SECONDARY SCHOOL ANNUAL EXAMINATIONS 2006

Educational Assessment Unit – Education Division

FORM 4 MATHEMATICS (NON-CALCULATOR PAPER) TIME: 20 minutes

Name _____ Class_____

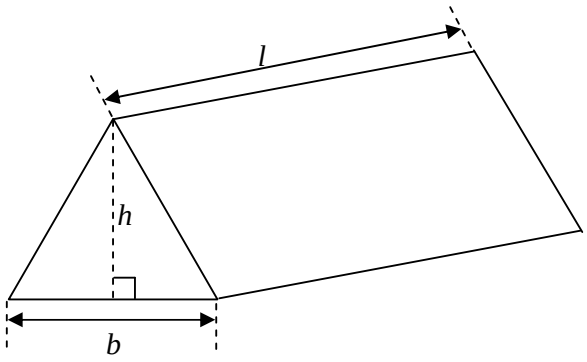
Mark

Instructions to Candidates

- Answer all questions. There are 20 questions to answer.
- Each question carries 1 mark.
- Calculators, rulers, protractors and other mathematical instruments are not allowed.
- You are not required to show your working. However space for working is provided if you need it.

No.	QUESTION	Space for Working if Required
1.	Work out: $-2 + (-3) - (-7)$ Ans_____	
2.	Estimate the value of $5{\cdot}02 \times (9{\cdot}93 - 1{\cdot}88)$ Ans_____	
3.	$\frac{1}{2}$ of 150% is equal to: (a) 0·5 , (b) 1·5 or (c) 0·75 Ans_____	
4.	Put in order, smallest first: $3{\cdot}88\times10^{2}$, $4{\cdot}96\times10^{-2}$, $5{\cdot}32\times10^{-3}$, $1{\cdot}08\times10^{3}$. Ans_____	
5.	If $x : y = 1 : 4$, find x when $y = 20$. Ans_____	
6.	In a party there are 25 persons, 3 of whom are left-handed. Give the number of left-handed persons as a percentage. Ans_____	
7.	Calculate the average speed, in km/h, of a cyclist who travels 125 km in 5 hours.  Ans_____	
8.	The volume of a solid cube is 1000 cm^3. Calculate the total surface area of the cube.  Ans_____	
9.	Estimate the circumference of a circle of radius 4 cm. Ans_____	
10.	How many sides does a regular polygon with an exterior angle of 36° have? Ans_____	

11.

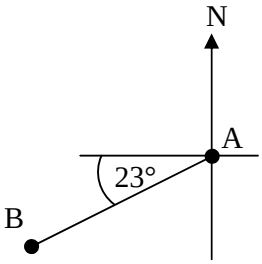


Which of the following formulae gives the volume of this prism?

(a) V = lbh (b) V = $\frac{lbh}{2}$ (c) V = $\frac{l+b+h}{2}$

Ans_____

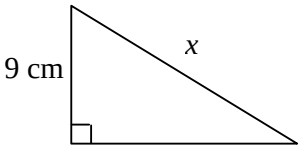
12.



Calculate the three-figure bearing of B from A.

Ans_____

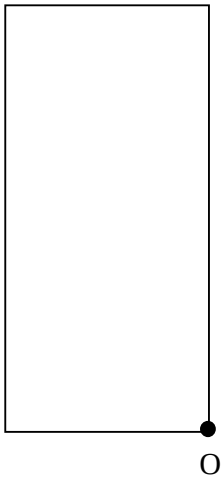
13.



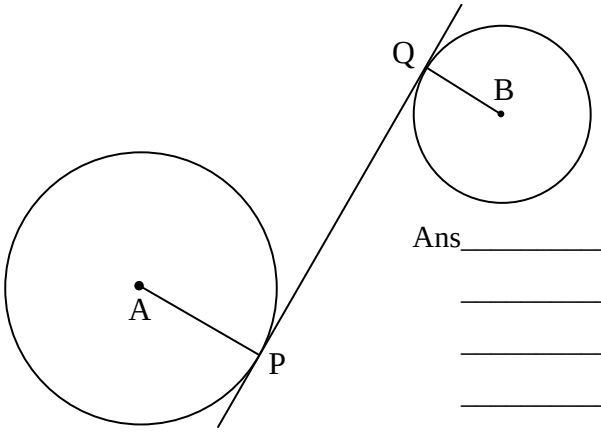
What is the length of the side marked x?

Ans_____

14.



Draw the image of this shape after a rotation of 90° clockwise about O.

15.	PQ is a common tangent to two circles with radii AP and BQ as shown in the diagram. Explain why AP and BQ must be parallel.  Ans_____ _____ _____ _____	
16.	Solve the equation: $3x + 4 = 25$ Ans_____	
17.	Find the **median** of the following numbers – 7 , 4 , – 6 , 5 , – 3 , 0 , 3 . Ans_____	
18.	The probability of winning a lottery is $\frac{1}{200}$. What is the probability of **not** winning the lottery? Ans_____	
19.	Give the name of the quadrilateral which is produced by the following Logo program: **pd fd 100 rt 70 fd 50 rt 110 fd 130 home** Ans_____	
20.	Calculate the simple interest on Lm200 in 2 years at 4% per annum. Ans_____	

SECONDARY SCHOOL ANNUAL EXAMINATIONS 2006

Education Assessment Unit – Education Division

FORM 4 **MATHEMATICS (MAIN PAPER)** **TIME: 1 hour 40 minutes**

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	Total Main	Non Calculator	Global Mark
Mark																

DO NOT WRITE ABOVE THIS LINE

Name: _____ Class: _____

CALCULATORS ARE ALLOWED BUT ALL NECESSARY WORK MUST BE SHOWN

ANSWER ALL QUESTIONS

1. A map scale is 1**:**20000.
   (a) Give the length on the map in cm that represents 1 km.

   (b) Give the length on the map in cm that represents 6·4 km.

4 marks

2. A bank exchanges €1 for Lm0·4329. Use this rate to change:
   (a) €86 into Lm, correct to the nearest cent.

   (b) Lm129 into €, correct to the nearest Euro.

4 marks

3. If $x = 2a - 3b$

(a) Find the value of x when $a = 4$ and $b = -6$.

(b) Make a the subject of the formula.

4 marks

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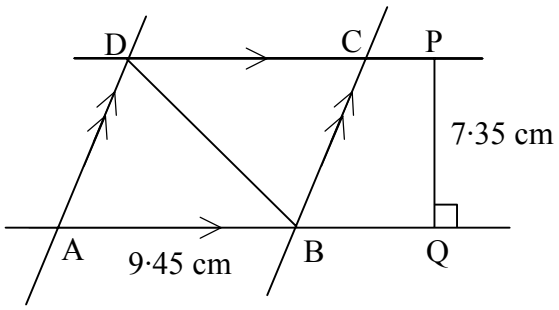
4. In the diagram:
   - Line ABQ is parallel to line DCP
   - Line AD is parallel to line BC
   - PQ is perpendicular to ABQ
   - AB = 9·45 cm
   - PQ = 7·35 cm



Calculate, correct to 2 decimal places:

a) The area of quadrilateral ABCD.

b) The area of triangle ABD.

4 marks

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5. a) Expand and simplify: $3(a + b) + 2(4a - b)$

b) Factorise: $3ab - 6b$

5 marks

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6. a) Evaluate: i) $2^{-3}=$ ii) $x^{0}=$ iii) $\left(\frac{1}{3}\right)^{-2}=$

b) Write as a single number in index form:

i) $15^{3} \times 15^{4} =$

ii) $17^{8} \div 17^{5} =$

7 marks

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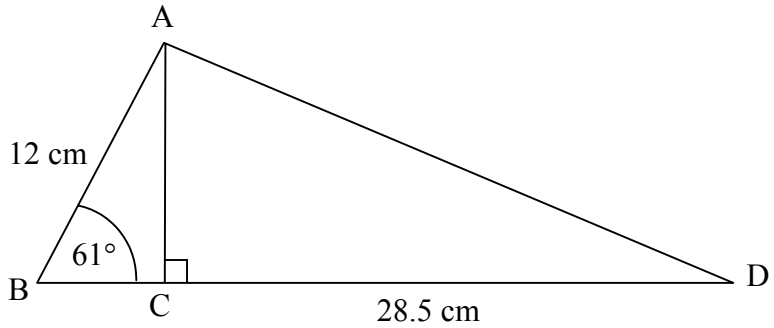
7. In Δ ABD, AC is perpendicular to BD , AB = 12cm, CD = 28·5cm, and $\angle$ABD = 61°.

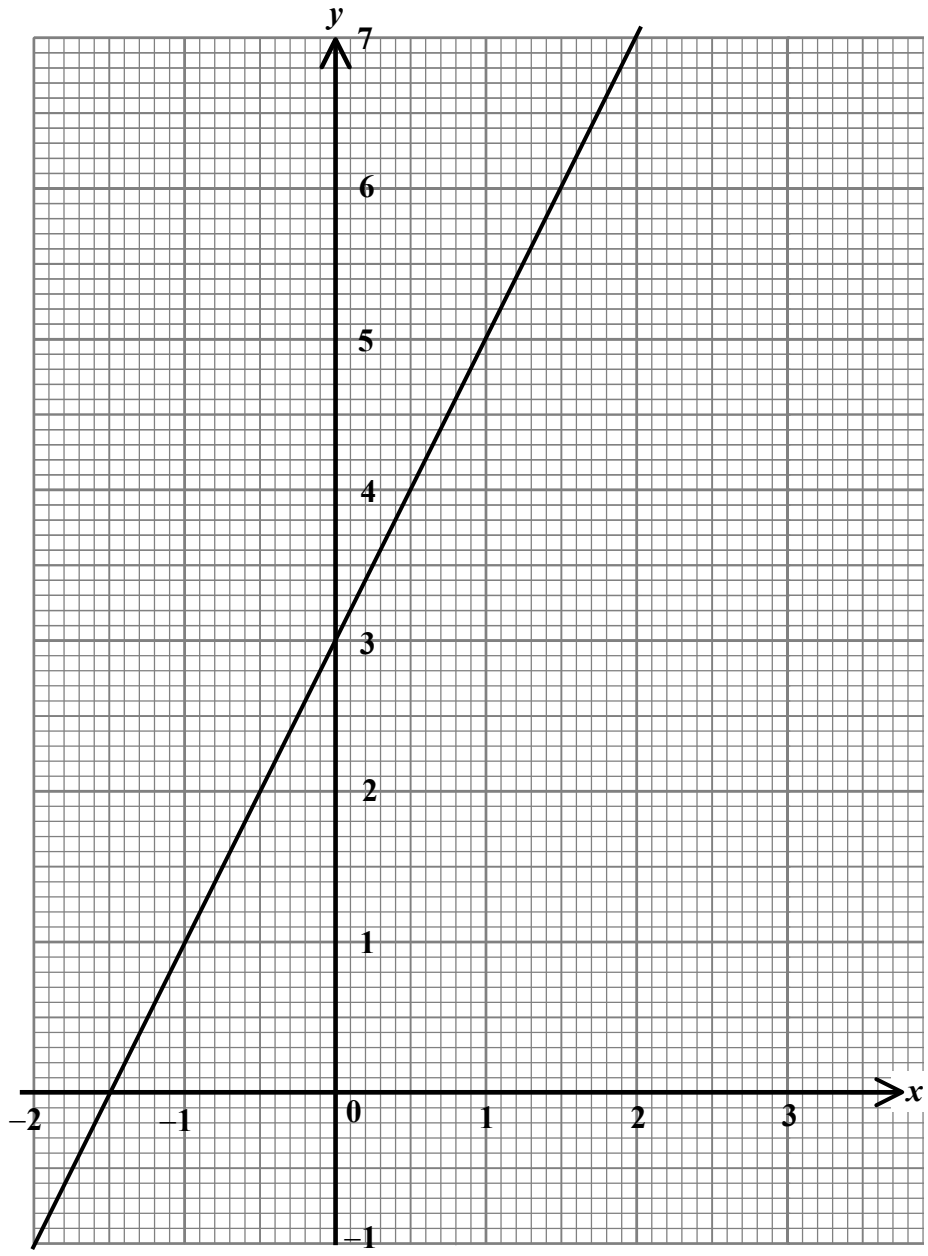


a) Calculate the length of AC correct to 3 significant figures.

b) Calculate $\angle$ADC correct to 1 decimal place.

6 marks

8.



Given that the graph shown has an equation of the form: $y = mx + c$,

a) ***m*** is called the _____

b) ***c*** is called the _____

c) Calculate the value of ***m***.

d) Write down the value of ***c***. _____

e) Write down the **equation** of the line. _____

6 marks

9. In a bag there are two red dice and one blue dice all numbered from 1 to 6. One dice is removed at random and then tossed.

a) Complete the following possibility space to show all the possible outcomes.

		SCORE					
		1	2	3	4	5	6
COLOUR	**RED**			R3			
	RED						R6
	BLUE	B1					

b) What is the probability of removing:

i) A **red** dice and getting a score of **5**. _____

ii) A **blue** dice and getting an **odd** number. _____

5 marks

10.

a) Electricity units cost 4c per unit and there is a fixed charge of Lm2·40 on each bill. Calculate the bill in Lm on 1876 units.

b) A company clerk is paid Lm6604 for a period of 52 weeks. He receives his salary in the form of a cheque every four weeks. Calculate:

i) The number of cheques the company clerk receives in the 52-week period.

ii) The amount on every cheque.

6 marks

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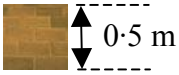
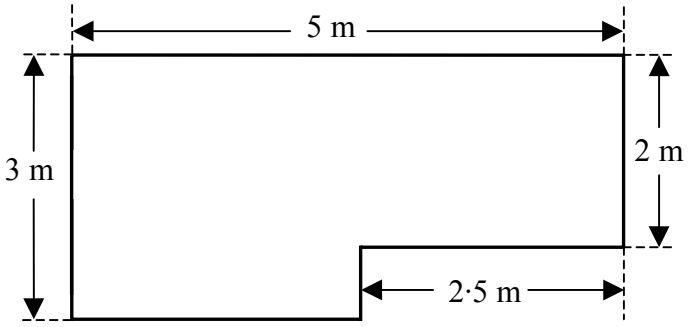
11. The diagram shows the floor of a room to be covered with square tiles, where each tile is of length 0·5 m.

a) Calculate the area of one tile in m^2.



b) Calculate the area of the floor in m^2.



c) Calculate the number of tiles needed.

d) If each tile weighs 5·2 kg, calculate the total weight of the tiles to be used.

e) If the tiles cost Lm16 per m^2, calculate the total cost of the tiles if only an exact amount of m^2 can be bought.

11 marks

12. The following are the number of goals scored in each game played by a football team this season.

2	0	1	2	1	0	0	3	2	4	1	2	1	1
2	1	1	2	3	2	4	3	1	0	2	0	0	2
3	4	2	0	0	1	1	3	2	2	0	1	2	0

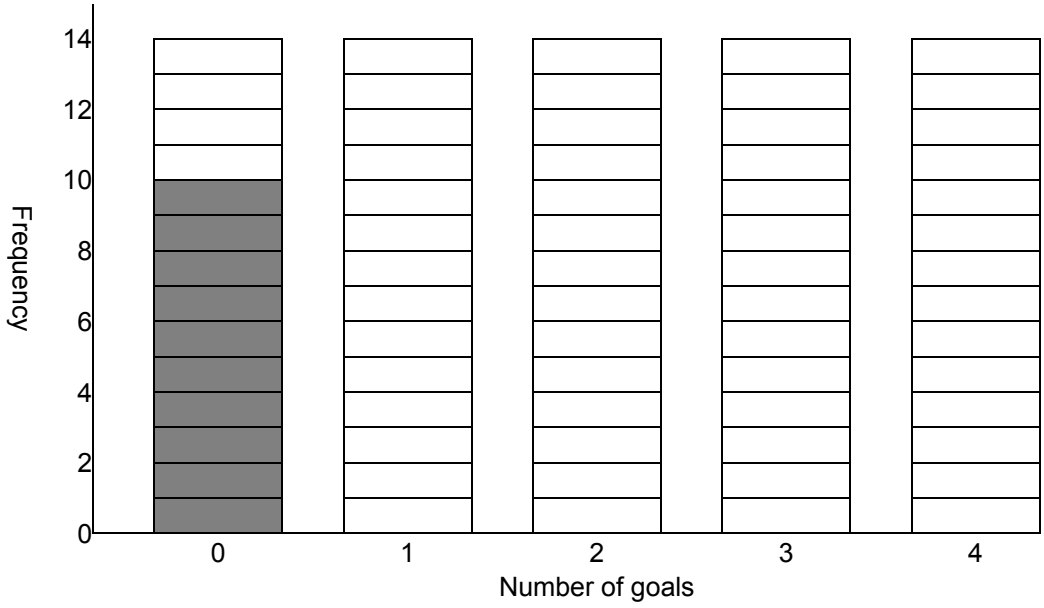
a) Complete the following frequency table:

Number of goals	0	1	2	3	4
Frequency	10				

b) Underline the correct answer: The **mode** is: 0 , 1 , 2 , 3 , 4 .

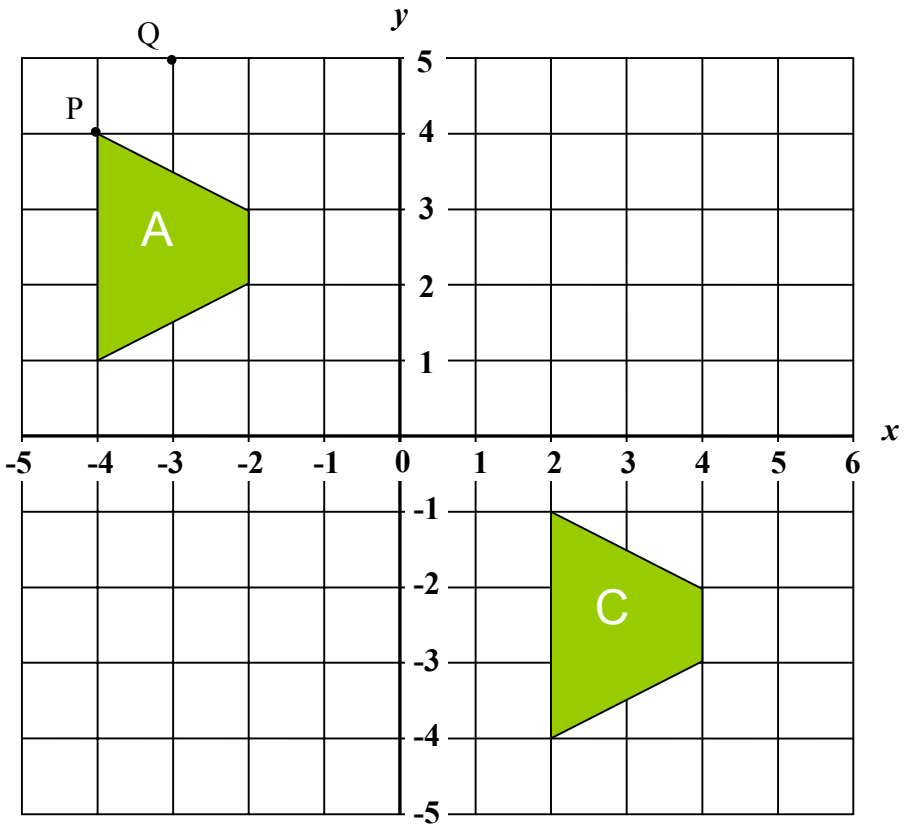
c) Calculate the **mean** number of goals, correct to 1 decimal place.

d) Use the frequency table in (a) to complete this bar chart:



8 marks

13.



a) Draw the **reflection** of shape **A** in the y axis and label it **B**.

b) Write down the **coordinates** of the vertex of **B** corresponding to **P** (–4 , 4).

c) Draw an **enlargement** of shape **A** by scale factor 2 and using point Q (-3 , 5) as the center of enlargement.

d) Describe fully the transformation that maps shape **A** to shape **C**.

10 marks