| FORM 3 | **MATHEMATICS** Scheme B | | | | | | | TIME: 30 mins | | |

**Non Calculator Paper**

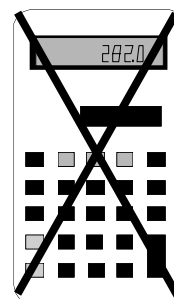| Question | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Total |
|----------|---|---|---|---|---|---|---|---|---|----|-------|
| Max. Mark | 3 | 2 | 4 | 2 | 2 | 2 | 3 | 3 | 2 | 2 | 25 |
| Mark | | | | | | | | | | | |

**DO NOT WRITE ABOVE THIS LINE**

NAME AND SURNAME: _____     CLASS:_____

**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** and the **examination paper**.

- You are not required to show your working.  However, space for working is provided if you need it.

1. **Fill in:**

   a. 12 mm = _____ cm

   b. 5.8 kg = _____ g

   c. 2.5 hours =_____ mins

_____(3 marks)

2. **Workout:**

   a. $-2 - 9 =$ _____

   b. $-4 \times 4 =$ _____

_____(2 marks)

3. a) **Simplify:**

   98 : 63 : 14 = _____ : _____ : 2

   b) The ratio of the amount of money in David's pocket to that of Mary's pocket is 5:2. Mary has 24c. How much has David got?

**Ans**: _____
_____ (4 marks)

4. Work out the average speed of a plane that flies 210m in 70 seconds.

**Ans**: _____

_____ (2 marks)

5. Each exterior angle of a regular polygon is 15°. How **many sides** does this polygon have?

**Ans**: _____

_____ (2 marks)

6. Graziella wishes to draw a **square** using LOGO. Complete the following to help her draw the square with sides 60 turtle steps long.

REPEAT ___ [ ___ 60 RT ___ ]

_____ (2 marks)

7. Work out $3\frac{1}{5} - 1\frac{1}{2} + 4\frac{1}{10}$ giving your answer as a mixed number in its lowest term.

Ans: _____

_____(3 marks)

8. a) **Simplify**

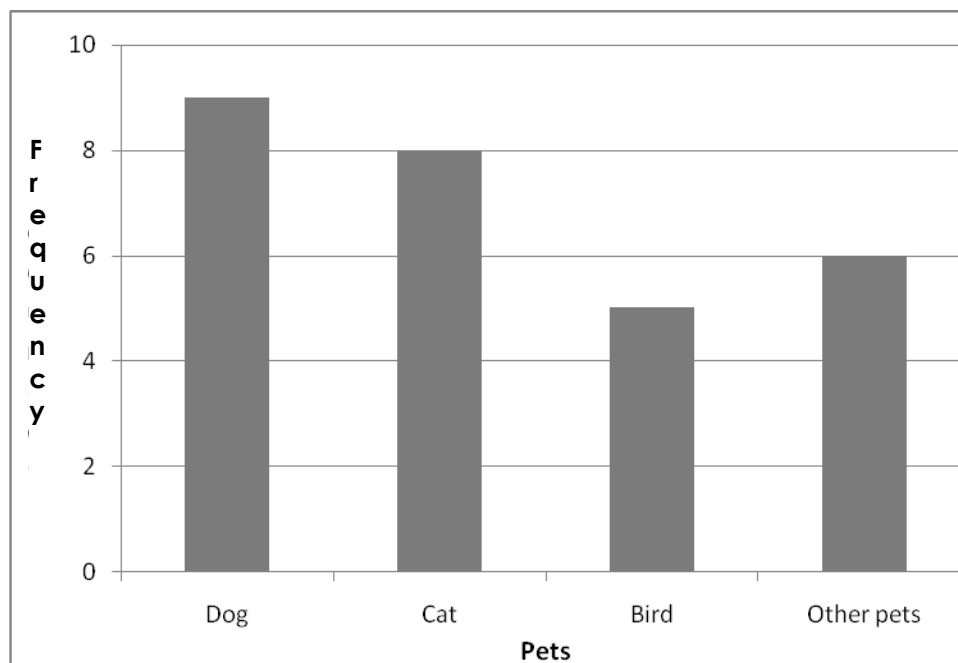$$4w \times 3w = \underline{\hspace{2cm}}$$

b) **Expand**

$$2(5x\text{ -}7) = \underline{\hspace{2cm}}$$

c) **Factorise**

$$15xy - 5 = \underline{\hspace{2cm}}$$

_____(3 marks)

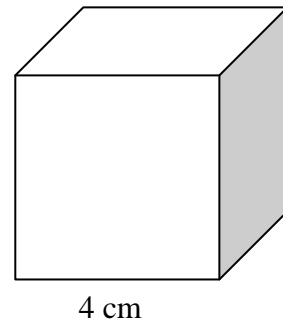9. his bar chart shows the different pets owned by pupils in a class.



a) How many dogs are owned by pupils in the class? _____
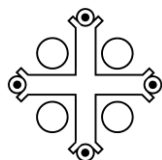
b) How many pets are there altogether? _____

_____(2 marks)

10. Work out the **surface area** of this cube

4 cm

Surface area = _____ cm$^2$

_____ (2 marks)

# End of Paper

# HALF-YEARLY EXAMINATIONS – FEBRUARY 2012

| **FORM 3** | **MATHEMATICS** Scheme B | **TIME: 1hr 30mins** |
|---|---|---|

## Main Paper

| Question | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | Main | NC | Global Mark |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Max. Mark | 3 | 4 | 2 | 6 | 8 | 6 | 9 | 4 | 7 | 5 | 7 | 5 | 9 | 75 | 25 | 100 |
| Mark | | | | | | | | | | | | | | | | |

### DO NOT WRITE ABOVE THIS LINE

NAME AND SURNAME:_____ CLASS:_____

INSTRUCTIONS TO CANDIDATES:

**Read all the questions carefully before you start answering.**

- Answer all questions.
- This paper carries 75 marks.
- Calculators and mathematical instruments are allowed but all necessary working must be shown.

1. Maria leaves home at **11 a.m.** and arrives at the office at **1.30 p.m.**
   **a)** How **long** was her journey?

   _____

   She drives at 60km/h.
   **b)** How **far** is her home from the office?

   _____

   (3 marks)

**2.** Find missing quantities in these ratios

    **a)** $3 : x = 18 : 30$               **b)** $24 : 33 = y : 11$

    $x =$ _____           $y =$ _____

                                               (4 marks)

**3.** How much copper would you need to mix with **27 kg** of zinc to make brass?

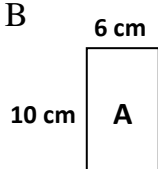> To make brass use
> 7 parts copper
> to 3 parts zinc

                                              _____
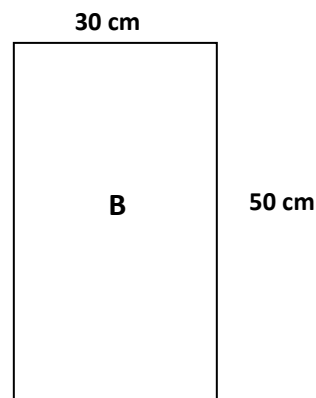
                                             (2 marks)

**4.** Write down and **simplify** these ratios

    **a)** length of rectangle A: length of rectangle B

                          _____:_____

    **b)** width of rectangle A: width of rectangle B

                          _____:_____
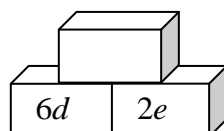
    **c)** Are the rectangles similar? Why?

        Yes / No

        _____

        _____

                                       (6 marks)

*Rectangle A: 6 cm (top), 10 cm (side), labelled A*

*Rectangle B: 30 cm (top), 50 cm (side), labelled B*

**5. Simplify**

a) $8a + 4 - 2a - 9 + 5a$

_____

b) $4 \times c \times c$

_____

c) $12b^2 + 5f^2 - 3f^2 + 3b^2$

_____

d) Complete this algebra pyramid

The expression in the top brick is found by **multiplying** together the expressions in the two bricks underneath it.



$$\begin{array}{|c|c|}\hline 6d & 2e \\\hline\end{array}$$

(8 marks)

**6. a)** Mr. Vella uses this formula to work out the cost of hiring a car while on holiday.

$$C = 20d + 2p + 5$$

$d$ stands for the **number of days**

$p$ stands for the **number of litres of petrol**.

$€C$ stands for the **total cost**

Calculate how much Mr. Vella spends if he hires the car for **5 days** and uses **30 litres of petrol**.

_____

**b)** Make $x$ the **subject** of the formula $y = 2x - 3$

_____
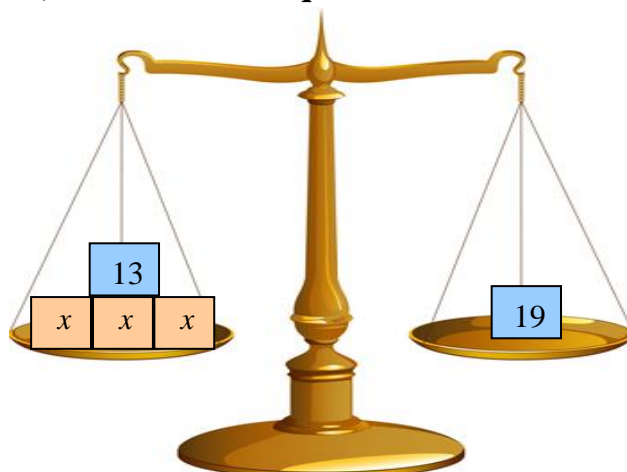
(6 marks)

**7. Solve:**

**a)** $4x - 7 = 5$

$x =$ _____

**b)** $28 - 5x = 18$

$x =$ _____

**c)**   i) Write down an **equation** for the balance



_____

   ii) Solve the equation

$x =$ _____

(9 marks)

**8.  a) Expand** $4(2-f)$

_____

**b) Factorise** $15n+9$

_____

(4 marks)

**9.  a)** John and Carmel bought a pizza. John ate $\frac{2}{7}$ of it and Carmel ate $\frac{3}{5}$.
What fraction of the pizza did they eat altogether?

_____

**b) Change** $\frac{14}{5}$ to a **mixed number**

_____

**c) Change** $1\frac{2}{3}$ to an **improper fraction**

_____

**d) Work out** $\frac{3}{16}\times\frac{4}{9}\times\frac{1}{2}$

_____
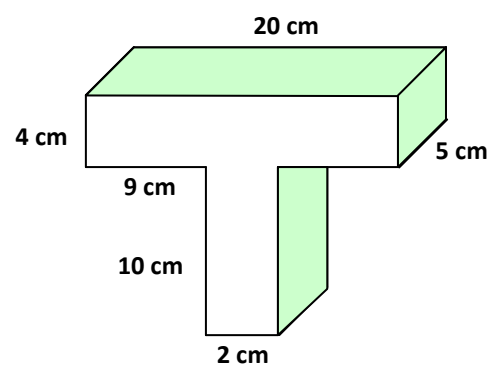
(7 marks)

**10. a)** Find the **surface area** of the shaded parts of this solid.

_____cm$^2$

**b)** Find the **volume** of this solid

_____cm$^3$


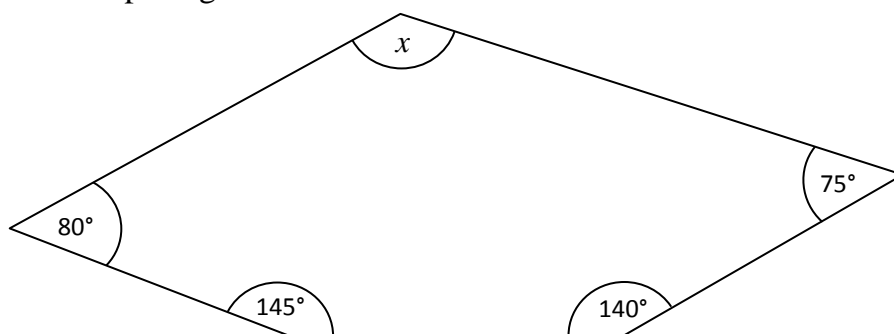
20 cm

4 cm

5 cm

9 cm

10 cm

2 cm

(5 marks)

**11. a)** Find the sum of the interior angles of a pentagon.

_____

**b)** Use your answer to part (a), or otherwise, to find the size of angle $x$ in the pentagon below.



$x =$ _____

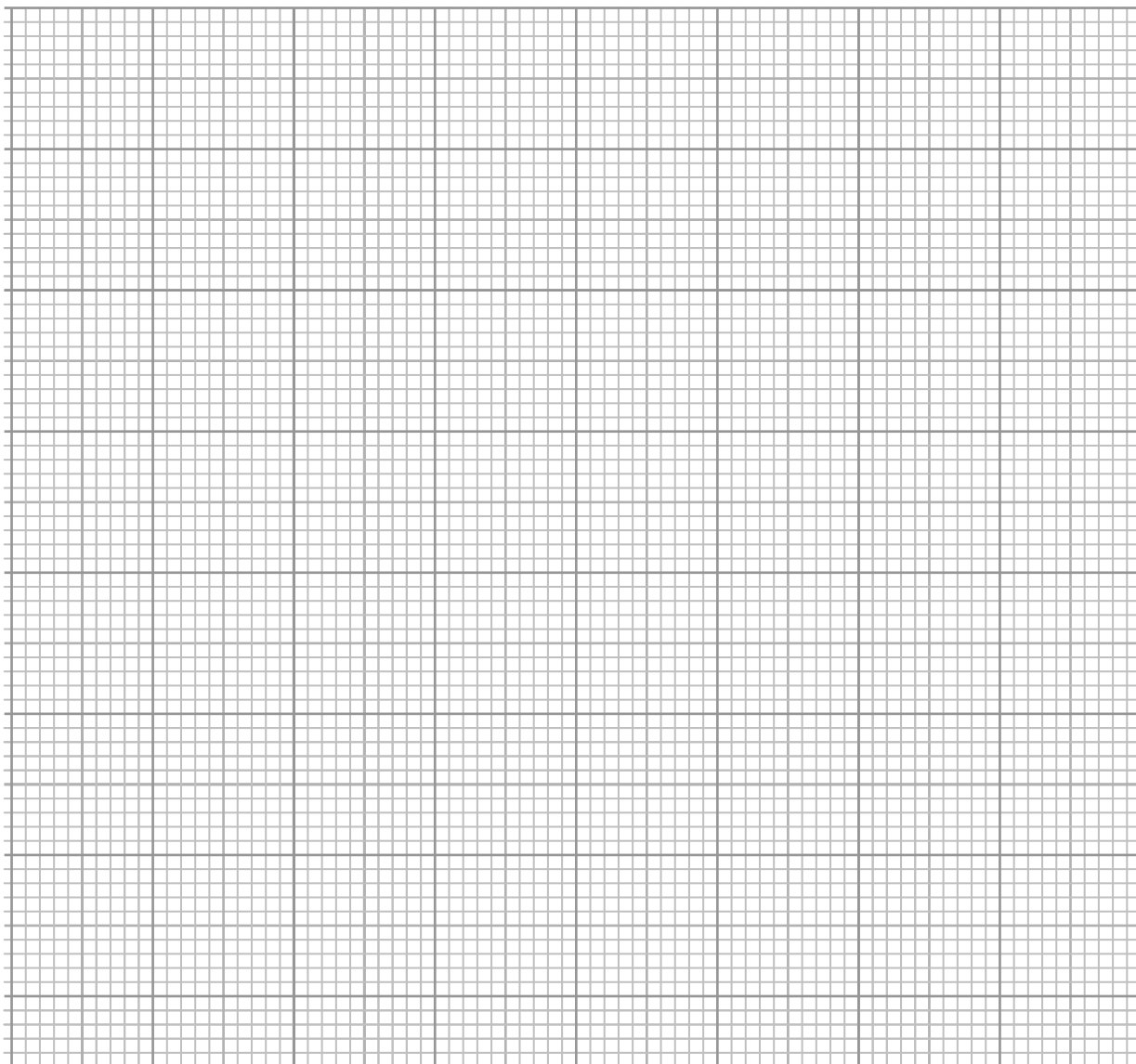**c)** Draw a circle of radius 5 cm. Construct a **regular octagon** inside this circle.

(7 marks)

**12.** The equation of a straight line is $y = 2x - 3$.

**a) Complete** this table of values.

| $x$ | $-3$ | $-2$ | $-1$ | $0$ | $1$ | $2$ | $3$ |
|---|---|---|---|---|---|---|---|
| $2x$ | $-6$ | | | $0$ | | $4$ | |
| $-3$ | | $-3$ | | $-3$ | $-3$ | | |
| $y$ | | | $-5$ | | $-1$ | | $3$ |

**b)** Draw the graph $y = 2x - 3$. Use a scale of $2\,\text{cm}$ for 1 unit on the $x$ axis and $1\,\text{cm}$ for 1 unit on the $y$ axis.

**c)** What is the gradient of the line? _____

**d)** What is the value of the $y$-intercept? _____

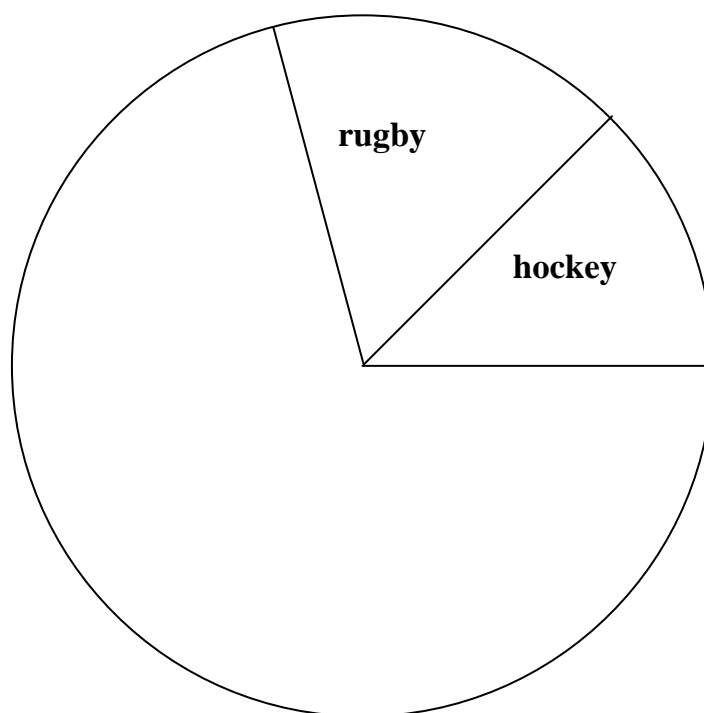**e)** Find the value of $x$ when $y$ is 2 $x =$ _____

(9 marks)

**13.** People are asked to choose their favourite type of sports.

The table below shows the results.

Use the information given in the table to continue the pie chart below.

| Sports | Frequency |
|---|---|
| Basketball | 12 |
| Football | 20 |
| Hockey | 9 |
| Rugby | 12 |
| Volleyball | 19 |

rugby

hockey

(5 marks)