SECONDARY SCHOOL ANNUAL EXAMINATIONS – 2004

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.

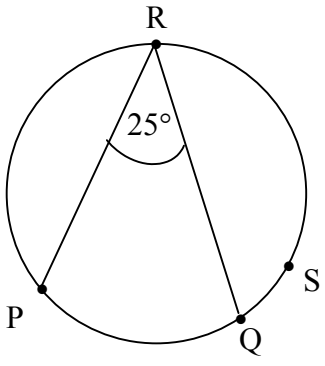
DO NOT

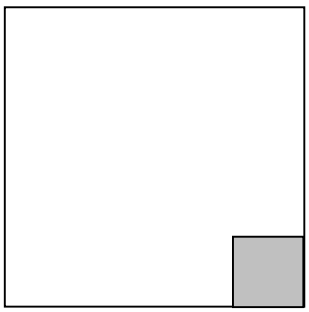
WRITE

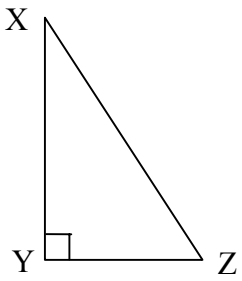
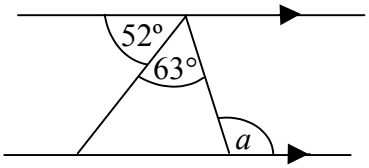
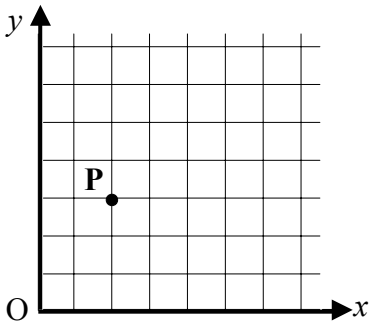
IN

THIS

SPACE

No.	QUESTION	SPACE FOR WORKING (IF REQUIRED)
1.	How many **50 cent** coins make Lm10? Ans: _____	
2.	$\sqrt{82}$ is approximately : A) 10 B) 9 C) 8 D) 7. Ans:_____	
3.	Complete this geometrical fact. 'Two **tangents** drawn to a circle from the same point outside the circle are …….. in length.' Ans_____	
4.	$2^3 + 2^2$ is equal to: A) 2^5 B) 4^5 C) 12 D) 32. Ans:_____	
5.	Lm1 is equivalent to € 2·428. Change Lm1500 to euro. Ans:_____	
6.	Simplify $2\frac{4}{5} + 3\frac{1}{3} - \frac{4}{5} - 1\frac{1}{3}$. Ans:_____	
7.	 The marked angle PRQ measures 25°. When point Q is dragged to a new position S: A) ∠PRS will be **smaller** than ∠PRQ. B) ∠PRS will be **bigger** than ∠PRQ. C) ∠PRS **remains equal** to ∠PRQ. Ans: _____	

No.	QUESTION	SPACE FOR WORKING (IF REQUIRED)
8.	The turtle is given the following LOGO commands. **PD FD 120 BK 120 RT 90 FD 60 HOME** The turtle starts at the position shown. Make a sketch of what the turtle draws to satisfy these LOGO commands. 	
9.	This question refers to a spreadsheet. Cell **A1** contains the value 5. Cell **A2** contains the value 4. Cell **A3** contains a formula that reads =(A1+A2)^2. What value would you expect in cell **A3**? Ans: _____	
10.	 The diagram shows a big square of side 4cm and a small shaded square of side 1cm. What fraction of the big square is shaded? Ans: _____	
11.	$\frac{1}{9}$ is equivalent to: A) 9^1 B) 1^{-9} C) 3^2 D) 3^{-2} Ans: _____	
12.	The vertices of a **regular hexagon** lie on the circumference of a circle. The angle subtended at the centre of the circle by one of the sides of the hexagon is equal to: A) 30° B) 45° C) 60° D) 90°. Ans: _____	
13.	6 apples and 4 bananas cost 72 cents. 5 apples and 3 bananas cost 58 cents. What is the **total** cost of **an apple and a banana**? Ans: _____	

No.	QUESTION	SPACE FOR WORKING (IF REQUIRED)
14.	Given that $f(x) = 2x^2$, find f(3). Ans: _____	
15.	The side of a square is of length 9cm. A rectangle having one side of length 10cm is **equal in area** to the square. Find the length of the other side of the rectangle. Ans:_____	
16.	 A circle passes through the vertices of triangle XYZ. The centre of this circle is: A) inside the triangle B) at the midpoint of side XZ C) somewhere outside the triangle XYZ D) at the midpoint of side XY. Ans: _____	
17.	A quadrilateral has **all its sides equal**. Its diagonals are **not equal**. This type of quadrilateral is called: A) rectangle B) parallelogram C) rhombus D) square. Ans:_____	
18.	 What is the size of angle a? Ans: _____	
19.	The graphs of $y = 2x - 4$ and $y = 2x + 5$ are drawn using the same axes and scales. What is the distance between the points where the graphs cut the y-axis? Ans:___ units	
20.	The coordinates of point P are (2,3). Point P is translated to point Q by the vector $\begin{pmatrix} 3 \\ -2 \end{pmatrix}$. The coordinates of point Q are: A) (4,6) B) (4,0) C) (5,5) D) (5,1). Ans:_____	

SECONDARY SCHOOL ANNUAL EXAMINATIONS – 2004

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. $p = 2{\cdot}83 \times 10^{-2}$ and $q = 5{\cdot}8 \times 10^{-3}$, work out the **sum** of p and q.
Give the answer in standard form.

(4 marks)

2. Fiona invested €6400 in a bank at 5·5% per annum.
a) How much interest (in euro) did she receive after **one year**?

b) **Lm1 is equivalent to €2·428.** Change the **interest** that she received to Maltese Liri.
Give the answer correct to the nearest cent.

(4 marks)

3. The sum of the **interior** angles of a polygon is 1080°.
Work out the number of sides of this polygon.

(4 marks)

4. a) The diagram shows part of a spreadsheet.

	A	B	C
1	75		
2	63		
3	82		
4	70		
5	95		
6			

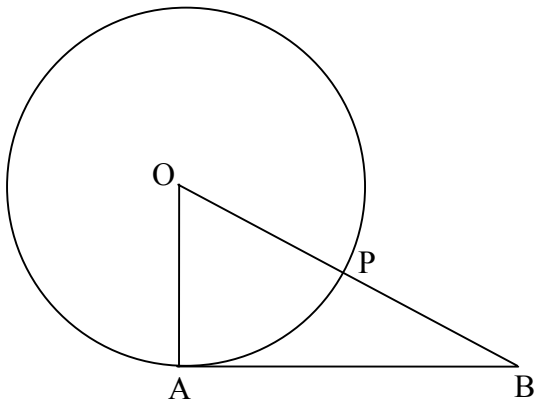
Column **A** shows the marks that Patrick obtained in five Mathematics tests. Underline the formula that you would use in cell **A6** to obtain Patrick's **average** mark for these tests.

=(A1+A5)/5 **=sumA1:A5/5** **=sum(A1:A5)/5**

b) Simon sat for five Mathematics tests. In the first **four** tests the marks he obtained were 82, 70, 75 and 80.
His average mark for the **five** tests was 75. Work out his mark for the fifth test.

(4 marks)

5.



O is the centre of a circle of radius 8 cm.
AB is a tangent of length 15 cm touching the circle at A. P is the point of intersection of OB and the circumference of the circle.

a) What is the size of angle OAB?
Give a reason for your answer.

_____ ° _____

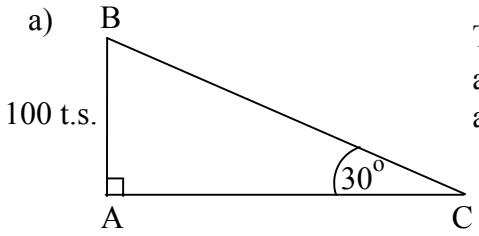
b) Work out the length of OB.

c) Write down the **ratio** OP **:** PB. _____

(5 marks)

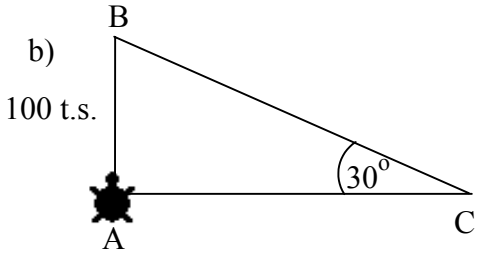
Name _____ Class _____

6. a)



Triangle ABC is right-angled at A, AB = 100 turtle steps and ∠ACB = 30°. Work out the length of BC, giving the answer in turtle steps.

b)



Complete this set of LOGO commands given to the turtle to draw the right-angled triangle ABC. The turtle started at point A as shown.

PD FD 100 RT _____ FD_____ HOME

(5 marks)

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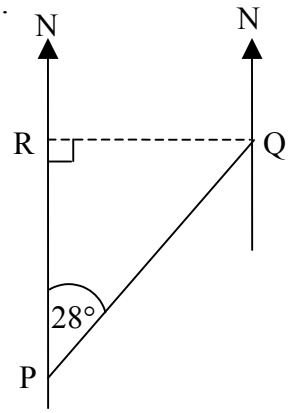
7. **Use ruler and compasses only. All construction lines and arcs must be clearly shown.**
   a) Mark a point Q on the given line such that PQ is 5·5 cm.
   b) Construct a triangle PQR in which PR = QR = 7 cm.
   c) Construct the perpendicular bisector of PQ.
   d) Find, by construction a point **T** such that PQTR is a **parallelogram**.
   e) Measure and write down the size of ∠PQT.

(6 marks)

8.

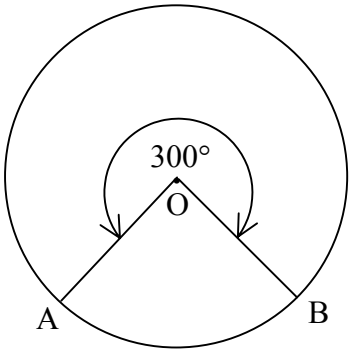


A boat travelled from P to Q on a bearing of 028°.
The distance from P to Q is 6 km. The boat travelled at a speed of 1·5 km/h.

a) How long did the boat take to travel from P to Q?
b) What is the bearing of P from Q?
c) Work out the distance PR. Give the answer correct to 1 decimal place.

(8 marks)

9. O is the centre of a circle of radius 5·5 cm. A and B are two points on the circumference of the circle such that the **reflex** angle AOB is 300°.



a) What is the size of the **acute** angle AOB?

b) Work out the length of the **minor arc** AB, giving the answer correct to 2 decimal places.

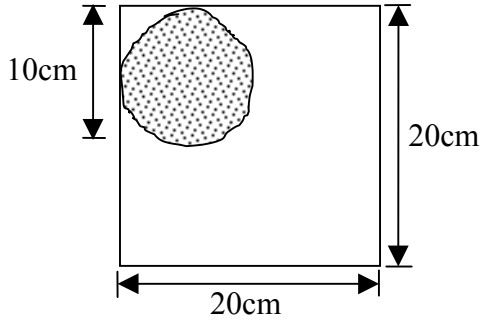
c) What is the length of the chord AB?

d) Work out the **difference** in length between the minor arc AB and the chord AB. Give the answer correct to 2 decimal places.

(8 marks)

10. A rectangular box is 20 cm long, 20 cm wide and 8 cm high. Closed glass cylinders have a diameter of 10 cm and a height of 8 cm. These glass cylinders are placed **upright** inside the box.

a) Paul made a free hand sketch to show their arrangement as seen from above.
Complete the sketch to find the greatest number of such cylinders that can **just fit** into the rectangular box.



b) (i) Work out the **volume of the rectangular box**.

(ii) Calculate the **total volume of the glass cylinders** that fit inside the box.
Give the answer correct to the nearest cm^3.

(iii) The empty space inside the box is completely filled with sand. Work out the **volume** of the sand that is used. Give the answer correct to the nearest cm^3.

(8 marks)

11. a) Solve the equation $\frac{x}{6} = 4.5$

b) Make L the subject of the formula $P = 2(L + B)$.

c) Solve the simultaneous equations:
$5a + 2b = 23$
$3a - 2b = 1$

(8 marks)

12. a) A fair **six** sided die is thrown once. Write down the probability of obtaining:

(i) a score of 3.

(ii) an even number.

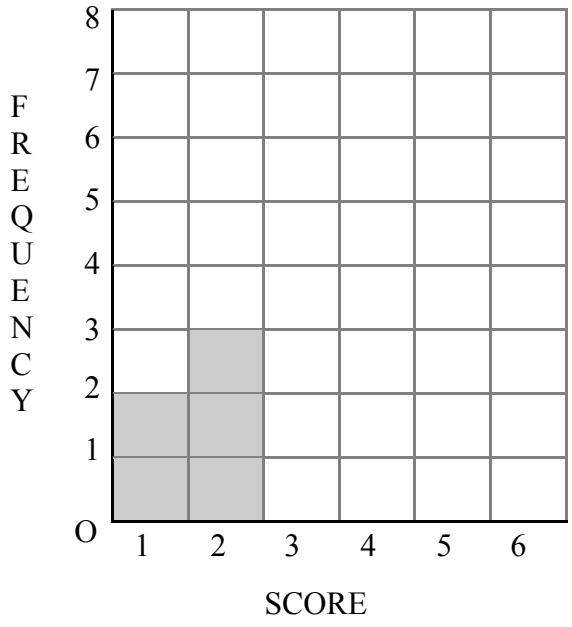
b) Andrew threw a **six** sided die **30 times**. The table shows the scores obtained.

SCORE	1	2	3	4	5	6
FREQUENCY	2	3	6	8		5

(i) Fill in the missing space in the given table to show the number of times that a score of 5 was obtained.

(ii) What is the **modal score**?

(iii) Complete the bar chart using the data from your table.



(8 marks)

13. On the given grid:

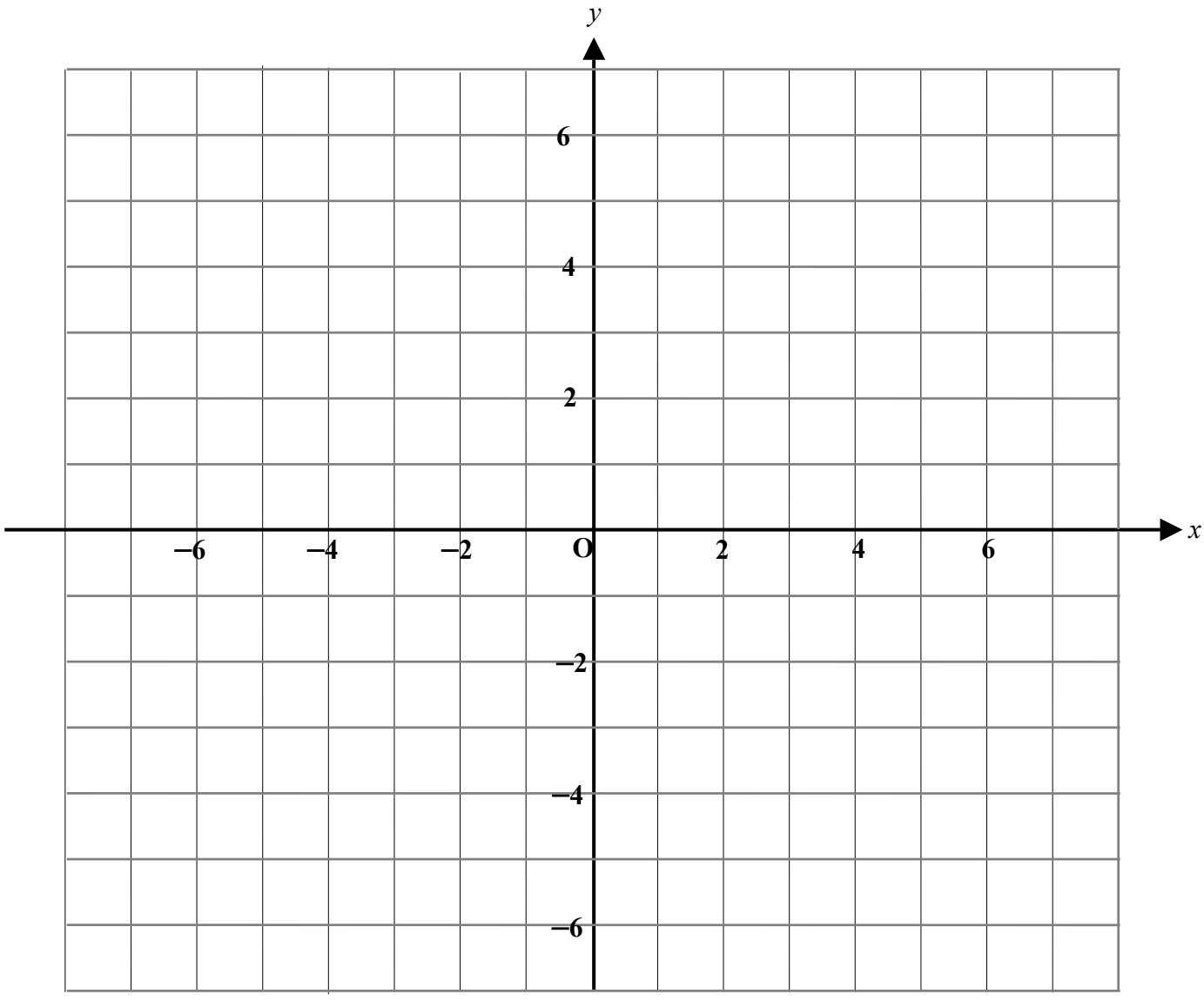
a) **Plot** and **join** the points (2,2) (4,2) (5,6) and (1,6) to form a **trapezium**. Label this figure A.

b) Draw the line $y = 1$.

c) **Reflect** figure A in the line $y = 1$ and label it B.

d) **Translate** figure B by the vector $\begin{pmatrix} -6 \\ 3 \end{pmatrix}$ and label the image C.

e) One of the vertices of **figure A** lies on the graph of $y = x$. Write down the coordinates of this point.



(8 marks)

END OF PAPER

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