

# SECONDARY SCHOOLS FINAL EXAMINATIONS – 2001

Educational Assessment Unit – Education Division.

**FORM 5**

**MATHEMATICS (MENTAL)**

**TIME: 15 min.**

Name \_\_\_\_\_

Class \_\_\_\_\_

Mark

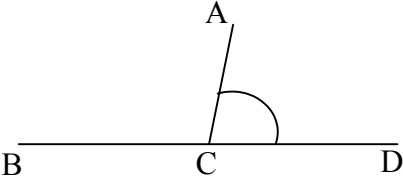
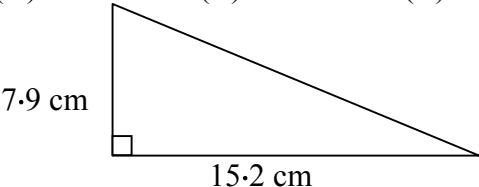
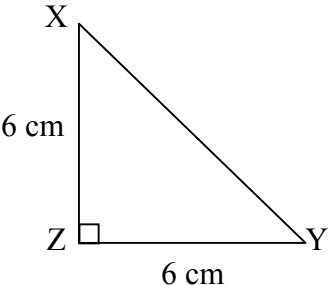
**ANSWER ALL QUESTIONS.**

**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.	$73 \times 18 = 1314$ . Write down the value of $7.3 \times 1.8$ .	
2.	<p>Angle ACD is roughly:            (A) <math>105^\circ</math>      (B) <math>75^\circ</math>      (C) <math>180^\circ</math>      (D) <math>20^\circ</math>.</p> 	
3.	Find the value of $(x - 3)(x + 5)$ when $x = 3$ .	
4.	<p>The area of this triangle is roughly:            (A) <math>23 \text{ cm}^2</math>    (B) <math>46 \text{ cm}^2</math>    (C) <math>60 \text{ cm}^2</math>    (D) <math>120 \text{ cm}^2</math>.</p> 	
5.	A sheet of 10 stamps costs 60 cents. What is the cost of 50 such stamps ?	
6.	<p>A rough estimate for <math>\frac{397 \times 50.3}{30.2 + 9.6}</math> may be:            A) 60      (B) 18      (C) 50      (D) 500.</p>	
7.	Last Sunday a boat traveled between Malta and Gozo in 35 minutes. It left Malta at 9.45 a.m. At what time did the boat reach Gozo ?	
8.	<p>What is the size of angle XYZ ?</p> 	
9.	Estimate the circumference of a circle of radius 10 cm. ( $C = 2\pi r$ )	
10.	Express 0.000835 in standard form.	

# SECONDARY SCHOOLS FINAL EXAMINATIONS – 2001

Educational Assessment Unit – Education Division.

**FORM 5**

**MATHEMATICS (MAIN )**

**TIME: 1h 45 min.**

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TOTAL MAIN	MENTAL MARK	GLOBAL MARK

**DO NOT WRITE ABOVE THIS LINE**

Name \_\_\_\_\_

Class \_\_\_\_\_

**CALCULATORS ARE ALLOWED  
BUT ALL NECESSARY WORKING MUST BE SHOWN.  
ANSWER ALL QUESTIONS.**

1. Change:
- a) 2.55 kilograms to grams.
  - b) 435 cents to Maltese Liri.
  - c)  $3.5 \text{ m}^2$  to  $\text{cm}^2$ .

(4 marks)

2. John invested Lm 5000 at 3% p.a.
- a) How much interest does he earn after one year ?
  - b) Interest is taxed at 15%. How much tax does he pay on this interest ?

(4 marks)

3. Solve the equation  $5(x - 4) + 3(x + 7) = 17$ .

(4 marks)

4. One interior angle of a regular polygon is  $140^\circ$ . Work out:
- the size of one exterior angle
  - the number of sides of this polygon.

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(4 marks)

5. a) Fill in with a positive integer  $81 = 3^{\square}$ .
- b) Hence  $81 \times 3^2 = 3^{\square}$ .
- c) Simplify  $y^8 \div y^2$ .

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(4 marks)

6. A bus travelling from Valletta to Paceville can carry a total of 60 passengers. On a certain trip there were 45 passengers on the bus.
- Express this number of passengers as a percentage of the total number of passengers that the bus can carry.
  - At Msida some passengers boarded the bus and now there were 80% of the total number of passengers that the bus can carry.  
How many passengers were there on the bus at Msida ?

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(6 marks)

7. Given that:  $\mathbf{C} = \begin{pmatrix} 3 & 2 \\ 1 & 8 \end{pmatrix}$  and  $\mathbf{D} = \begin{pmatrix} 3 & -2 \\ 5 & 0 \end{pmatrix}$

Work out the matrices: a)  $3\mathbf{D}$       b)  $\mathbf{X} = 3\mathbf{D} + \mathbf{C}$       c)  $\frac{1}{4}\mathbf{X}$ .

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(6 marks)

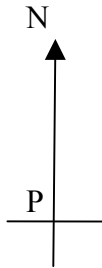
8. **Use ruler and compasses only. All construction lines and arcs must be clearly shown.**

- a) Draw a circle of radius 5 cm.
- b) Construct a regular hexagon whose vertices ABCDEF lie on the circumference of this circle.
- c) Join the points A and B to the centre O of the circle.
- d) Write down the size of angle AOB.

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(6 marks)

- 9 A man left point P and walked 50 metres due North to a point R.  
Then he ran 100 metres due East to arrive at a point Q.
- Taking a scale of 1 cm = 10 m; make a scale drawing for this information.
  - Measure and write down the length, in cm, from P to Q.
  - Work out the actual distance, in metres, from P to Q ?
  - Measure and write down the bearing of Q from P.



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(6 marks)

10. A motorist spent the following amounts on petrol each month during the year 2000:  
Lm 18, Lm 24, Lm 20, Lm 18, Lm 25, Lm 24,  
Lm 22, Lm 20, Lm 18, Lm 24, Lm 24, Lm 27.
- Arrange these amounts in order of size, the smallest first.
  - Write down:
    - the mode
    - the median.
  - Work out the mean of these amounts.

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(6 marks)

11. A group of students is made up of 4 girls: Maria, Amanda, Kim and Ruth together with 6 boys namely: Dennis, Paul, Simon, Trevor, Brian and James.  
A box contains 3 balls each numbered either 4 or 6 or 8. Every student picked at random a ball from the box. The ball was replaced after each draw.

a) Complete the possibility space diagram for all probable draws by each student.

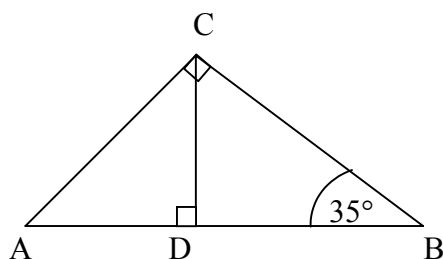
	4	6	8
Maria	<b>M 4</b>	<b>M 6</b>	
Amanda		<b>A 6</b>	<b>A 8</b>
Kim			<b>K 8</b>
Ruth			
Dennis			
Paul	<b>P 4</b>	<b>P 6</b>	<b>P 8</b>
Simon			
Trevor			
Brian	<b>B 4</b>	<b>B 6</b>	<b>B 8</b>
James			

- b) Giving the answers as fractions in the simplest form, work out the probability that:
- one of the boys picked a number bigger than 5.
  - one of the girls picked a number smaller than 5.
  - one of the girls picked a number 6 or bigger.

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(8 marks)

12. Triangle ABC is right-angled at C. Angle ABC is  $35^\circ$  and  $BD = 20$  m.  
CD is perpendicular to AB. Work out:



- the size of angle BAC
- the length of CD correct to 2 significant figures
- the distance AD correct to 1 decimal place
- the total distance from A to B.

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(8 marks)

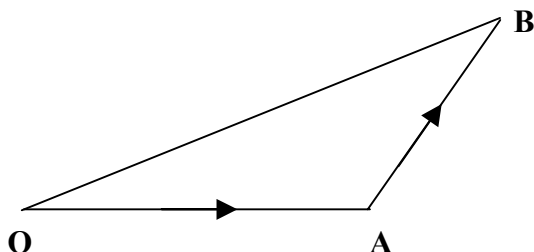
13.

$$\vec{OA} = \begin{pmatrix} 6 \\ 0 \end{pmatrix} \quad \text{and} \quad \vec{AB} = \begin{pmatrix} 2 \\ 4 \end{pmatrix}$$

M is the midpoint of  $\vec{OB}$ .

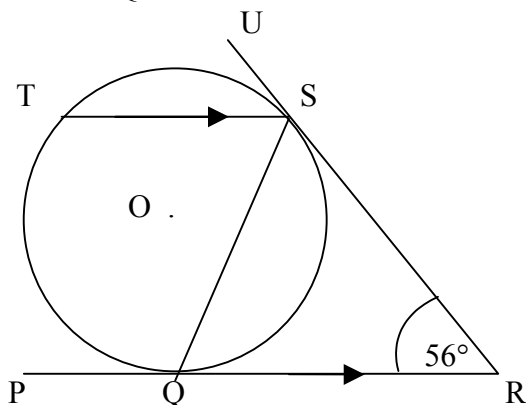
- a) Work out the following vectors: (i)  $\vec{OB}$  and (ii)  $\vec{OM}$  giving the answer in the form  $\begin{pmatrix} p \\ q \end{pmatrix}$ .
- b) Work out the magnitude of  $\vec{OB}$  giving the answer correct to 1 decimal place.
- c)  $\vec{MP}$  is equal and parallel to  $\vec{OA}$ .

Write down  $\vec{OP}$  in the form  $\begin{pmatrix} p \\ q \end{pmatrix}$ .



(8 marks)

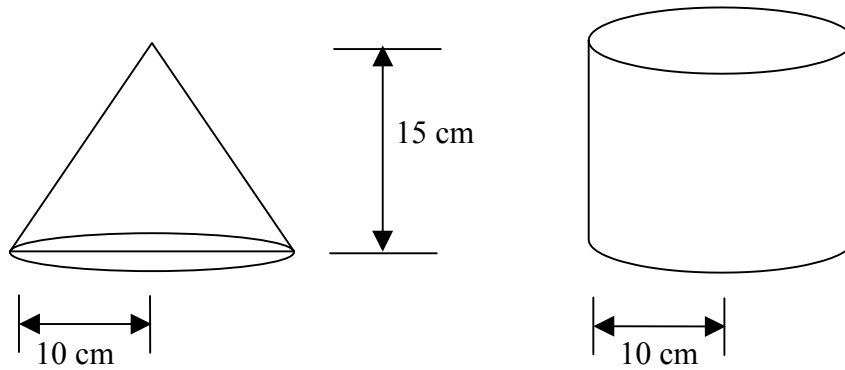
14. PQR and RSU are two tangents to the circle centre O. TS is parallel to the line PQR and  $\angle QRS = 56^\circ$ . Give reasons for your answers.
- a) What can you say about the length of QR and SR?
- b) Calculate the size of  $\angle SQR$ .
- c) Work out the size of  $\angle TSQ$ .
- d) Show that SQ bisects  $\angle TSR$ .



(8 marks)



15. A cone and a cylinder have an equal height of 15 cm. The radii of the cone and the cylinder are both equal to 10 cm.



- a) Calculate, giving the answers correct to 3 significant figures:
- (i) the volume of the cylinder
  - (ii) the volume of the cone
  - (iii) the total volume of the two shapes together.
- b) Write down, in its simplest form, Volume of cylinder : Volume of cone.

$$\text{Volume of a cone} = \frac{1}{3} \pi r^2 h$$

(8 marks)

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**END**

**SPACE FOR ROUGH WORK IF NEEDED**