

# JUNIOR LYCEUMS ANNUAL EXAMINATIONS - 2000

Educational Assessment Unit - Education Division

FORM 2

MATHEMATICS (MENTAL)

TIME: 15 minutes

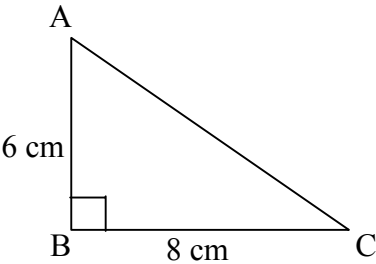
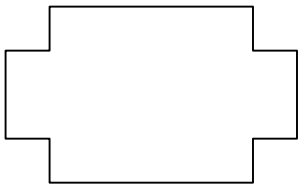
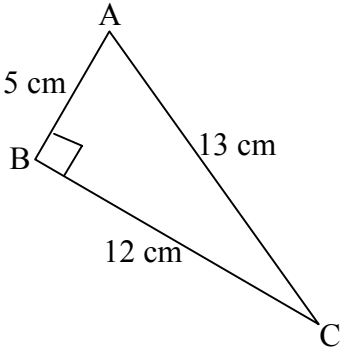
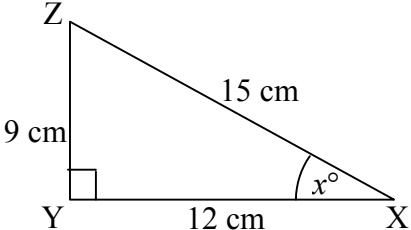
Name \_\_\_\_\_

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. Write $36.8 \times 10^{-2}$ as an ordinary number.	_____
2. A number is chosen at random from the first <b>ten</b> positive integers. What is the probability that it is a square number?	_____
3. Complete: $5^{\square} = \frac{1}{25}$	_____
4. Given that $3x + y = 7$ , make $y$ the subject of the equation.	_____
5. What is the length of AC? 	_____
6.  What is the order of rotational symmetry of this shape?	_____
7. What is 75% of Lm8.80?	_____
8. What is the area of $\triangle ABC$ ? 	_____
9. If $p = 2x - 3y$ , find the value of $p$ when $x = 3$ and $y = -1$ .	_____
10.  Write down the value of $\cos x^\circ$ as a fraction in its simplest form.	_____

# JUNIOR LYCEUM ANNUAL EXAMINATIONS 2000

Educational Assessment Unit - Education Division

**FORM 2**

**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 \_\_\_\_\_

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

**ANSWER ALL QUESTIONS.**

1. Work out correct to three significant figures:

(a)  $9.72^2$

(b)  $\sqrt{437.4}$

(c)  $(9.72)^2 - \sqrt{437.4}$

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

(4 marks)

2. (a) Express the following ratios in their simplest form:

(i) 3 cm : 12 mm

(ii) 3.5 kg : 560 g

(b) The map ratio of a map is  $1 : 5\,000$ . A length on the map is 7.2 cm. What real length, in metres, does this represent?

(4 marks)



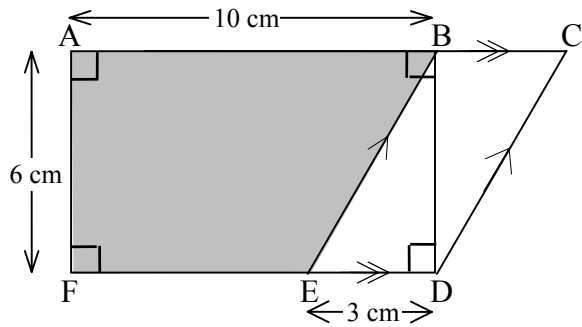
7. ABDF is a rectangle and BCDE is a parallelogram. Work out the area of:

(a) the rectangle ABDF; \_\_\_\_\_

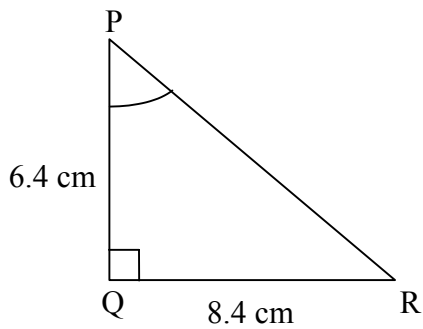
(b) the triangle BDE; \_\_\_\_\_

(c) the parallelogram BCDE; \_\_\_\_\_

(d) the shaded part ABEF; \_\_\_\_\_  
\_\_\_\_\_



8.



Work out correct to 1 decimal place:

(a) the size of angle QPR; \_\_\_\_\_

(b) the size of angle PRQ; \_\_\_\_\_

(c) the length of PR. \_\_\_\_\_  
\_\_\_\_\_

9. (a) The shaded triangle is translated to two different positions **X** and **Y**.  
Complete:

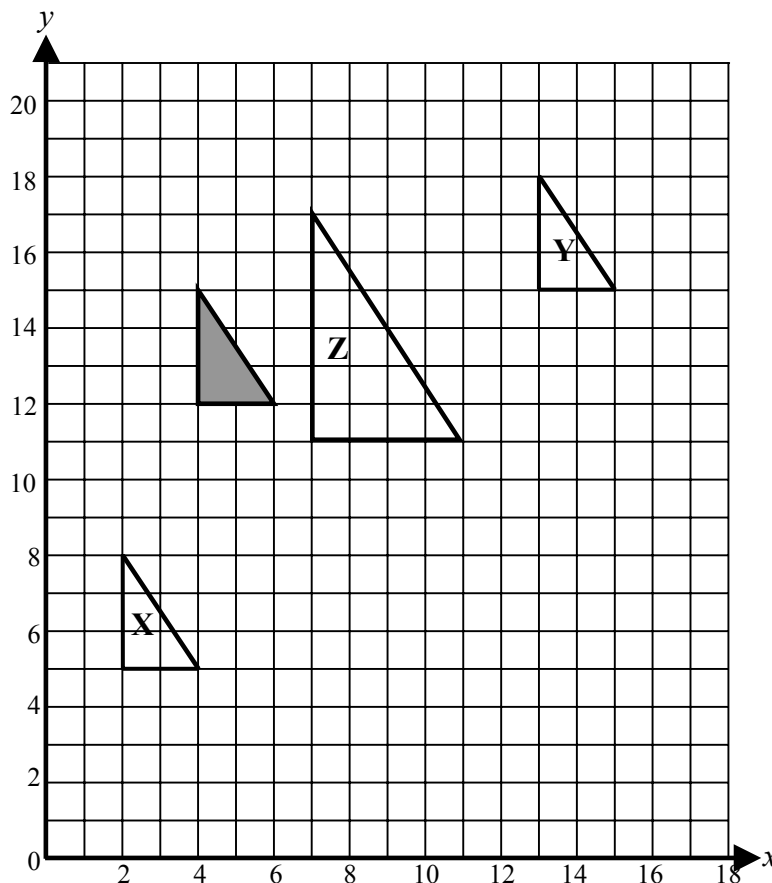
(i) The shaded triangle is translated to triangle **X** by the column vector  $\begin{pmatrix} \quad \\ \quad \end{pmatrix}$ .

(ii) The shaded triangle is translated to triangle **Y** by the column vector  $\begin{pmatrix} \quad \\ \quad \end{pmatrix}$ .

(b) **Z** is an enlargement of the shaded triangle. Give the co-ordinates of the centre of the enlargement and the scale factor.

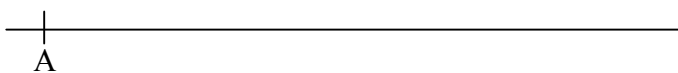
Co-ordinates: (   ,   )

Scale Factor is \_\_\_\_\_.



(6 marks)

10. (a) Construct a triangle ABC in which  $AB = 6.5$  cm,  $AC = 5.4$  cm and angle  $BAC = 80^\circ$ .



- (b) Using ruler and compasses only, bisect the line AB and let this bisector meet BC at point T.  
(c) Measure and write down the length of AT.

AT = \_\_\_\_\_ cm.

(6 marks)

11. (a) It takes Sarah 50 minutes to walk 4 km. How long would it take her to walk 5 km if she walks at the same speed?

\_\_\_\_\_

(b) Four men build a wall in 6 hours. How long would three men take to build the wall if they work at the same rate?

\_\_\_\_\_

(c) During a sale a shopkeeper reduces the prices of his goods by 20%. Work out the sale price of a pair of shoes which, before the sale, were marked Lm12.50.

\_\_\_\_\_

(d) Mr Farrugia decides to give his workman a 5% increase in his salary. The man now earns Lm120 per week. What will he get after the pay rise?

\_\_\_\_\_

(8 marks)

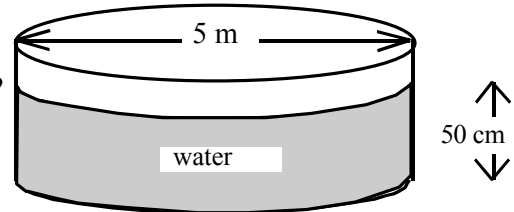
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12. Mr Zerafa builds a pond in his garden. The pond is circular and has a diameter of 5 metres.

(a) What is the radius of the pond?

\_\_\_\_\_ m.

(b) What is the area of the space taken up by the pond?  
(Give your answer correct to **2 decimal places**.)



\_\_\_\_\_ m<sup>2</sup>.

(c) Mr Zerafa wants to put a fence around the pond. How many metres of fencing does he need?  
(Give your answer correct to **the nearest metre**.)

\_\_\_\_\_ m.

(d) Mr Zerafa decides to fill the pond with water to a height of 50 cm. How many litres of water does he need? (Give your answer correct to **three significant figures**.)

Circumference of a circle = $2\pi r$ Area of a circle = $\pi r^2$ 1 litre = $1000 \text{ cm}^3$
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\_\_\_\_\_ l.

(8 marks)

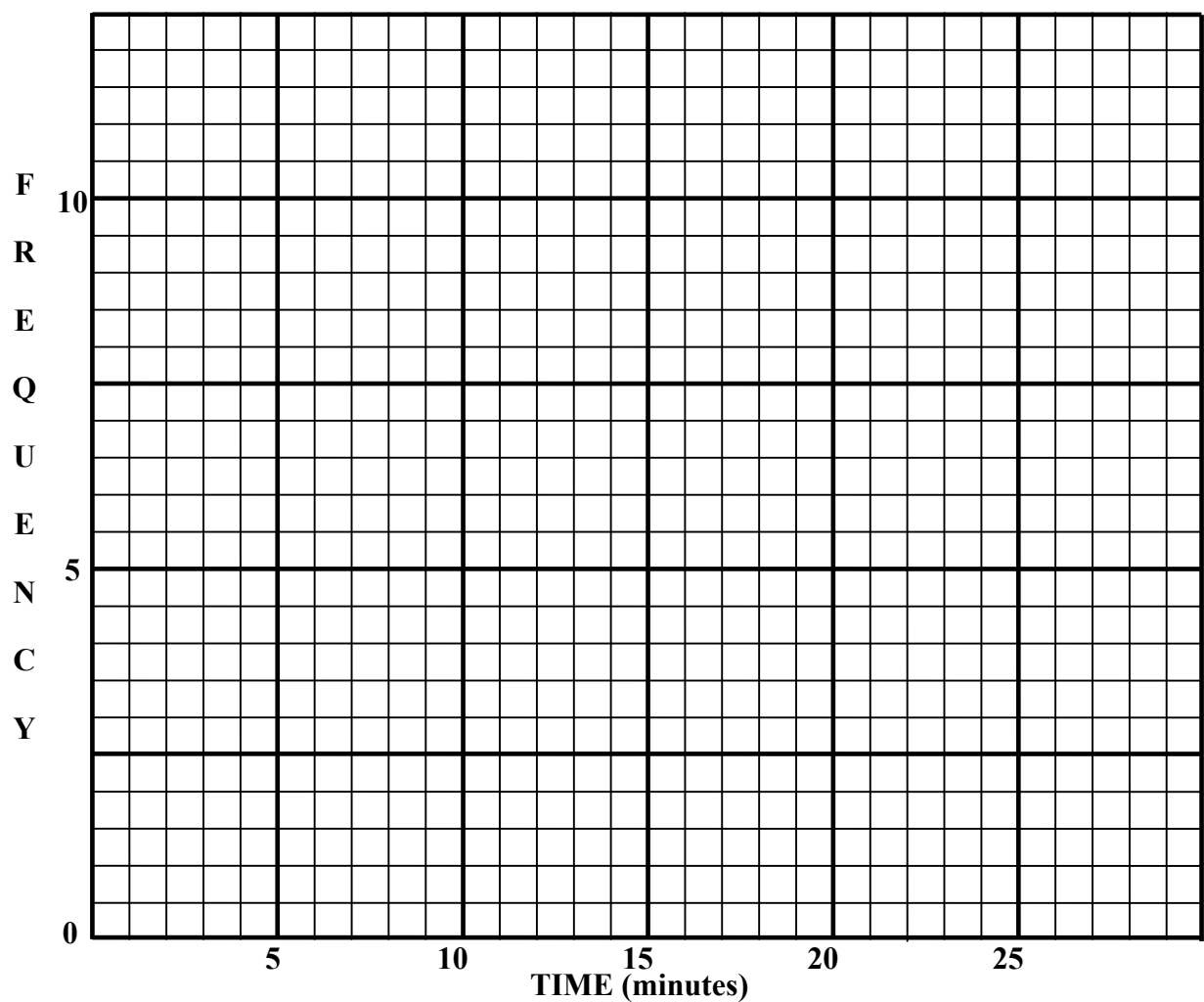
13. (a) In a box there are 3 green balls, 2 white balls and 4 yellow balls. A ball is taken at random from the box.
- (i) What is the probability that it is a yellow ball? \_\_\_\_\_
- (ii) What is the probability that it is **not** green? \_\_\_\_\_
- (b) The following is a list of the times, in minutes, taken by a group of 30 students to arrive from home to school one morning.

15 5 7 7 8 5 8 24 20 4  
 10 3 24 16 10 12 11 21 18 7  
 20 6 9 12 8 12 22 23 15 18

(i) Complete the frequency table below:

Time, T, in minutes	$0 \leq T < 5$	$5 \leq T < 10$	$10 \leq T < 15$	$15 \leq T < 20$	$20 \leq T < 25$
Frequency	2				

(ii) On the graph paper below draw a bar chart to illustrate this information.

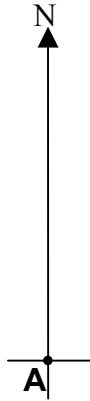


(8 marks)



14. From a town A, the bearing of an airport, P, is  $070^\circ$ . B is another town, 6 kilometres due north of A. The bearing of the airport, P, from B is  $120^\circ$ .

(a) Draw a rough sketch to show all the given information.



- (b) Use a scale of 1 cm to 1 km to make a scale drawing and use it to find:
- the distance, in kilometres, of the airport from town A;
  - measure angle APB.

(i) distance AP = \_\_\_\_\_ km

(ii) angle APB = \_\_\_\_\_  $^\circ$ .

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(8 marks)

15 (a) Complete this table for  $y = 2 - x$ .

$x$	-3	-2	-1	0	1	2	3
2	2	2		2		2	2
$-x$	3			0		-2	
$y$	5			2		0	

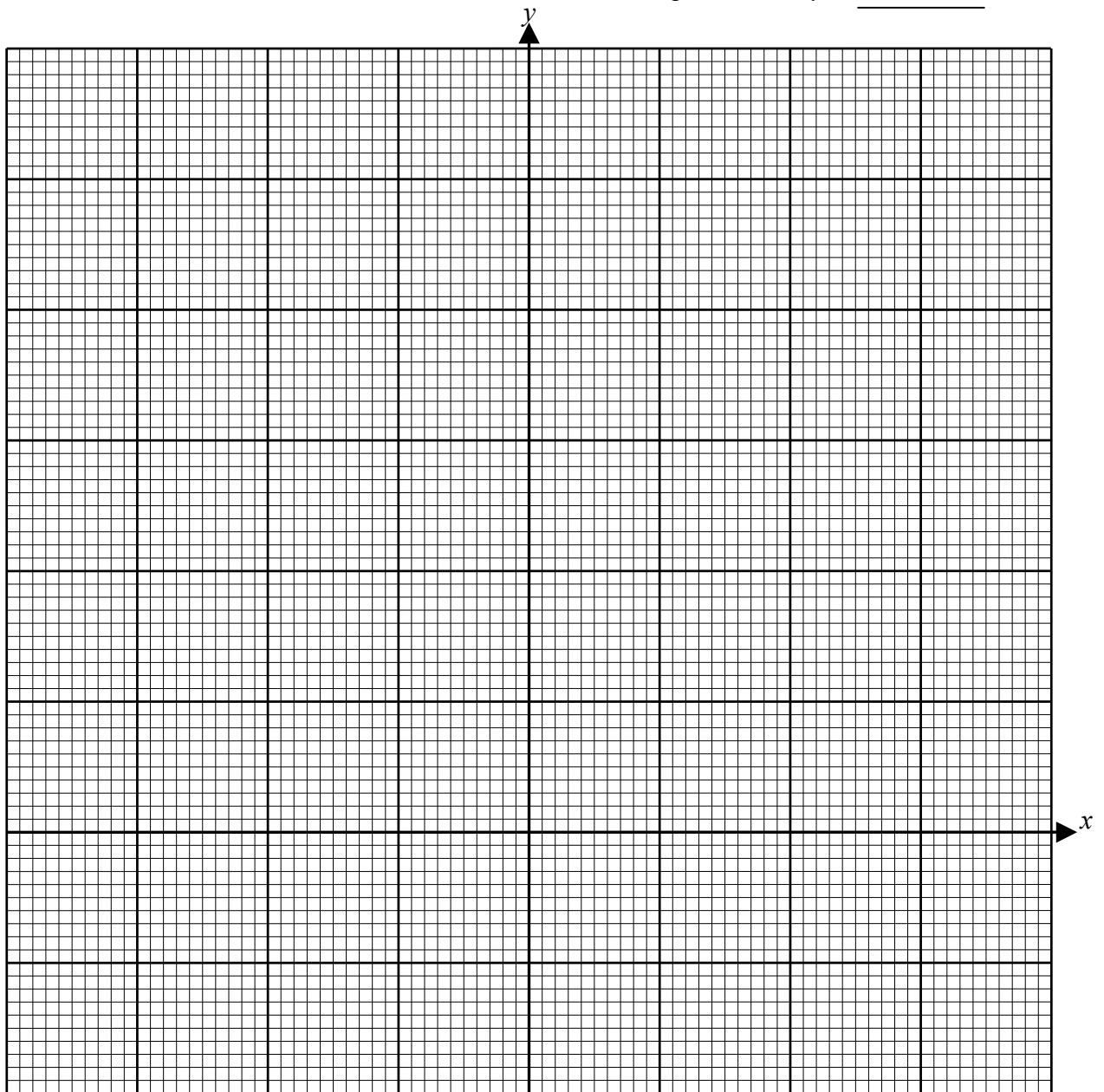
(b) Using a scale of 2 cm to represent 1 unit on each axis, draw the graph of  $y = 2 - x$ .

(c) Write down the co-ordinates of the point where the line cuts the  $x$ -axis.

Co-ordinates (   ,   )

(d) Write down the equation of the line which is parallel to  $y = 2 - x$  and which passes through the origin.

Equation  $y =$  \_\_\_\_\_



(8 marks)