style="text-align: right;">Ans: _____</p> </div> </div>	
19.	<p>Write down an estimate for <math>(29.65 + 9.85)^2</math>.                      Ans: _____</p>	
20.	<p>The equation for this straight line graph is:</p> <div style="display: flex; align-items: flex-start;"> <div style="margin-right: 20px;">  </div> <div> <p>(A) <math>y = x</math></p> <p>(B) <math>y = x + 1</math></p> <p>(C) <math>y = x - 1</math></p> <p>(D) <math>y = -x - 1</math>.</p> <p style="text-align: right;">Ans: _____</p> </div> </div>	

# SECONDARY SCHOOLS FINAL EXAMINATIONS – 2002

Educational Assessment Unit – Education Division.

**FORM 5**

**MATHEMATICS (Main Paper)**

**TIME: 1h 40 min**

1	2	3	4	5	6	7	8	9	10	11	12	13	TOTAL MAIN	NON CALCULATOR	GLOBAL MARK

**DO NOT WRITE ABOVE THIS LINE**

Name \_\_\_\_\_

Class \_\_\_\_\_

**CALCULATORS ARE ALLOWED  
BUT ALL NECESSARY WORKING MUST BE SHOWN.  
ANSWER ALL QUESTIONS.  
THIS PAPER CONTAINS 13 QUESTIONS.**

1. a) Simplify: (i)  $7.955 + 3.25 \times 5.86$ . (ii)  $2\frac{1}{4} \times 3\frac{1}{3} \div 2\frac{1}{2}$

- b) Write the answers to parts (i) and (ii) as a ratio in the form of  $n : 1$ .

: 
  = 
  : 
 1

(i)

(ii)

(5 marks)

2. *(Give your answers correct to one decimal place).*

- a) One litre of petrol costs 36 cents. Last week I spent Lm10.00 on petrol. How many litres of petrol did I buy?
- b) My car travelled 280 km on Lm10.00 of petrol. How many kilometres did my car travel on 1 litre of petrol ?
- c) Part of a spreadsheet, which I use to keep a record of how many kilometres my car travels on 1 litre of petrol, is shown below.

	A	B	Formula
1	Amount spent on petrol each week ( in Lm)	10	=B1*100/36
2	Amount of petrol bought each week ( in litres)	27.8	
3	Distance travelled each week ( in km)	280	=B3/B2
4	Number of km travelled on 1 litre of petrol	10.1	

What will the number in cell **B4** be if the number in cell **B3** is changed to 310?

(5 marks)

- 3 a) Calculate the simple interest on Lm650 at 3.5 % per annum after one year.
- b)  $I = \frac{PTR}{100}$ . Make P the subject of this formula.
- c) A sum of money was invested in a bank at 5.5 % per annum. After one year it gave a simple interest of Lm41.25. Calculate the value of the sum that was invested.

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(5 marks)

4. a) Write each number correct to one significant figure and **work** out an estimate for **P**:

$$P = \left( \frac{49.75 \times 31.6}{41.28 + 9.75} \right)^2$$

- b) Use your calculator to work out the value of **P** giving the answer:

(i) correct to 2 decimal places

\_\_\_\_\_

(ii) in standard form correct to 3 significant figures

\_\_\_\_\_

(iii) correct to the nearest 10.

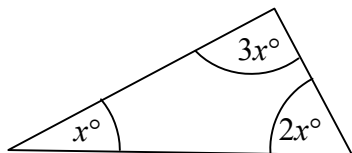
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(5 marks)

5. a) Solve the equation  $3(x - 5) = x + 5$ .

b)

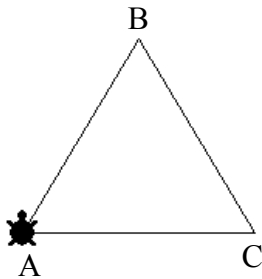


- Work out: (i) the value of  $x$   
(ii) the size of each angle of this triangle.

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(5 marks)

6.

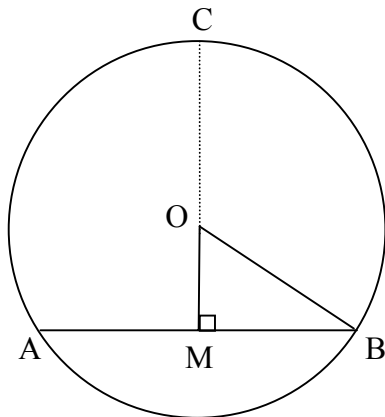


- a) The **equilateral** triangle ABC was drawn by using a set of LOGO commands. The drawing started at A and the turtle faced the direction shown. The turtle travelled a total of 450 turtle steps. Complete the following LOGO commands used to draw triangle ABC.  
**RT 30 REPEAT 3 [ FD \_\_\_\_\_ RT \_\_\_\_\_ ] LT 30.**

- b) The screen was cleared. The turtle was given another set of LOGO commands to draw a **square** of side 150 turtle steps. How many turtle steps did the turtle travel to draw the square?

(5 marks)

7.

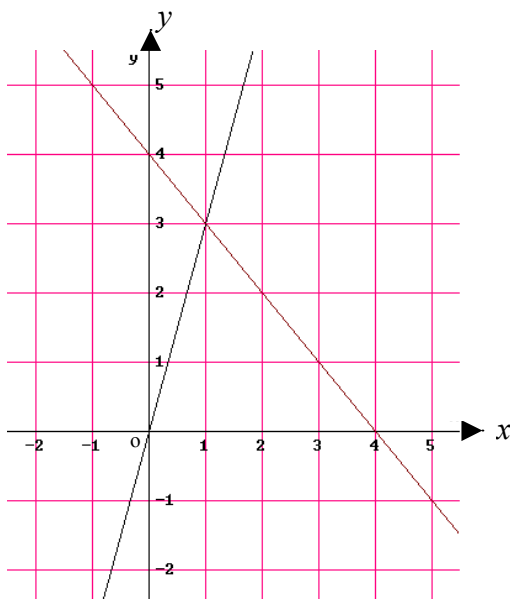


AB is a chord of a circle centre O. OM is the perpendicular from the centre to the chord. Given that  $AB = 8$  cm and  $OM = 3$  cm, calculate:

- the length of MB
- the length of the radius of the circle
- the length of CM.

(5 marks)

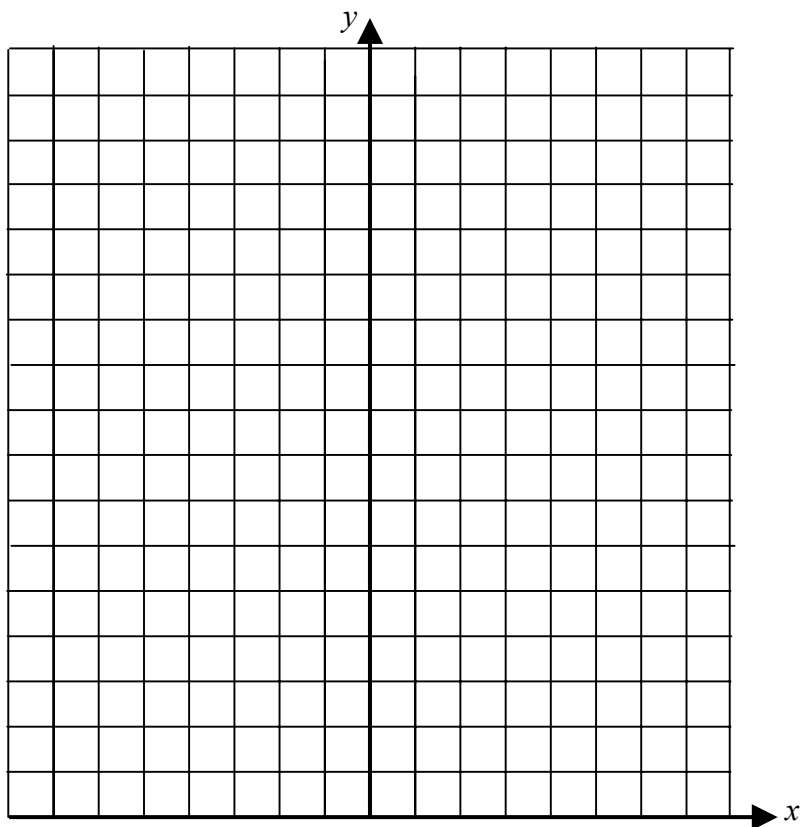
8.



- a) The diagram shows the graphs of two straight lines having these equations:  
 $y = 3x$  and  $y = 4 - x$ .  
 Write down the co-ordinates at the point of intersection. \_\_\_\_\_
- b) Solve the simultaneous equations:  
 $2x + y = 7$   
 $2x - y = 5$ .

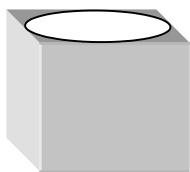
(5 marks)

9. On the squared grid given below choose a suitable scale for the  $x$ -axis from  $-6$  to  $6$  and for the  $y$ -axis from  $0$  to  $16$ .
- Plot the points A  $(-6, 0)$ , B  $(-4, 0)$  and C  $(-4, 4)$ . Join A, B and C.
  - Translate triangle ABC by the vector  $\begin{pmatrix} 3 \\ 4 \end{pmatrix}$  and label it T.
  - Reflect triangle T in the  $y$ -axis and label it M.
  - Enlarge triangle M by a scale factor of 2 about  $(0, 0)$ . Label it E.



(8 marks)

10. A cylinder of height 12cm and radius 6cm fits exactly inside a box as shown in the diagram.



- Calculate:
  - the length, breadth and height of the box
  - the volume of the cylinder, giving the answer correct to 4 significant figures
  - the volume of the box.
- Express the volume of the cylinder as a percentage of the volume of the box, giving the answer correct to 1 decimal place.

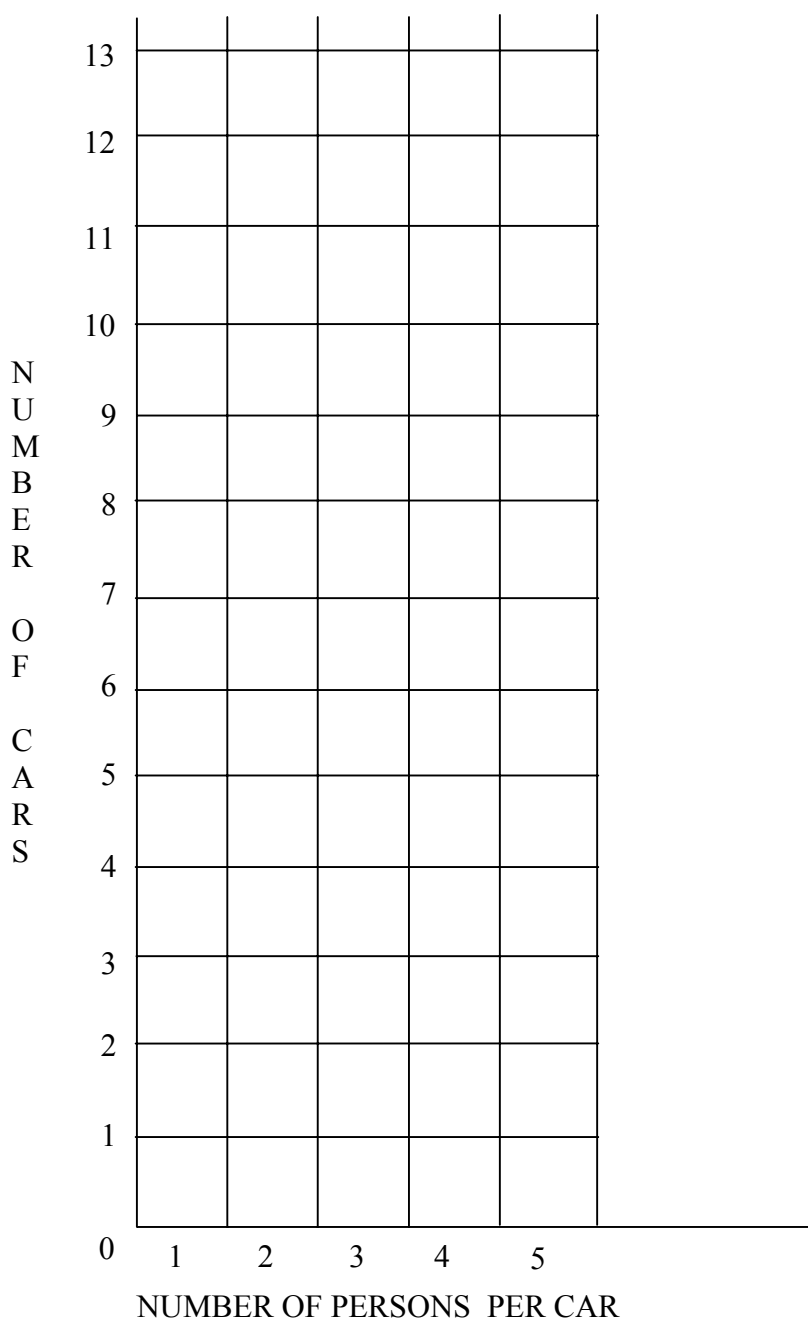
(8 marks)



11. The table shows the number of persons per car that were travelling along a main road one morning.

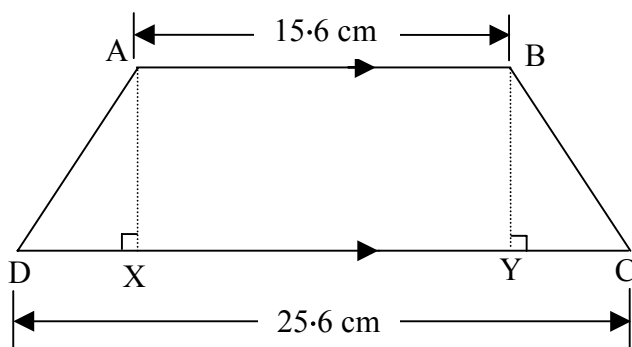
Number of persons per car	1	2	3	4	5
Number of cars	10	12	8	8	12

- How many cars passed by?
- How many persons travelled in these cars?
- Work out the **mean** number of persons per car.
- Write down the probability that a car travelling that morning carried 2 persons.
- On the grid provided below, draw a bar chart to illustrate the information given in the table.



(8 marks)

12. The figure shows a trapezium ABCD in which  $AB = 15.6$  cm,  $DC = 25.6$  cm and  $DX = CY$ . Angles AXD and BYC are both right angles. The area of the trapezium is  $123.6$  cm<sup>2</sup>.

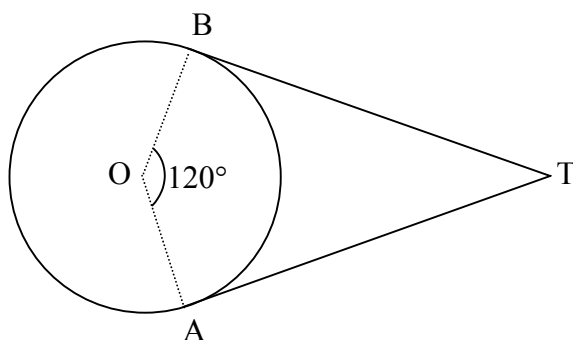


Calculate:

- AX, the height of the trapezium
- the length of DX
- the size of  $\angle ADX$ , giving the answer correct to the nearest degree
- the area of triangle ADX.

(8 marks)

13. AT and BT are two tangents from point T to a circle centre O and radius 5 cm.



- Draw the line of symmetry of this figure.
- Complete the following statements:

In  $\Delta$ s AOT and BOT

OT is common

AO = \_\_\_\_\_

$\angle OAT = \angle \text{_____} = \text{_____}^\circ$

$\therefore \Delta$ s AOT and BOT are

\_\_\_\_\_

- Calculate the area of the **minor** sector AOB, giving the answer correct to 3 significant figures.

(8 marks)

END OF PAPER