FORM 3   **MATHEMATICS** Levels 6-7   **TIME: 30mins**

Non Calculator Paper

Question	1	2	3	4	5	6	7	8	9	Total
Mark										

DO NOT WRITE ABOVE THIS LINE

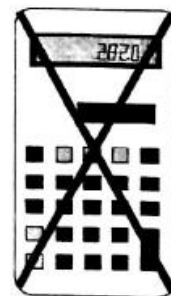**NAME AND SURNAME:** _____

CLASS: _____

INDEX: _____

INSTRUCTIONS TO CANDIDATES:

Read all the questions carefully before you start answering.

- Answer all questions.

- This paper carries 25 marks.

- **Calculators, protractors** and other mathematical instruments are **NOT ALLOWED.**

- On your desk you should have nothing except for **pen, pencil, ruler** and the **examination paper.**

1. Fill in:

   a) 5.7 kg = _____ g

   b) 3 ¼ hour = _____ minutes

   c) 90 mm = _____ cm

   d) 7 ½ litres = _____ ml

   _____ (4 marks)

2. Work out:

   a) $3 - 9 + 7 =$ _____

   b) $-17 - (-3) =$ _____

   c) $(-3) \times (-2) \times (-4) =$ _____

   d) $(-24) \div (-4) =$ _____

   _____ (4 marks)

3. Simplify: 4 km : 800 m

                                                    Ans: _____

   _____ (2 marks)

4. Simplify:

   i) $3x + 6y + x - 5y =$ _____   ii) $10 \times a \times a =$ _____

   _____ (2 marks)
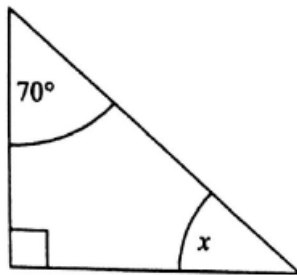
5. Expand: $6 (x + 5) =$ _____

   _____ (2 marks)

6. a) What is the sum of the interior angles of a triangle? _____

    b) Find the value of x:

Ans: $x =$ _____

(3 marks)

7. A racing car travels at a constant speed of 100 km/hr.
    How far does it travel in 2 ½ hours?

Ans   _____ km
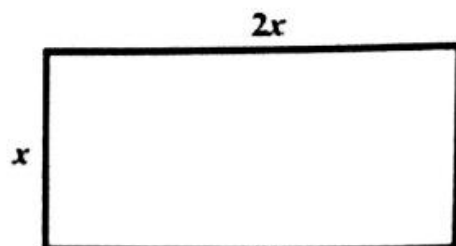
(1 mark)

8. Work out the following:

    a) $\dfrac{2}{9} \times \dfrac{3}{16}$

    b) $\dfrac{3}{4} + \dfrac{1}{6} - \dfrac{5}{12}$

(3 marks)

9. The length of a rectangle is twice as long as its width.

a) Write a formula, in terms of x, for the perimeter P of the rectangle.

Ans: $P =$ _____

b) If $x = 7$ cm, find the value of the **perimeter** of the rectangle.

Ans: Perimeter = _____ cm

c) Write an expression, in terms of x, for the **area** of the rectangle
Simplify your expression.

Ans _____

(4 marks)

END OF NON CALCULATOR PAPER

| FORM 3 | **MATHEMATICS** Levels 6-7 | TIME: 30mins |

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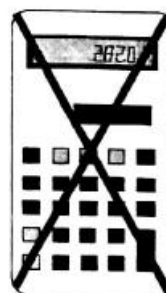NAME AND SURNAME: _____

CLASS: _____   INDEX: _____

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1. Factorise completely: $4a + 16b$

    Ans _____
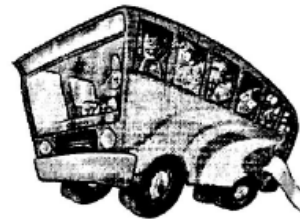
    (2 marks)

2. Expand and simplify: $2(3x + 5) + 3(x + 4)$

    Ans _____

    (3 marks)

3. A bus leaves the terminus. $\frac{2}{3}$ of the seats are full.
    After the first stop, $\frac{1}{4}$ of the seats are full.

    a) Did people get **on** or **off** the bus at the first stop? Explain.

    _____

    _____

    b) What is the **difference**, as a fraction of the full seats, between the seats at the
        terminus and those after the first stop?

    Ans _____

    c) If the bus has 57 seats, with how many persons did the bus leave the **terminus**?

    Ans _____

    (5 marks)

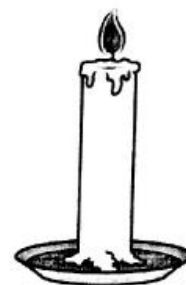4. Solve: $6x - 2 = 4x + 2$

    Ans $x =$ _____

    (3 marks)

5. a) Make y subject of the formula: $2y + z = 6$.

Ans _____

b) The height h cm of a candle after t hours is given by the formula:

$$h = 20 - 4t$$

i) Find the value of h when $t = 0$.

Ans $h =$ _____ cm

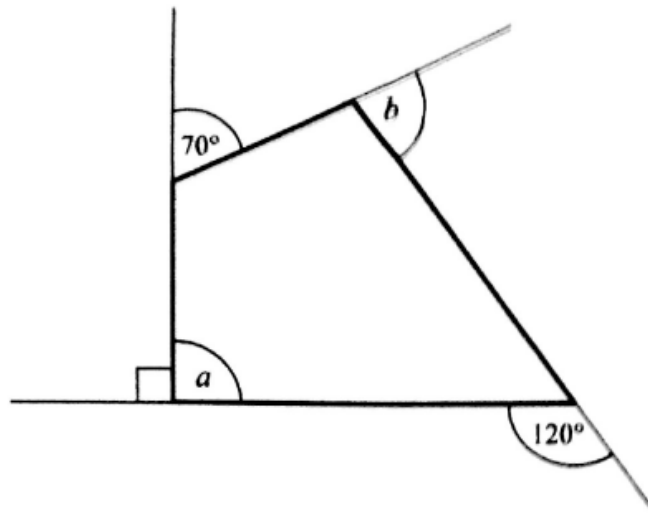ii) How high will the candle be after 2 hours?

Ans _____ cm

iii) At what time will the candle burn out?

Ans _____ hours

(8 marks)

6.

i)   Angle **a** is _____°. It is called (a right, an acute, an obtuse, a reflex) angle.

ii) The sum of exterior angles is _____°.

iii) Work out the value of angle **b**.

iv) Angle **b** is called (a right, an acute, an obtuse, a reflex) angle.

(6 marks)

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7. A fisherman is 16 km away from shore.

a)   If he needs to reach the shore in $\frac{1}{2}$ hour, what should the **speed** be?

Ans Speed = _____ km/hr

b)   A lightning strikes in the sky. The sound takes 20 seconds to travel to the fisherman. If sound travels at a speed of 331 metres per second, how **far away** is the lightning?

Ans _____ m

(5 marks)

8. a)   The ratio **3 : 4** is the same as **15** : _____.

   b)   In a recipe for a cake the ratio of *butter: sugar: flour* is 1: 3: 4.

   i)   The total mass of the ingredients is 1600g. How much of each ingredient is used?

   Ans butter = _____ g , sugar = _____ g , flour = _____ g

   ii) How much sugar is needed if 100g of butter is used?
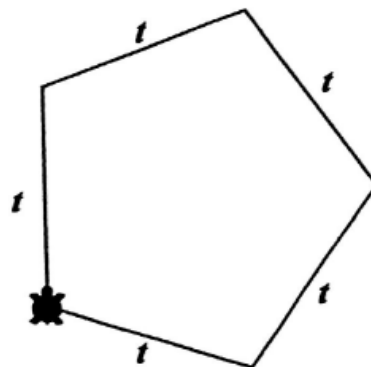
   Ans _____ g

   (7 marks)

9.   The diagram shows a **regular pentagon** of side *t* turtle steps.

   a)   Write a **formula**, in terms of t, for the perimeter *P* of the pentagon.

   Ans *P* = _____ turtle steps

   b)   Work out the **value** of *P* when *t* = 40.

   Ans *P* = _____

   c) Fill in this LOGO procedure which draws a pentagon of side 40 turtle steps:
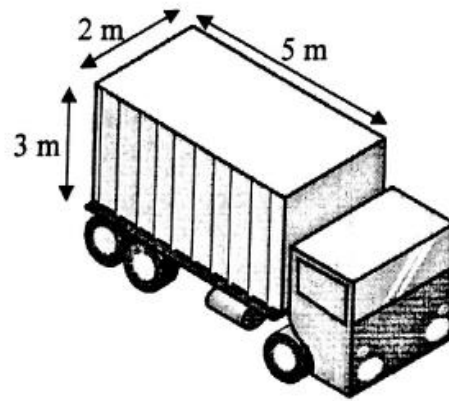
   REPEAT _____ [**FD** _____ **RT** _____].

   (6 marks)
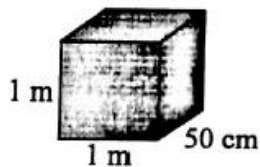
10. The trailer of a truck is in the form of a cuboid. It measures 2 m by 5 m by 3 m.

a) Work out the **volume** of the trailer.

2 m
5 m
3 m

Ans   Volume = _____ m³

The trailer is completely full of boxes, all measuring 1m by 1m by 50 cm.

1 m
1 m
50 cm

b) Work out the **volume** of 1 box **in m³**.

Ans   Volume = _____ m³

c) How many boxes are there in the trailer?

Ans _____ boxes

d) Work out the **total surface area** of 1 box.

Ans _____

(8 marks)

11. The following table shows the temperature in Russia at different times of a day.
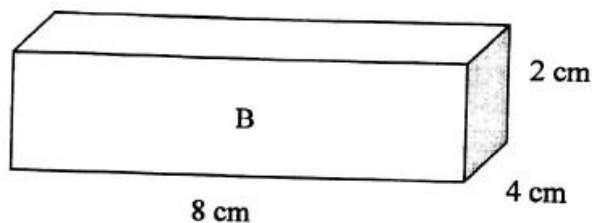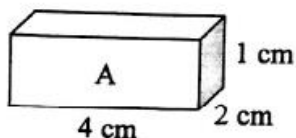
Time	2.00 am	11.00 am	3.00 pm	11.00 pm
Temperature (°C)	-8	5	7	-3

a) At what **time** of the day was the **coldest?** _____

b) What was the **hottest** temperature during the day? _____ °C

c) What is the **difference** between the temperatures at 11.00 am and 11.00 pm?

Ans   Difference = _____ °C

12.

a) Write down the **ratio** of the heights of cuboids A and B.

_____

b) Work out the **volume** of cuboid A and of cuboid B.

Ans   A = _____ cm³, B = _____ cm³.

c) Write down the **ratio of the volumes** of the cuboids in its **simplest form**:

Ans   _____

d) What do you notice when comparing the ratios in parts (a) and (c)?

_____
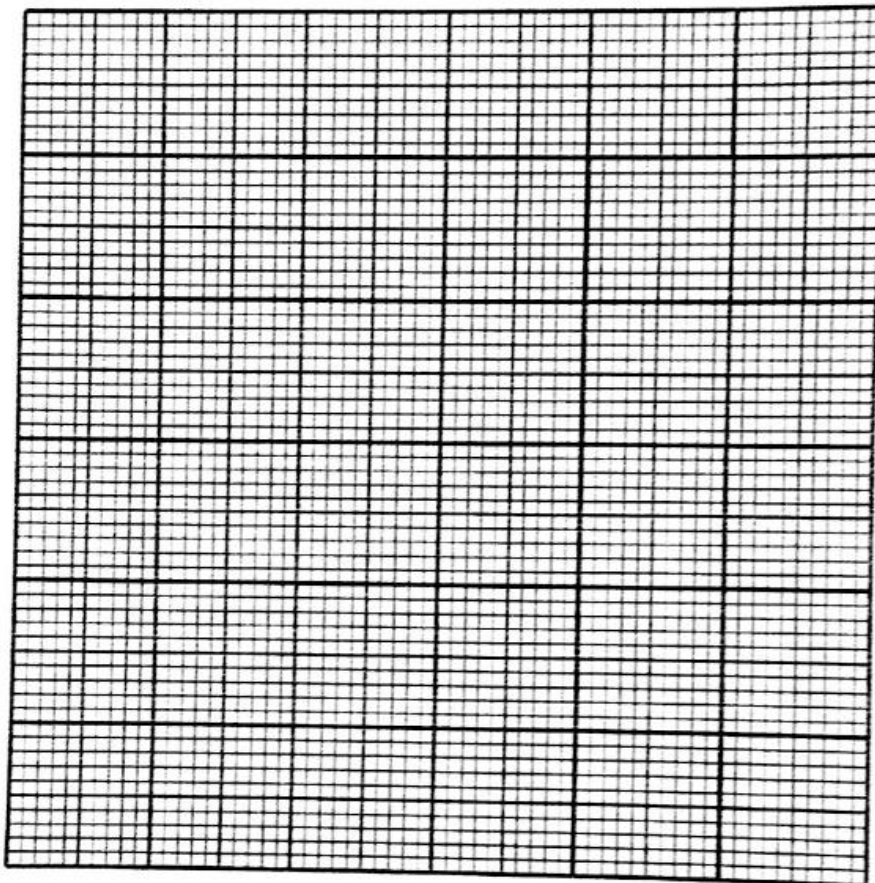
_____

e) Are the shapes **similar** or not? (Yes/No)

(8 marks)

13. a) Complete this table for $y = 2 - x$.

x	-2	-1	0	1	2	3
2	2		2			2
-x	2		0			
y	4		2		0	

b) Using a scale of 2 cm to represent 1 unit on both axes, draw the graph of $y = 2 - x$.

c) Write down the co-ordinates of the point where the line cuts the y-axis.

Ans   Co-ordinates (_____ , _____)

d) Work out the gradient of the line from the graph.

Ans   Gradient = _____