SECONDARY SCHOOL ANNUAL EXAMINATIONS 2010

Directorate for Quality and Standards in Education
Educational Assessment Unit

B

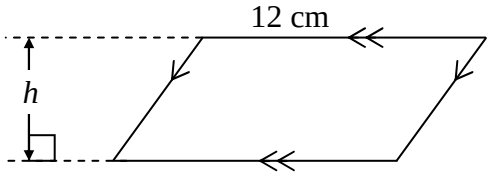
FORM 4 **MATHEMATICS SCHEME B** **TIME: 20 minutes**
Non-Calculator Paper

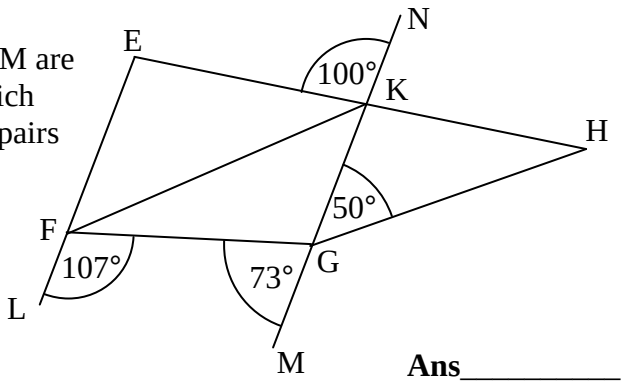
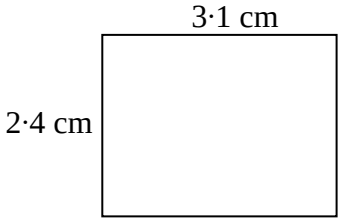
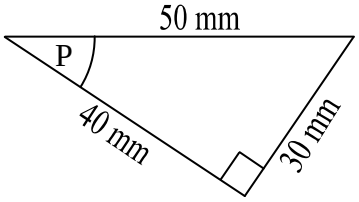
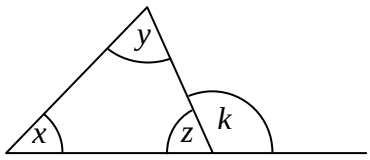
Name _____ **Class**_____

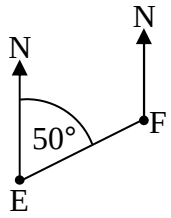
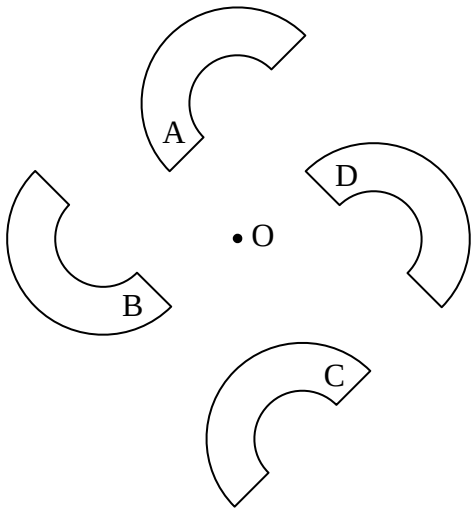
Mark

Instructions to Candidates

- Answer all questions. There are 20 questions to answer.
- Each question carries 1 mark.
- Calculators and protractors 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 $\frac{a}{2}+\frac{a}{5}$ **Ans**_____	
2	Calculate the **median** of the numbers: $7\ ,\ 3\ ,\ 4\ ,\ 6\ .$ **Ans**_____	
3	Write $3{\cdot}2 \times 10^{-2}$ as an ordinary number. **Ans**_____	
4	Simplify: $7a-9+2a+19$ **Ans**_____	
5	The area of the parallelogram is 36 cm^2. Find the height *h.*  **Ans**_____cm	
6	Which of the following are **not** the sides of a right angled triangle? A) 3 , 4 , 5 B) 5 , 12 , 13 C) 4 , 5 , 6 D) 9 , 12 , 15 **Ans**_____	
7	Express 40,000 cm^2 as m^2. **Ans**_____ m^2	
8	Work out: $3\frac{7}{8}-1\frac{1}{2}$ **Ans**_____	

9	EKH, EFL and NKGM are all straight lines. Which one of the following pairs of lines are **parallel**? (A) EH and FG (B) EL and NM (C) FK and GH (D) EL and GH  **Ans**_____	
10	This is a scale drawing of the floor of a room. 1 cm represents 2 m. Calculate the **perimeter** of the floor of the actual room.  **Ans**_____m	
11	Write the value of **tan P** as a **decimal**.  **Ans**_____	
12	P is the **reflection** of Q(2, 3) in the ***y* axis**. What are the coordinates of P? A) (3, 2) B (−2, −3) C(−2, 3) D(2, −3) **Ans**_____	
13	The probability that an operation succeeds is $\frac{99}{100}$. **How many** operations out of 1000 will probably **not** succeed? **Ans**_____	
14	Which one of the following is equal to k? A) $x + y$ B) $x + z$ C) $y + z$ D) $x - y - z$  **Ans**_____	

15	Make *b* the subject of the formula: $a = \frac{bh}{2}$ **Ans**_____	
16	Three of the following points lie on a straight line. Which one does not? A) (1, 3) B (4, 12) C(−5, −15) D(9, 3) **Ans**_____	
17	What is the bearing of E from F?  ° **Ans**_____	
18	What is the **100th term** of the sequence: 3 , 6 , 9 , 12 , … ? **Ans**_____	
19	Work out $1\frac{3}{10} \div 6\frac{1}{2}$ **Ans**_____	
20	Which of B, C and D is a 90° clockwise rotation of shape A about O?  **Ans**_____	

SECONDARY SCHOOL ANNUAL EXAMINATIONS 2010

Directorate for Quality and Standards in Education
Educational Assessment Unit

B

FORM 4 **MATHEMATICS SCHEME B** **TIME: 1h 40min**

Main Paper

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

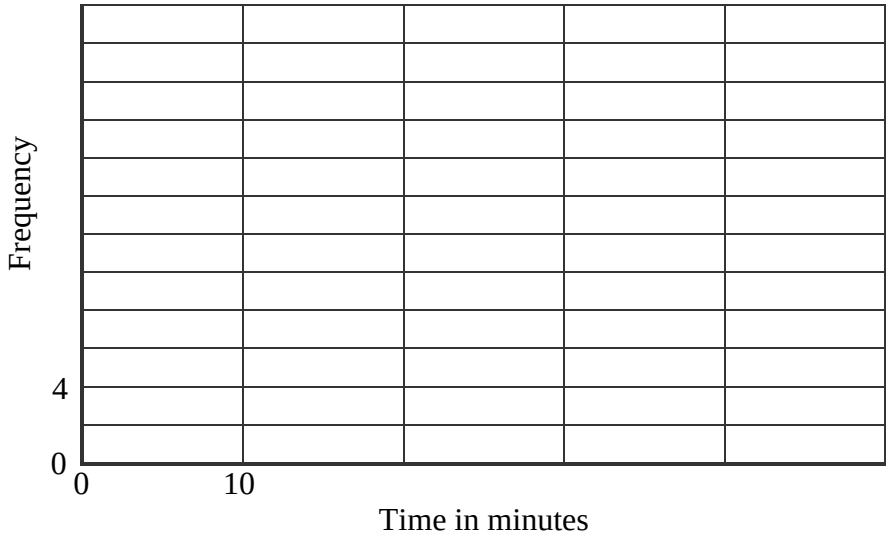
Name: _____ **Class: _____**

- Answer all questions.
- This paper carries 80 marks.
- Calculators and mathematical instruments are allowed but all necessary working must be shown.

1) The following frequency table shows information about the times that 50 factory workers take to travel to work.

Time in minutes	$0 < t \leq 10$	$10 < t \leq 20$	$20 < t \leq 30$	$30 < t \leq 40$	$40 < t \leq 50$
Frequency	2	8	22	14	4

Draw a **histogram** on the grid below to show all the information.



(3 marks)

2)

a) Solve the equation: $5(2k - 1) = 35$

Ans_____

b) Expand and simplify: $3(3a + 1) + 2(4 + 2a)$

Ans_____

c) Factorise completely: $7ax^2 + 21x$

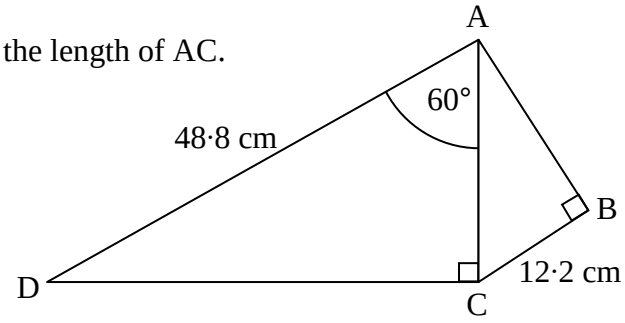
Ans_____

(6 marks)

---

3)

a) Calculate the length of AC.



Ans_____cm

b) Calculate ∠CAB.

°

Ans_____

c) **Explain** why the quadrilateral ABCD is a **trapezium.**

Ans_____

_____

_____

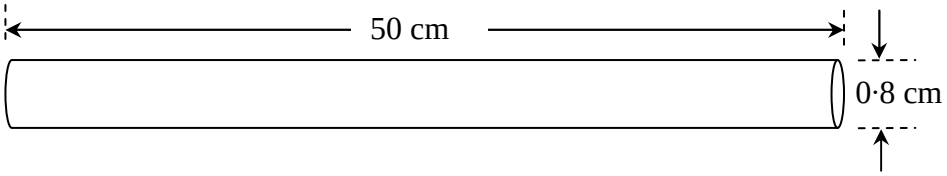
(5 marks)

B

Name_____ Class_____

4)

a) Calculate the **volume** of a 50 cm long cylindrical copper rod of cross-sectional diameter 0·8 cm. Give your answer in cm^3 correct to **2 decimal places**.



Ans_____cm^3

b) Copper weighs 8·94 g/cm^3. Calculate the weight in grams of one rod correct to **1 decimal place**.

Ans_____g

c) How many of these rods can be cast out of 7 kg of copper?

Ans_____rods

(9 marks)

5) Janet used these ingredients to make 24 buns.

100 g butter
80 g sugar
2 eggs
90 g flour
30 ml milk

a) How much **flour** is needed to make 40 buns?

Ans_____g

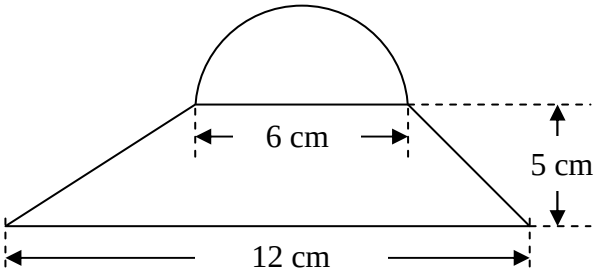
b) Robert followed the same recipe and used 30 g sugar. How many **buns** did he make?

Ans_____buns

(4 marks)

---

6) The shape below is made up of a trapezium and a semicircle. Calculate the **total area** giving your answer correct to 3 significant figures.



Ans_____cm^2

(7 marks)

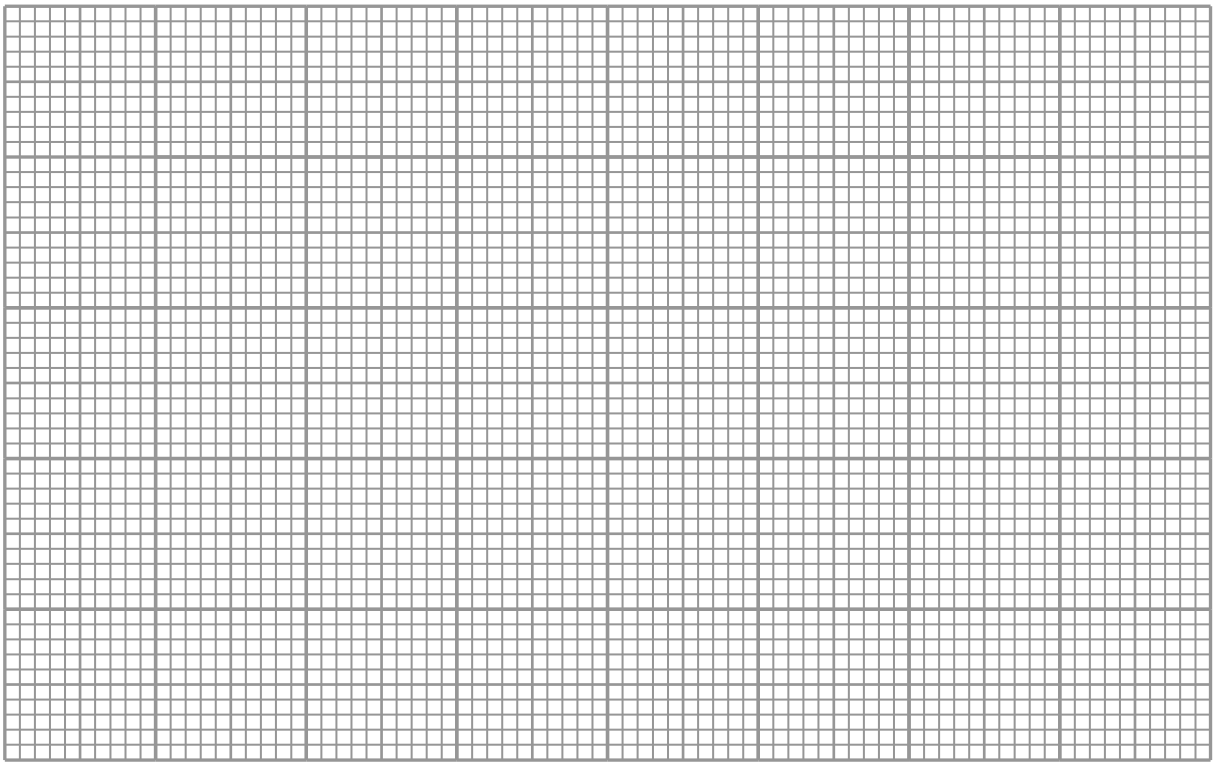
Name_____ Class_____ B

7)

a) Complete the following table to obtain the coordinates of 7 points on the graph of the equation: $y = x^2 + 2x - 5$.

x	−4	−3	−2	−1	0	1	2
x^2	16			1	0		4
$+2x$	−8	−6				2	
-5	−5	−5	−5	−5	−5	−5	−5
y	**3**		**−5**			**−2**	

b) Draw a set of axis taking values of x from −4 to 2 and values of y from −6 to 4. Use 2 cm for each unit on the x axis and 1 cm for each unit on the y axis.



c) **Plot** the points found in (a) and **draw** the curve.

d) From your graph find:

i) The **minimum** value of y.

Ans_____

ii) The **value of y** when $x = 0{\cdot}9$.

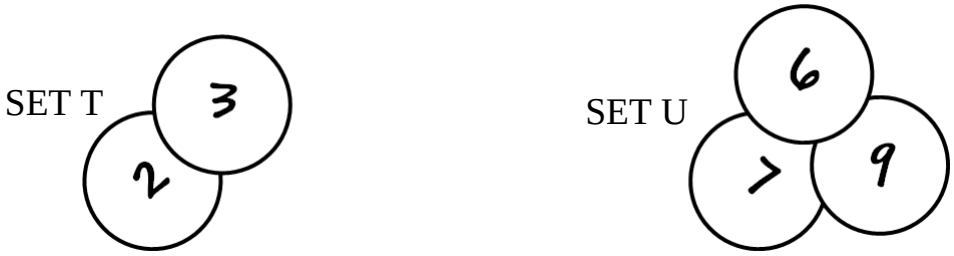
Ans_____

iii) The **values of x** when $y = 0$.

Ans_____

(9 marks)

8) A two-digit number is formed by randomly taking the **tens** digit from set **T** and the **units** digit from set **U**.



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

		Set U		
		6	7	9
Set T	2	*26*		
	3			

b) Work out the **probability** that the number formed is:

i) A **prime** number.

Ans_____

ii) A **multiple** of 3.

Ans_____

(6 marks)

---

9)

a) Write as a **fraction** in its **lowest terms**:

$2^3 \times 4^{-2} =$ _____

b) Simplify: i) $(n^5)^2 =$ _____

ii) $\frac{p^6}{p^4} =$ _____

(8 marks)

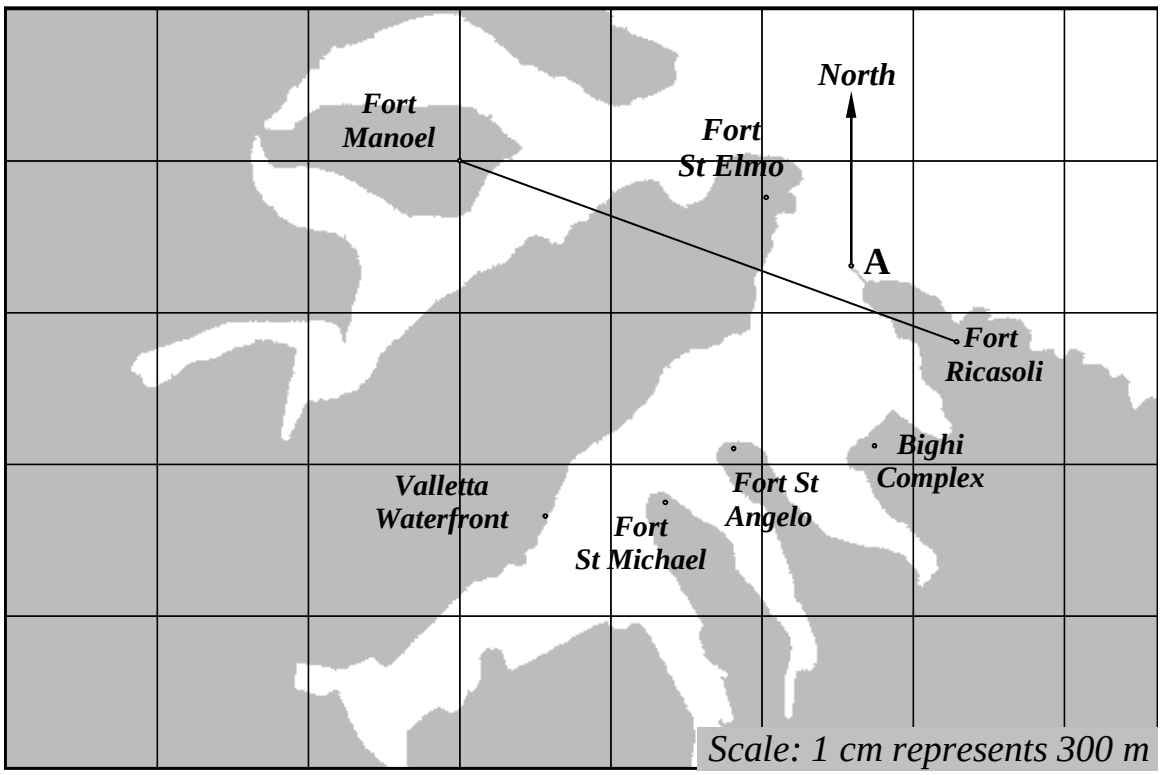
---

10)

a) Gregory and Cynthia share €180 between them in the ratio 2 : 3. Calculate the amount that **Cynthia** receives.

Ans €_____

b) Use the map below to answer the questions that follow:



i) Measure the **map distance** in cm between Fort Manoel and Fort Ricasoli.

Ans_____cm

ii) Calculate the **actual distance** in metres between Fort Manoel and Fort Ricasoli.

Ans_____m

iii) What is the **bearing** of Fort Ricasoli from Fort Manoel?

°

Ans_____

iv) A boat sails from point A on a bearing of 230°. **Where** is it heading to?

Ans_____

(9 marks)

11)

a) Calculate the size of an **exterior angle** of a 12-sided regular polygon.

°

Ans_____

b) Write a **Logo program** which draws a 12-sided regular polygon of side 20 turtle steps, using the "**repeat**" function.

Ans _____

(5 marks)

---

12) The following formula is used to change temperature from degrees Fahrenheit to degrees Celsius:

$$C = \frac{5(F - 32)}{9}$$

F is the temperature in degrees Fahrenheit and C is the temperature in degrees Celsius.

a) This is a spreadsheet. Write down a **formula** in cell B2 used to change the value in A2 from degrees Fahrenheit to degrees Celsius.

	A	**B**	**C**
1	*Fahrenheit*	*Celsius*	
2	131		
3			
4			

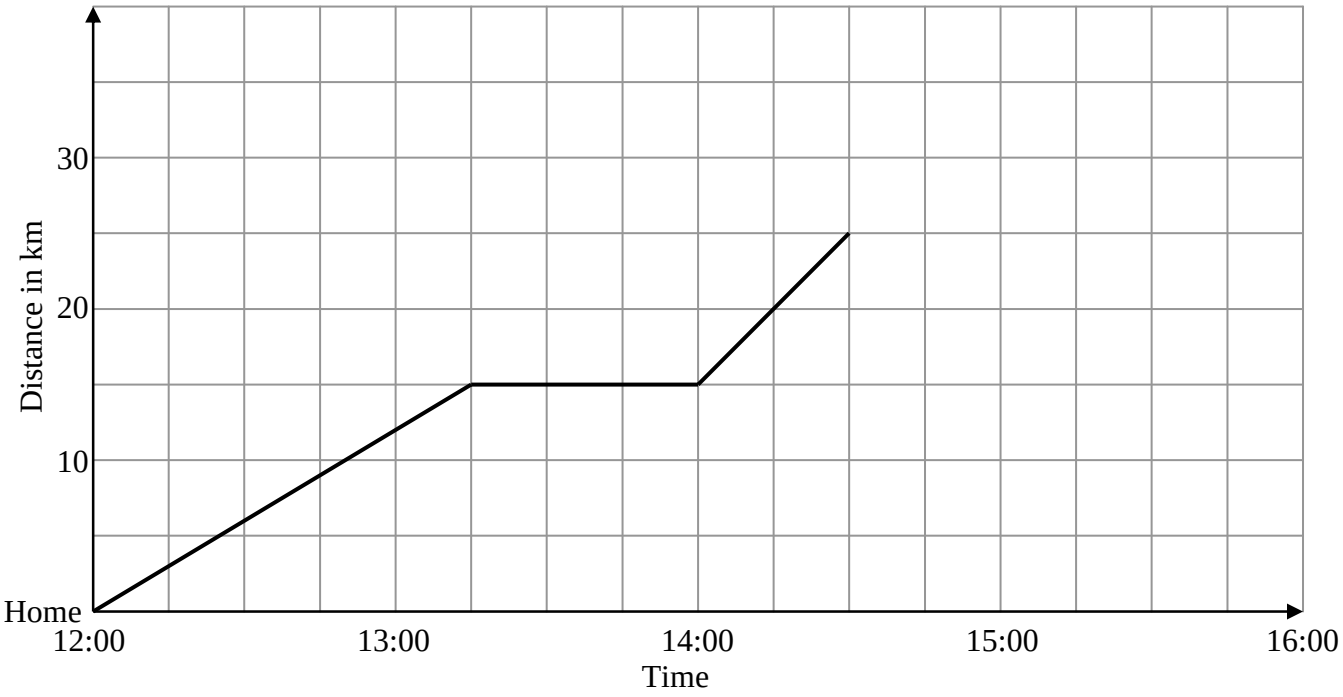
b) What **number** will be displayed in cell B2 when you press enter?

Ans_____

(3 marks)

---

13) Lydia went for a bicycle ride. The distance-time graph shows **part** of her ride.



She set off from home at noon and stopped for a rest. At 14:30 she had a flat tyre and stopped again for 15 min to repair it. She then cycled back home at 25 km per hour.

a) At what time did she stop for a rest?

Ans_____

b) How far was Lydia from home when she had a flat tyre?

Ans_____km

c) How long did Lydia take to go back home?

Ans_____

d) Complete the distance-time graph to show the whole journey.

e) At what time did Lydia arrive back home?

Ans_____

(6 marks)

BLANK PAGE