

SECONDARY SCHOOL ANNUAL EXAMINATIONS 2009

Directorate for Quality and Standards in Education
Educational Assessment Unit

B

FORM 3

MATHEMATICS SCHEME B
Non Calculator Paper

TIME: 30 minutes

Name: _____

Class: _____

Mark

INSTRUCTIONS TO CANDIDATES

- **Answer all questions.**
- **This paper carries a total of 25 marks.**
- **Calculators and protractors are not allowed.**

- 1 **Underline** the number that is **not prime**.

A. 17 B. 27 C. 37 D. 47

(1 mark)

- 2 Work out, giving your answer in its **lowest terms**.

$$\frac{2}{5} \times \frac{15}{16}$$

Answer: _____

(2 marks)

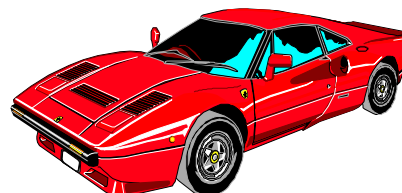
- 3 **€560** is divided in the ratio of **3 : 5**. Work out the **larger share**.

Answer: € _____

(2 marks)

- 4 A car travels at an **average speed** of 60 km/h.

How far does it travel after $2\frac{1}{2}$ hours?



Answer: _____ km

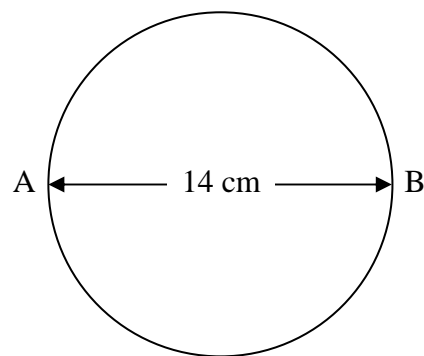
(2 marks)

- 5 What is the value of $\frac{x^2}{2} + 2$ when $x = -4$?

Answer: _____

(2 marks)

- 6** AB is the **diameter** of the circle.
Work out the **area** of the circle. (Take $\pi = \frac{22}{7}$)



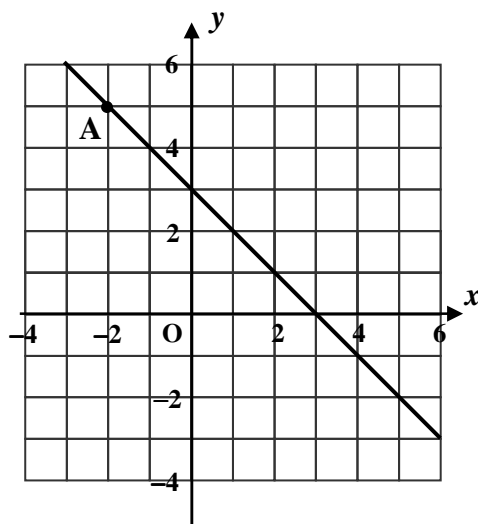
Answer: _____ cm^2

(3 marks)

- 7** (a) Write down the coordinates of A.

A (,)

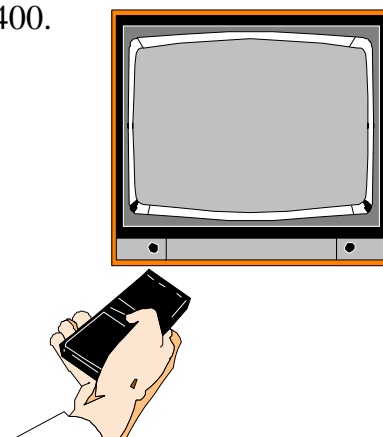
- (b) Work out the **gradient** of the line passing through A.



Answer: **gradient** = _____

(3 marks)

- 8** At a sale, the price of a TV set was reduced from €500 to €400.
Work out the **percentage reduction**.



Answer: _____ %

(3 marks)

9 Fill in:

(a) 3 km = _____ metres

(b) _____ kg = 7304 grams

(c) $\frac{3}{5}$ litre = _____ millilitres

(3 marks)

10 (a) Work out the **mean** of 9, 12, 18 and 21.

Answer: _____

(b) The **mean** of the numbers 12, 24 and x is the **same** as the mean of 9, 12, 18 and 21.
Find the value of x .

Answer: x = _____

(4 marks)

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B

FORM 3

MATHEMATICS SCHEME B
MAIN PAPER

TIME: 1h 30min

1	2	3	4	5	6	7	8	9	10	11	12	13	NC	Main	Total

Name: _____

Class: _____

Calculators are allowed but the necessary working must be shown.
Answer all questions.

1 Fill in:

(a) $298000 = 2.98 \times \underline{\hspace{2cm}}$

(b) $\underline{\hspace{2cm}} = 7.31 \times 10^{-4}$

(2 marks)

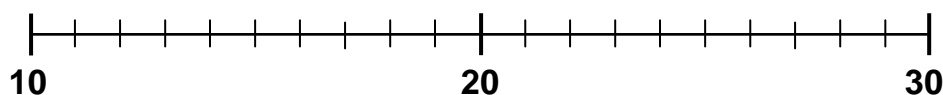
2 (a) Fill in with $<$, $>$ or $=$:

(i) $\frac{3}{5} \underline{\hspace{1cm}} 0.5$

(ii) $20\% \underline{\hspace{1cm}} \left(\frac{1}{2}\right)^2$

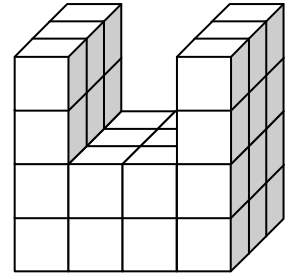
(b) Show the **inequality** on the **number line**.

$$17 < x \leq 25$$



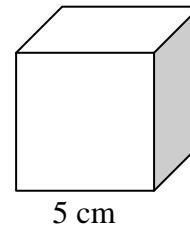
(4 marks)

- 3 (a) The solid shape is made up of **centimetre cubes**.
Work out the **volume** of the solid shape.



Volume = _____ cm^3

- (b) Work out the **surface area** of this **cube**.



Surface area = _____ cm^2

(4 marks)

- 4 A mobile phone costs €75. As a Christmas Offer, ALLPHONES give a 15% discount while DIGITRONIC sell the same phone for €60. Sandra wants to buy the mobile phone.

- (a) Which shop gives the **better bargain**, ALLPHONES or DIGITRONIC?



Answer: _____

- (b) How much would she **save**?



Answer: €_____

(5 marks)

Name: _____

Class: _____

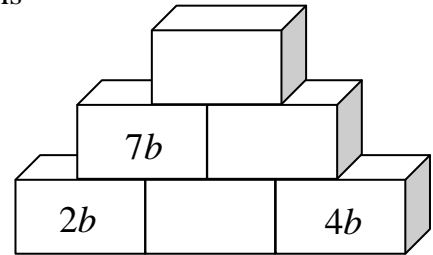
B

- 5 (a) Open the brackets and simplify.

$$2(5x - 10) - 7(x + 2)$$

Answer: _____

- (b) Each expression is the **sum** of the two expressions in the bricks below.
Fill in the blank bricks.



(5 marks)

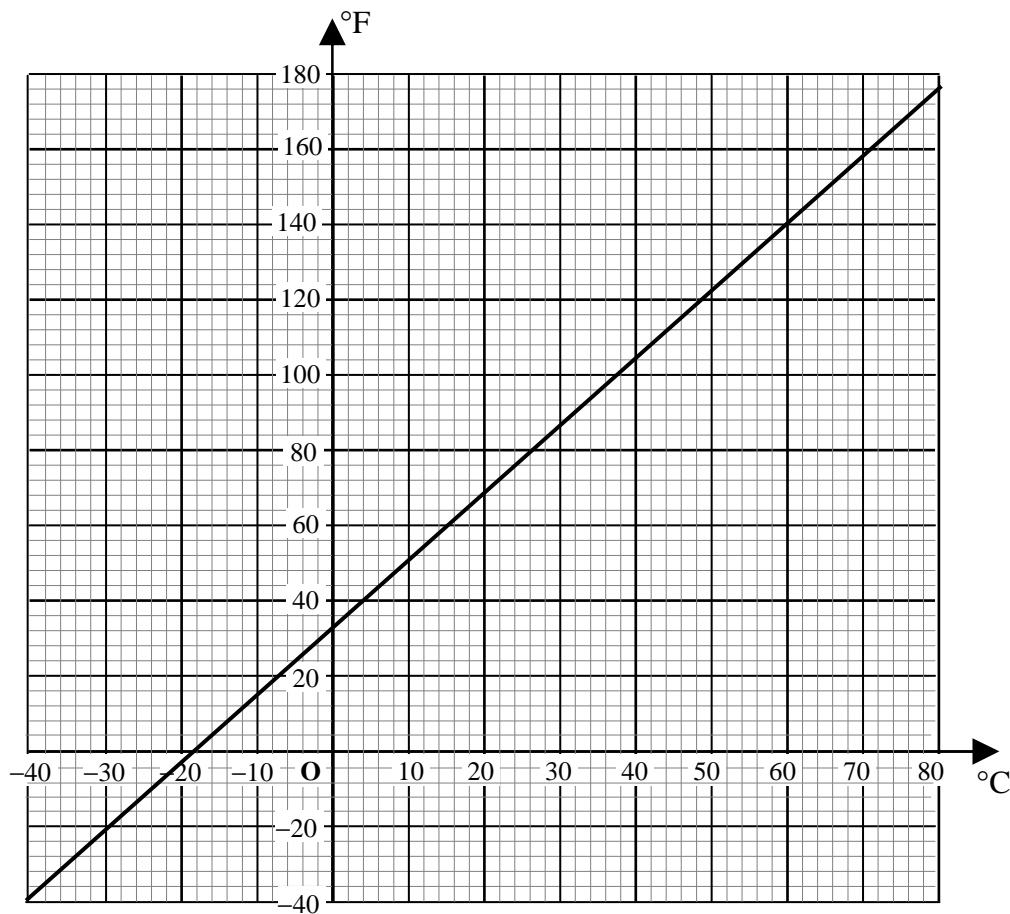
- 6 Rachel is using a spreadsheet to generate number sequences.

	A	B	C
1	1		
2	2		
3	3		
4	4		
5	5		
6	6		

- (a) In **cell B1** she writes the formula **=A1*2-1**. She then copies the formula down to cell B6.
- (i) Write down the **six numbers** she gets in **column B**. _____
- (ii) What are the numbers in **column B** called? _____
- (b) In **cell C1** she writes the formula **=A1*A1**. She then copies the formula down to cell C6.
- (i) Write down the **six numbers** she gets in **column C**. _____
- (ii) Write down the next **two numbers** in this sequence. _____

(6 marks)

- 7 The graph below changes degrees Celsius ($^{\circ}\text{C}$) to degrees Fahrenheit ($^{\circ}\text{F}$).



- (a) Use **this graph** to fill in.

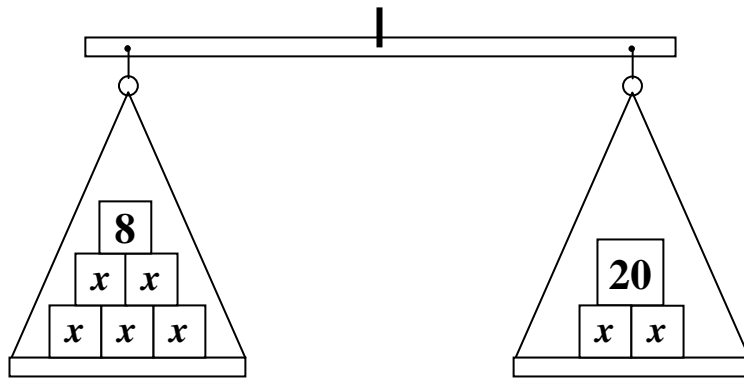
- (i) $20^{\circ}\text{C} = \underline{\hspace{2cm}}^{\circ}\text{F}$ (iii) $\underline{\hspace{2cm}}^{\circ}\text{C} = 140^{\circ}\text{F}$
(ii) $-40^{\circ}\text{C} = \underline{\hspace{2cm}}^{\circ}\text{F}$ (iv) $\underline{\hspace{2cm}}^{\circ}\text{C} = -30^{\circ}\text{F}$

- (b) Write an **estimate**, in **Fahrenheit**, of 90°C .

Answer: $\underline{\hspace{2cm}}^{\circ}\text{F}$

(6 marks)

- 8 (a) (i) Form an **equation** that represents this balance.



Answer: _____

- (ii) **Solve** this equation.

Answer: $x =$ _____

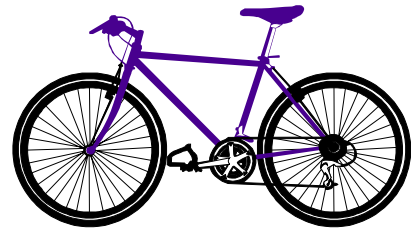
- (b) Robert thinks of a number N . He multiplies the number by 3 and adds 7. Robert's answer is 61.

Write an **equation** in N and solve it to find Robert's number.

Answer: $N =$ _____

(6 marks)

- 9** The **diameter** of a mountain bike wheel is 66 cm.
- (a) Work out the **circumference** of the wheel, correct to the **nearest centimetre**.



Answer: _____ cm

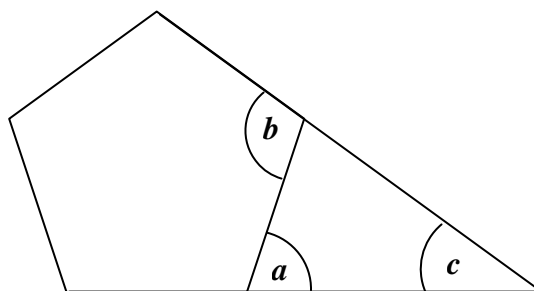
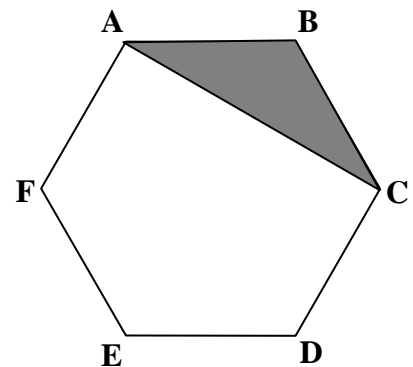
- (b) Calculate the **total distance**, in km, covered by the wheel after it has turned 1000 complete revolutions. Give your answer correct to **3 decimal places**.

Answer: _____ km

(6 marks)

- 10** (a) ABCDEF is a **regular hexagon**.
Explain why triangle ABC is **isosceles**.

- (b) The diagram shows a **regular pentagon**.
Work out the size of the marked angles.



$a =$ _____ $b =$ _____ $c =$ _____

(7 marks)

- 11** The picture shows a model of a ship. The model was made to scale in the ratio of **1 : 40**.



- (a) The length of the model ship is 45 cm.
Work out the **length** of the **real ship**, in metres.

Answer: _____ metres

- (b) The keel of the real ship is **12 metres**.
Work out the **length** of the keel on the **model**, in centimetres.

Answer: _____ cm

- (c) Another model of the **same ship** is 30 cm long.

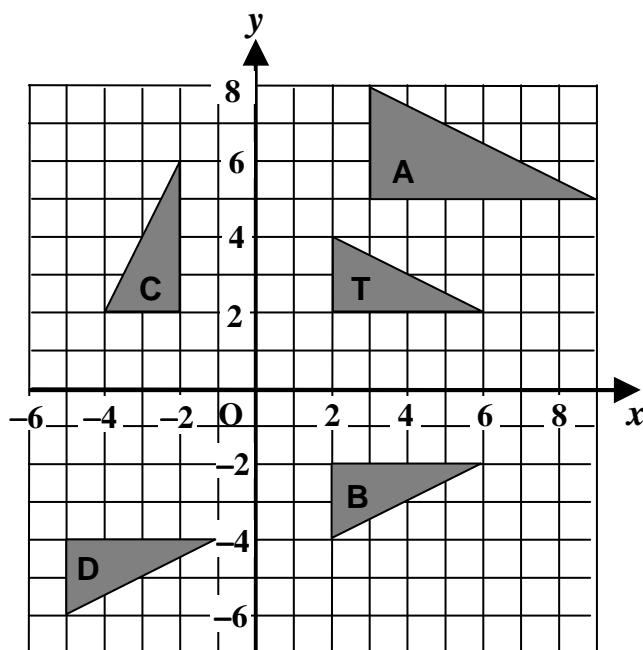
Fill in: This model was made to a scale of **1 : _____**.

(8 marks)

- 12** (a) A is an **enlargement** of T.
Write down

(i) the **scale factor**

(ii) the **coordinates** of the
centre of enlargement



- (b) **Describe** fully each transformation.

(i) **T to B:** _____

(ii) **T to C:** _____

(iii) **B to D:** _____

(8 marks)

- 13** (a) Use **ruler, compasses** and **pencil** to draw

(i) the **perpendicular bisector** of AB.

(ii) a **semicircle** with centre O and with **AB** as **diameter**.

(iii) $\angle ABP = 60^\circ$. (**P** lies on the circumference of the circle.)

A _____ B

- (b) Use a **protractor** to **measure** $\angle APB$. _____

(8 marks)

END OF PAPER