SECONDARY SCHOOL ANNUAL EXAMINATIONS 2009

Directorate for Quality and Standards in Education
Educational Assessment Unit

FORM 3 **MATHEMATICS SCHEME B** **TIME: 30 minutes**
Non Calculator Paper

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 ma

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

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

Answer: _____

(2 marks)

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

Answer: €_____

(2 marks)

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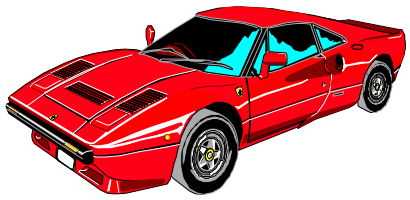
4 A car travels at an **average speed** of 60 km/h.

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



Answer: _____ km

(2 marks)

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

Answer: _____

(2 marks)

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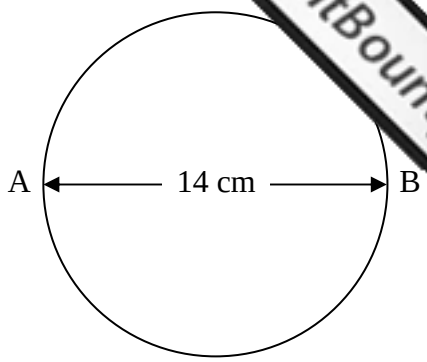
6 AB is the **diameter** of the circle.

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



Answer: _____ cm^2

(3 marks)

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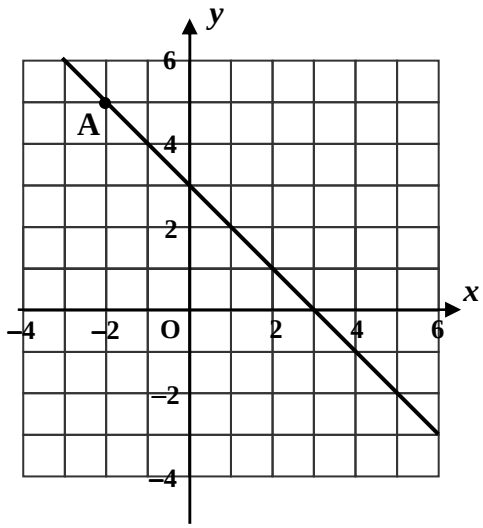
7 (a) Write down the coordinates of A.

A (,)

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



Answer**: gradient = _____**

(3 marks)

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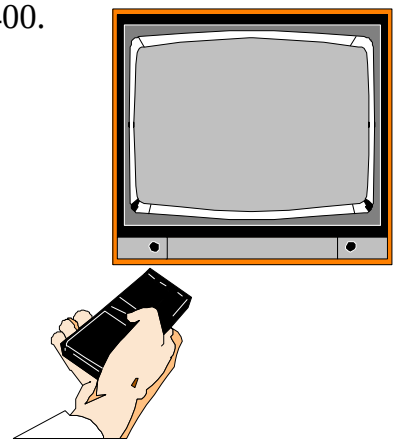
8 At a sale, the price of a TV set was reduced from €500 to €400.
Work out the **percentage reduction**.



Answer: _____ %

(3 marks)

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9 **Fill in**:

(a) 3 km = _____ metres

(b) _____ kg = 7304 grams

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

(3 marks)

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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)

SECONDARY SCHOOL ANNUAL EXAMINATIONS 2009

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B

FORM 3 **MATHEMATICS SCHEME B** **TIME: 1h 30min**

MAIN PAPER

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) $298000 = 2.98 \times$ _____

(b) _____ $= 7.31 \times 10^{-4}$

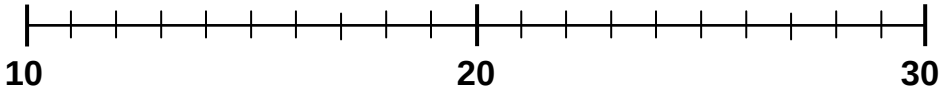
(2 marks)

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

(i) $\frac{3}{5}$ _____ 0.5 (ii) 20% _____ $\left(\frac{1}{2}\right)^2$

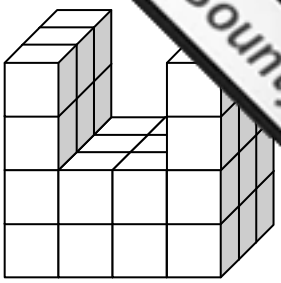
(b) Show the **inequality** on the **number line**.

$$\mathbf{17 < \mathit{x} \leq 25}$$



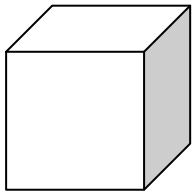
(4 marks)

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)

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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)

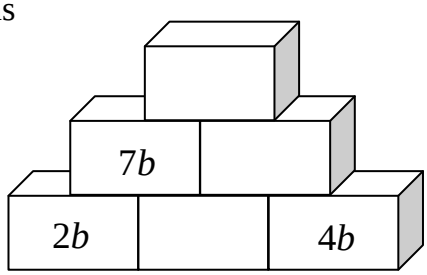
Name: _____ **Class:** _____ **B**

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? _____

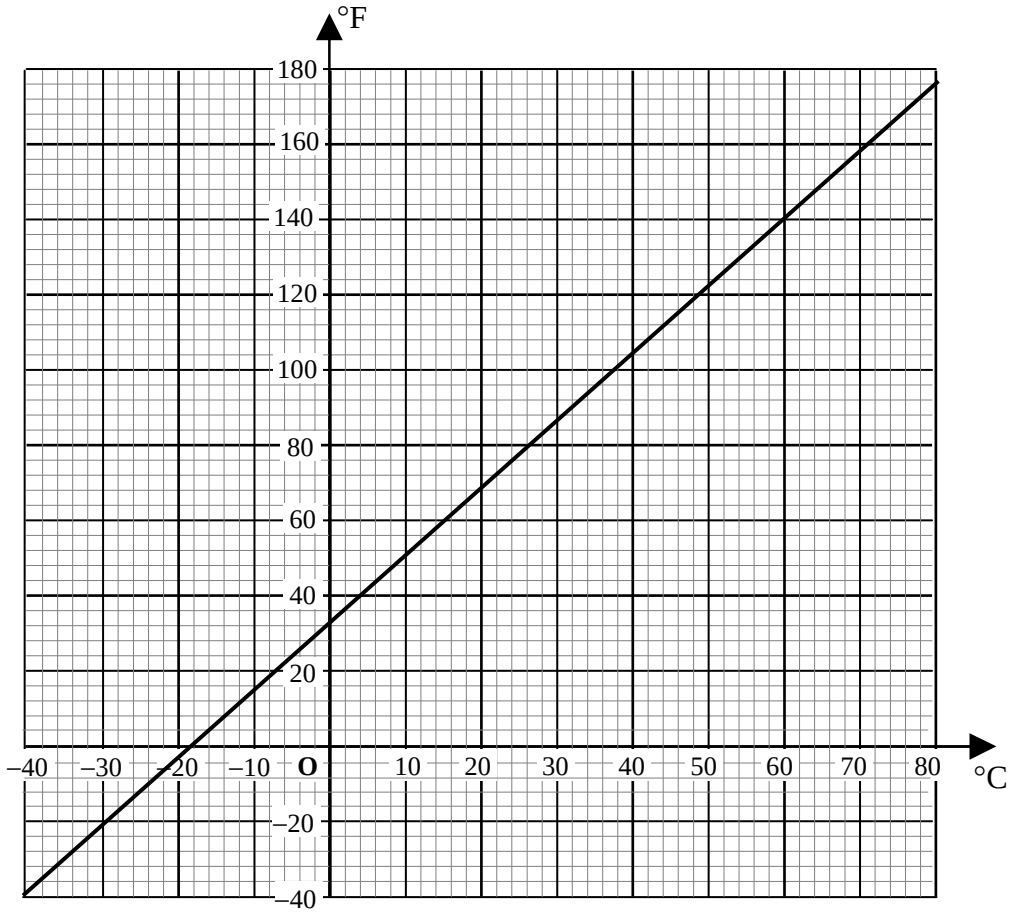
(b) In **cell C1** she writes the formula **=A1*A1**. She then copies the formula down to cell C6.

(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 (°C) to degrees Fahrenheit (°F).



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

(i) 20° C = _____ °F

(ii) –40° C = _____ °F

(iii) _____ °C = 140° F

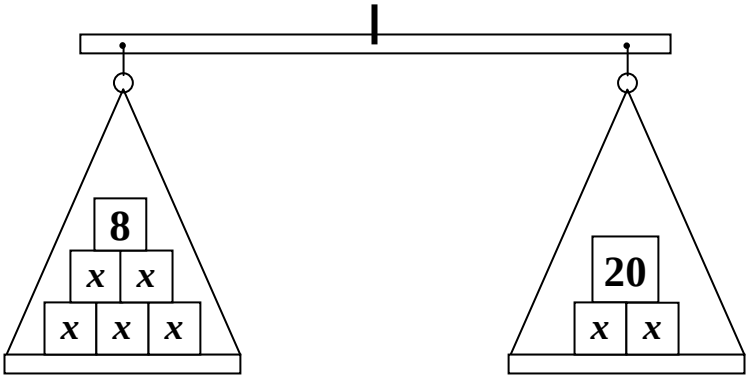
(iv) _____ °C = –30° F

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

Answer: _____ ° 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)

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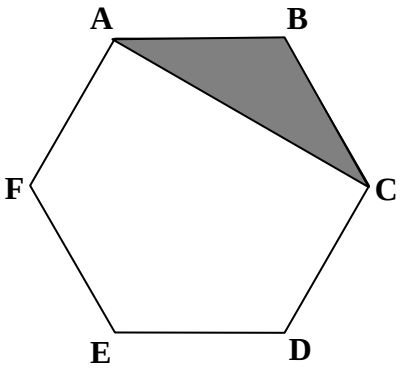
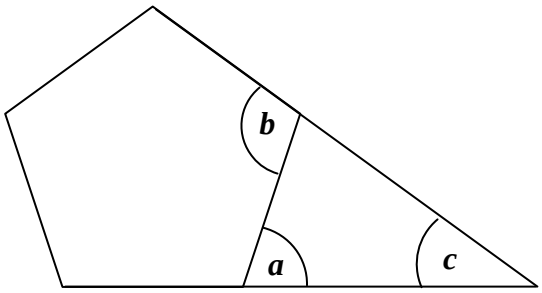
10 (a) ABCDEF is a **regular hexagon**.
Explain why triangle ABC is **isosceles**.



_____

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



a = _____ *b* = _____ *c* = _____

(7 marks)

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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)

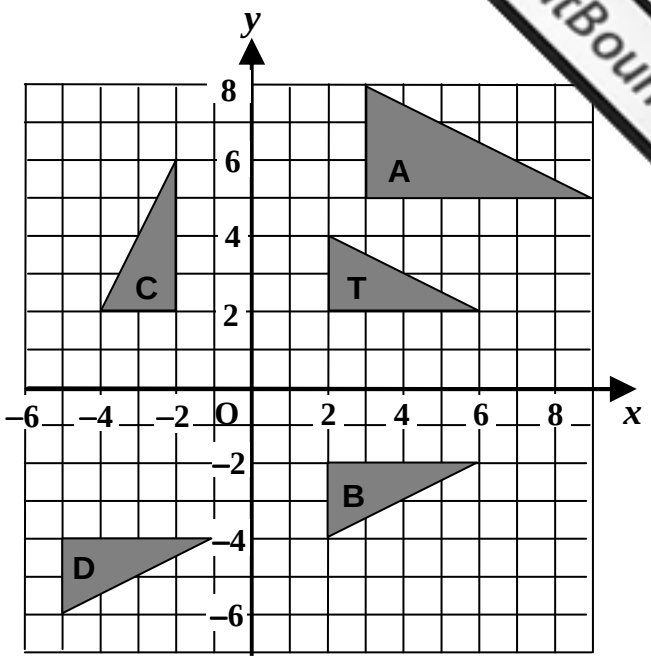
12 (a) A is an **enlargement** of T.
Write down

(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)

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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) ∠ABP = 60°. (**P** lies on the circumference of the circle.)

A _____ **B**

(b) Use a **protractor** to **measure** ∠APB. _____

(8 marks)

END OF PAPER