SECONDARY SCHOOL ANNUAL EXAMINATIONS – 2006

Educational Assessment Unit – Education Division

FORM 5   MATHEMATICS (Non Calculator Paper - Option C) TIME: 20 minutes
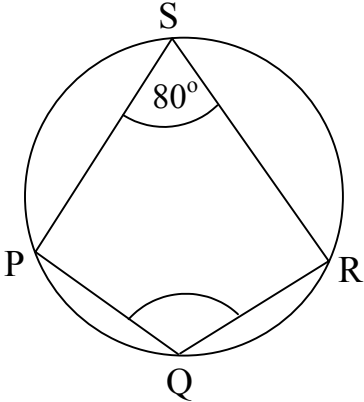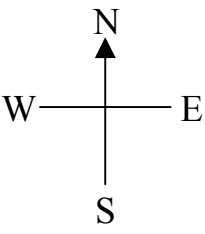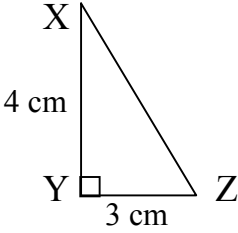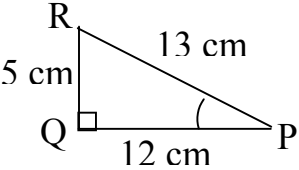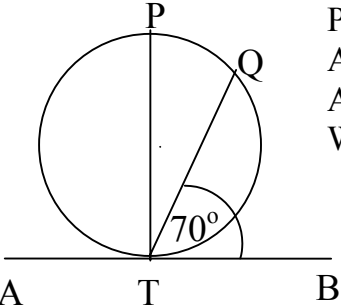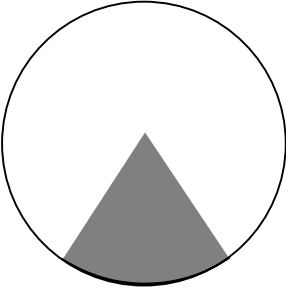
Name:⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯   Class: ⎯⎯⎯⎯

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.	Find the value of $9 - 2 \times 4$. Ans _____	
2.	A **hexagon** is a figure with: (A) 5 sides (B) 6 sides (C) 8 sides (D) 10 sides. Ans _____	
3.	What is the next **even** number after 10? Ans _____	
4.	In a bag there are 4 yellow marbles and 5 green marbles. Kenneth picks a marble at random from the bag. What is the probability that Kenneth picks a yellow marble? Ans _____	
5.	Given that $5 \cdot 8 \times 7 = 40 \cdot 6$, what is the value of $58 \times 0 \cdot 7$? Ans _____	
6.	Which **one** of the following is the **best estimate** for the **area** of a circle of radius 3 cm? (A) 27 cm^2 (B) 18 cm^2 (C) 9 cm^2 (D) 6 cm^2. Ans _____	
7.	Given that $y = 7x + 5$, find the value of y when $x = 1$. Ans _____	
8.	4% of a certain sum of money is Lm20. What is the value of 8% of the same sum of money? Ans _____	
9.	 PQRS is a cyclic quadrilateral in which ∠PSR is 80°. What is the size of ∠PQR? Ans _____	

No.	QUESTION	SPACE FOR WORKING (IF REQUIRED)
10.	The turtle starts at the position shown. The turtle is given a set of LOGO commands and draws the figure as shown. PD FD 100 ___ 90 FD 50 PU HOME Which **one** of the following is the missing command? (A) FD (B) BK (C) RT (D) LT. Ans _____	
11.	Ivan was using a spreadsheet. In cell **A1** he typed 30. In cell **B1** he typed 32. Choose the correct formula that Ivan would type in cell **C1** to obtain the **average** of the entries in cells **A1** and **B1**. (A) **= A1+B1** (B) **= A1+B1**/2 (C) **= A1 B1**/2 (D) **= (A1+B1)**/2. Ans _____	
12.	N W———E S Maria was facing South. She turned 90° clockwise. What direction is she now facing? (A) North (B) South (C) West (D) East. Ans _____	
13.	The marks obtained by 7 pupils in a Mathematics test were 2, 3, 4, 5, 6, 6, 8. What is the mode of these marks? Ans _____	
14.	A rough **estimate** for $\sqrt{15}$ is: (A) 15 (B) 8 (C) 5 (D) 4. Ans _____	

No.	QUESTION	SPACE FOR WORKING (IF REQUIRED)
15.	X 4 cm Y ⬚ — Z 3 cm Triangle XYZ is right-angled at Y. YZ is 3 cm long and XY is 4 cm long. What is the length of XZ? Ans _____	
16.	The angles of a triangle are in the ratio of 1 : 2 : 3. The size of the **smallest** angle of the triangle is: (A) 6° (B) 30° (C) 60° (D) 90°. Ans _____	
17.	R 13 cm 5 cm Q ⬚ ————— P 12 cm Triangle PQR is right-angled at Q. What is the value of cos P? Ans _____	
18.	P Q 70° A T B PT is a **diameter** of the circle. ATB is a **tangent** to the circle at T. Angle BTQ is 70°. What is the size of angle PTQ? Ans _____	
19.	Does the point with co-ordinates $(0,-1)$ lie on the straight line graph of $y = 3x - 1$? Ans _____	
20.	The area of a circle is 660·6 cm². Find the area of the **shaded sector** of the circle if the angle at the centre is 60°. Ans _____	

FORM 5   MATHEMATICS (Main Paper - Option C)   TIME: 1hour 40 minutes

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:** _____

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

1. a) Write $0 \cdot 6$ as a **fraction in its lowest terms.**

    b) Give your answers in **standard form** .
        Given that $A = 4 \times 10^5$ and $B = 2 \times 10^3$ find the value of:
        (i) $A \times B$ (ii) $A \div B$

                                                                          (4 marks)

2   a) Fill in the blank spaces in the sequence:

        6, 9, 12, 15, ____, ____.
    b) The nth term for this sequence is $3n + 3$. Use this formula for the nth term
        to find the 10th term of the sequence.

                                                                          (4 marks)

3. a) A shopkeeper bought a washing machine for Lm200. Later he sold it at a profit of 5%.
    Work out:
    (i)   5% of Lm200

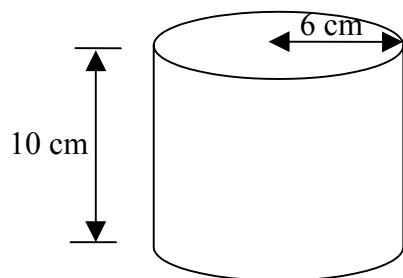   (ii)   the selling price of the washing machine.

    b) Aaron used a spreadsheet to calculate the interest on his Savings Account.
        He entered the following data.

	A	B	C	D	E
1	Principal (Lm)	Rate (%)	Time (Years)	Interest (Lm)	
2	800	2	1	=A2*B2*C2/100	
3					

    What value did Aaron obtain in cell **D2**?

<div align="right">(5 marks)</div>

4.

6 cm

10 cm

A cylinder has a radius of 6 cm and a height of 10 cm.
Work out, **giving your answers correct to the nearest whole number:**
a) the **volume** of the cylinder

b) the **curved surface area** of the cylinder.

<div align="right">(4 marks)</div>

5. The formula for the area of a trapezium is $A = \dfrac{(a + b)\,h}{2}$.

   a) Work out the area of a trapezium when $a = 12$ cm, $b = 18$ cm and $h = 8$ cm.

   b) The formula for the circumference of a circle is $C = 2\pi r$.
      Make r the subject of the formula.

                                                                    (4 marks)
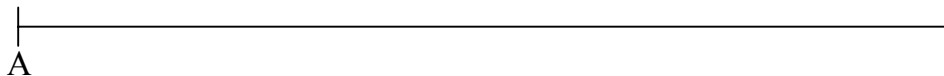
6. *Use ruler and compasses only. All construction lines and arcs must be clearly shown.*
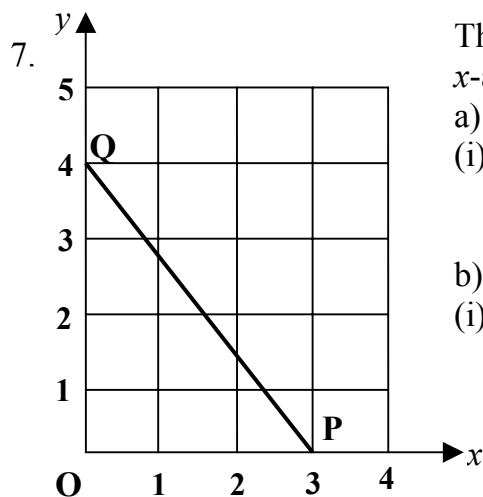   a) Mark a point B on the given line so that AB is 8·5 cm.
   b) Construct a triangle ABC in which ∠ABC is 90° and BC is 4 cm.
   c) Construct the perpendicular bisector of the line BC. Let this bisector meet AC at D.
   d) Measure and write down the size of ∠BDC.

A

                                                                    (5 marks)

7. The figure shows a sketch of a straight line graph that cuts the x-axis at P and the y-axis at Q.

   a) Write down:
   (i)   the co-ordinates of P   (ii)   the co-ordinates of Q.
            P = (,   )   Q = (,   )

   b) Calculate
   (i)   the area of triangle POQ   (ii)   the length of PQ.

                                                                    (6 marks)

8. A game is played by throwing **2 dice at the same time**. Each dice is numbered from 1 to 6.
   The possibility space diagram shows the **sum** of the scores obtained by the two dice.
   a) Complete the possibility space diagram.
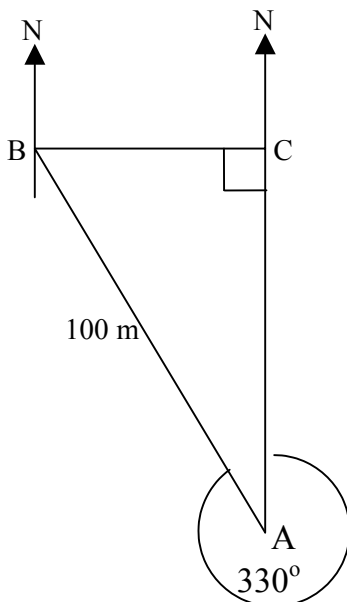
2nd dice

+	1	2	3	4	5	6
1	2	3	4	5	6	7
2	3		5	6	7	8
3	4	5		7	8	9
4	5	6	7		9	10
5	6	7	8	9		11
6	7	8	9	10	11	

1st dice

b) Use the possibility space diagram to find the probability of obtaining:

   (i)   **a sum of 2**   _____

   (ii)   a sum which is a **multiple of 5**   _____

   (iii) a sum which is a **square number.**   _____

(6 marks)

9. Christine walked a distance of 100 m from A to B on a bearing of 330°. Then she walked
   due East from B to C. Point C is North of A.

   a) What is the size of angle BAC?

   b) Calculate the distance BC.

   c) Work out the distance CA, giving your answer
      correct to one decimal place.

   d) What is the bearing of A from C?
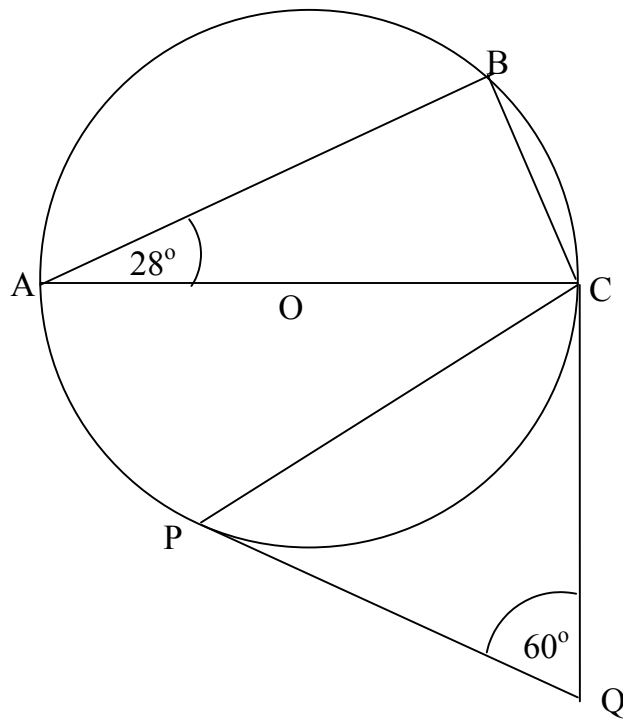
(8 marks)

10. In a class there are 30 students. The table shows the number of students that were **present** in the class for five days last week.

Days of the week	Monday	Tuesday	Wednesday	Thursday	Friday
Number of students present	26	28	27	24	25

a) On which day of the week was there the **biggest number of absent students**?

b) Calculate the **mean** number of students **present** each day for that particular week.

c) Express the number of students that were **present last Wednesday as a percentage of the total number of students in class.**

d) Write down in **its lowest terms** the ratio of:-
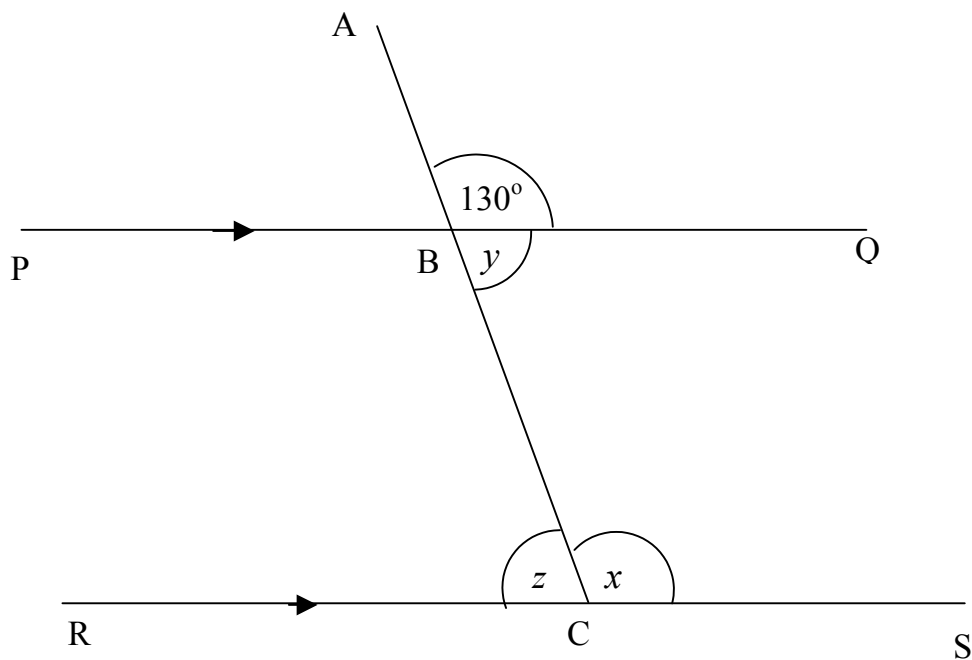   **the number of present students on Friday : the total number of students in class**.

(8 marks)

AOC is a diameter of a circle with centre O. Angle BAC is 28°. CQ is a tangent touching the circle at C. PQ is another tangent touching the circle at P. Angle PQC is 60°. Giving reasons for each answer, find the size of:

a) angle ABC

b) angle ACB

c) angle CPQ.

(8 marks)

12.

PQ and RS are parallel lines. The line AC cuts PQ at B and RS at C
as shown in the figure. Angle ABQ is 130°.
Giving a reason for each answer, find the size of the marked angles
x, *y* and *z*.
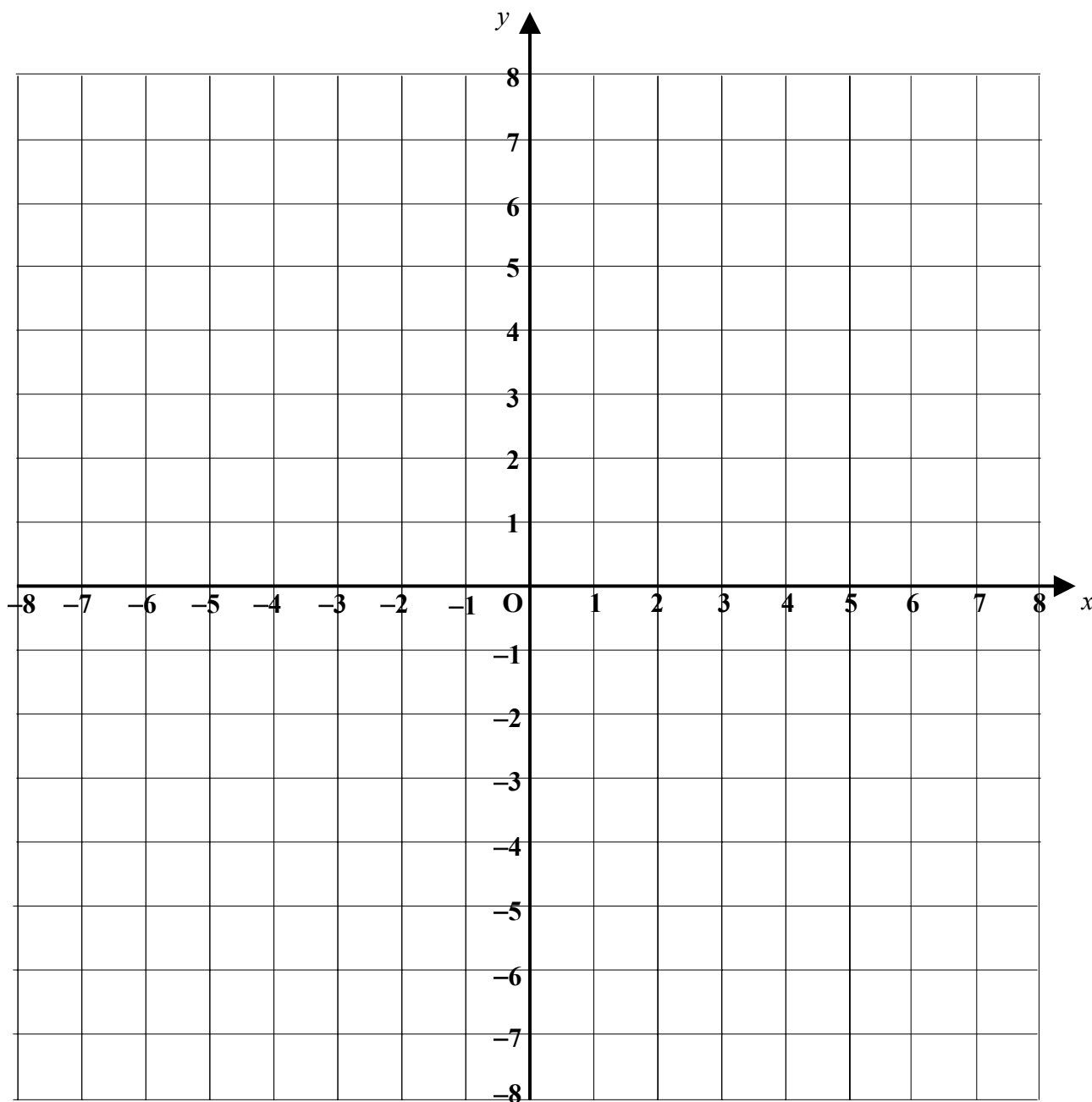
(i)   *x* =

(ii)   *y* =

(iii)   *z* =

(9 marks)

13. a) On the grid provided, **plot and join** the points A (3,2), B(6,2) and C(3,6) to obtain triangle ABC.

b) **Reflect** triangle ABC in the *y*-axis to obtain figure P. Draw and label figure P

c) **Reflect** figure P in the *x*-axis to obtain figure Q. Draw and label figure Q.

d) **Translate** figure Q by the vector $\begin{pmatrix} 5 \\ 1 \end{pmatrix}$ to obtain figure T. Draw and label figure T.

End of examination. (9 marks)