

DIRECTORATE FOR QUALITY AND STANDARDS IN EDUCATION  
Department for Curriculum Management and eLearning  
Educational Assessment Unit  
Annual Examinations for Secondary Schools 2013

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**FORM 3**                                      **MATHEMATICS**                                      **TIME: 30 minutes**  
**(Non Calculator Paper)**

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**Name:** \_\_\_\_\_ **Class:** \_\_\_\_\_

1	2	3	4	5	6	7	8	9	10	Total

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**INSTRUCTIONS TO CANDIDATES**

- Answer ALL questions.
- This paper carries a total of 25 marks.
- Calculators and protractors are NOT ALLOWED.

1 Work out the following:

(a)  $(-5) + (-9)$

Ans: \_\_\_\_\_

(b)  $(-6) \times (+3) \times (-2)$

Ans: \_\_\_\_\_

(2 marks)

2 Mariah runs at a speed of 8 km per hour. What **distance** does she travel in 3.5 hours?

Ans: \_\_\_\_\_ km

(1 mark)

3 Estimate  $\frac{23.1 \times 68.3}{4.85}$ .

Ans: \_\_\_\_\_

(2 marks)

4 (a) Change  $1\frac{4}{9}$  to an improper fraction.

Ans: \_\_\_\_\_

(b) Work out:  $\frac{3}{5} - \frac{3}{8}$

Ans: \_\_\_\_\_

(c) Work out:  $\frac{3}{7} \times \frac{11}{12}$

Ans: \_\_\_\_\_

(5 marks)

- 5 Nancy inherits €2500. She divides the money between her two children Laura and Mark in the ratio 1 : 4. How much money does **each child** receive?

Ans: Laura gets €\_\_\_\_\_, Mark gets €\_\_\_\_\_

(2 marks)

- 6 Work out the **value** of  $3x + 4y$  when  $x = 6$  and  $y = -3$ .

Ans: \_\_\_\_\_

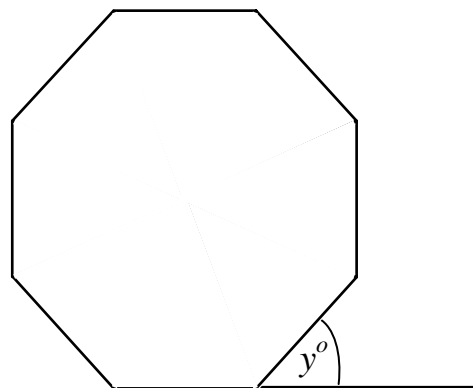
(2 marks)

- 7 Calculate 30% of 200 metres.

Ans: \_\_\_\_\_ metres

(2 marks)

- 8 The diagram shows a regular octagon.



Calculate the size of the **exterior angle** of the regular octagon, marked  $y^\circ$  on the diagram.

Ans:  $y^\circ =$  \_\_\_\_\_  $^\circ$

(2 marks)

- 9 Here are six numbers written in standard form.

$$2.6 \times 10^5 \quad 1.75 \times 10^6 \quad 5.84 \times 10^0 \quad 8.2 \times 10^{-3} \quad 3.5 \times 10^{-1} \quad 4.9 \times 10^{-2}$$

- (a) Write down the **largest** number.

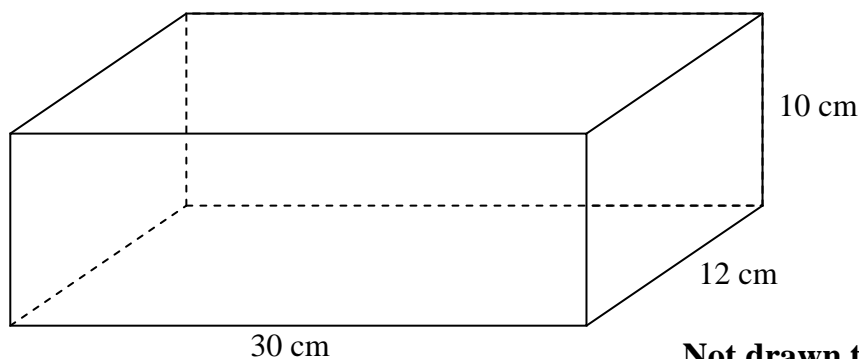
Ans: \_\_\_\_\_

- (b) Write  $4.9 \times 10^{-2}$  as an **ordinary number**.

Ans: \_\_\_\_\_

(2 marks)

- 10 A storage box is in the shape of a **cuboid**.



**Not drawn to scale**

- (a) Calculate the **volume** of this storage box.

Ans: \_\_\_\_\_  $\text{cm}^3$

- (b) Calculate the **total surface area** of the box.

Ans: \_\_\_\_\_  $\text{cm}^2$

(5 marks)

**END OF PAPER**

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FORM 3

MATHEMATICS  
 (Main Paper)

TIME: 1h 30min

Name: \_\_\_\_\_

Class: \_\_\_\_\_

1	2	3	4	5	6	7	8	9	10	11	12	13	Total Main	Non Calculator	GLOBAL MARK

**CALCULATORS ARE ALLOWED  
 BUT ALL NECESSARY WORKING MUST BE SHOWN.  
 ANSWER ALL QUESTIONS.**

1 Here is a list of words that represent parts of a circle:

*chord*

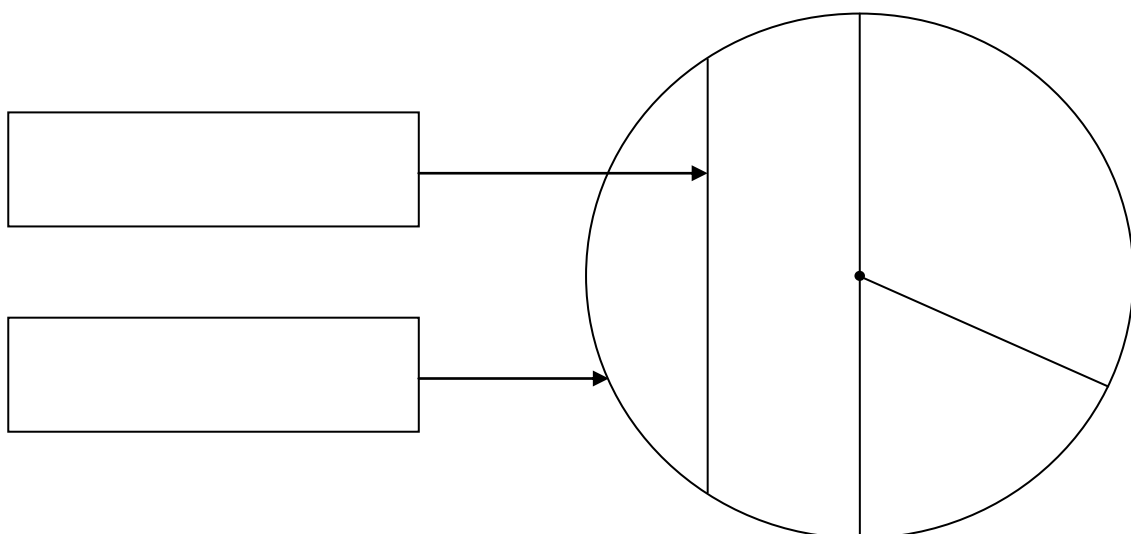
*centre*

*radius*

*diameter*

*circumference*

Fill each box below by choosing the **correct word** from the list.



(2 marks)

- 2 (a) **Increase** €360 by 55%.

Ans: €\_\_\_\_\_

- (b) During a sale, the price of a shirt is decreased from €42 to €27.30. What is the **percentage decrease**?

Ans: \_\_\_\_\_%

(5 marks)

- 3 (a) Insert the **correct symbol** in the box below: =, >, <, ≥ or ≤

$$-6 \quad \boxed{\phantom{0}} \quad -8$$

- (b) **Simplify** this ratio as much as possible: 16 : 240 : 600

Ans: \_\_\_\_\_

- (c) **Find**  $x$  in this ratio:  $x : 28 = 6 : 7$

Ans: \_\_\_\_\_

(5 marks)

- 4 (a) Complete these **conversions**:

(i) 6 cm = \_\_\_\_\_ mm

(ii) 2400 g = \_\_\_\_\_ kg

(iii) 0.7 litres = \_\_\_\_\_ ml

- (b) Jake's birthday party began at 20:45 on Saturday and finished at 01:00 on Sunday. How many **minutes** did the party last?

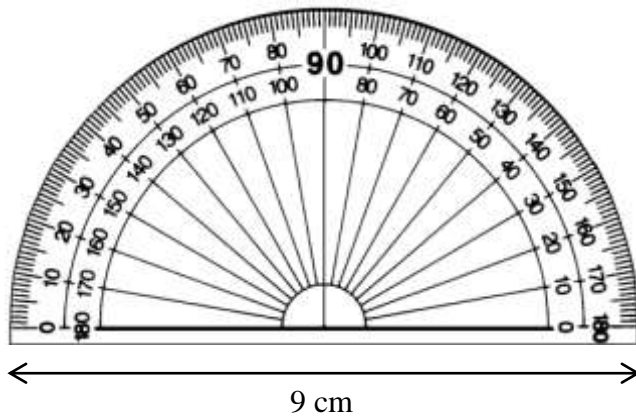
Ans: \_\_\_\_\_ minutes

(5 marks)

Name \_\_\_\_\_

Class \_\_\_\_\_

- 5 A semi-circular protractor has a radius of 4.5 cm. Calculate its **perimeter**, giving your answer correct to **1 decimal place**.



**Diagram not drawn to scale**

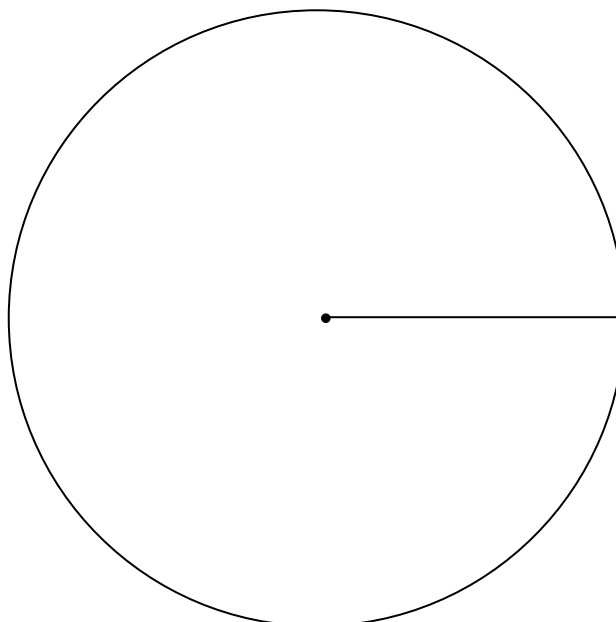
Ans: \_\_\_\_\_ cm

(3 marks)

- 6 In a class of 30, the eye colours of the students were recorded as follows.

Eye colour	Amber	Blue	Brown	Hazel
Frequency	8	2	14	6

Draw a **pie chart** to represent this information. **Label** it clearly.



(5 marks)

7 (a) **Expand:**  $8(3 - 6d)$ .

Ans: \_\_\_\_\_

(b) **Factorise** completely:  $18 + 24e$ .

Ans: \_\_\_\_\_

(c) **Solve:**  $11 - 3a = 2$

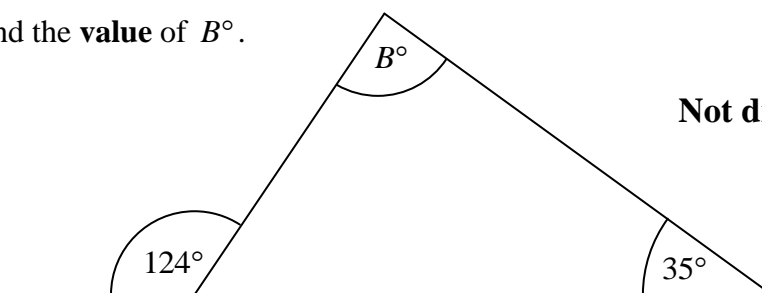
Ans: \_\_\_\_\_

(d) Make  $x$  the **subject of the formula**  $y = 5x - 3$ .

Ans: \_\_\_\_\_

(7 marks)

8 (a) Find the **value** of  $B^\circ$ .



Ans:  $B^\circ =$  \_\_\_\_\_  $^\circ$

(b) Andre thinks of a number. He multiplies it by 4 and adds 6. His answer is 30.

(i) Write down an **equation** for Andre's number.

Ans: \_\_\_\_\_

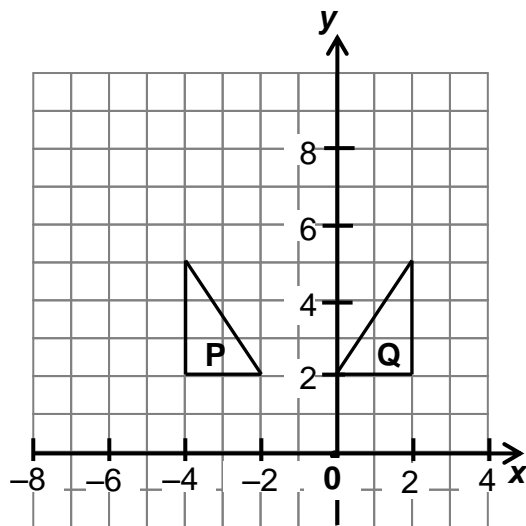
(ii) Find the number.

Ans: \_\_\_\_\_

(7 marks)



9



- (a) **Describe fully** the single transformation that maps Triangle P to Triangle Q.

Ans: \_\_\_\_\_ in the line \_\_\_\_\_

- (b) **Translate** Triangle P by 6 squares to the right and 4 squares up. Label the image R.

- (c) **Enlarge** Triangle P by a scale factor of 2 using (0, 0) as the centre of enlargement. Label the image S.

(6 marks)

- 10 (a) **Simplify:** (i)  $x + x$

Ans: \_\_\_\_\_

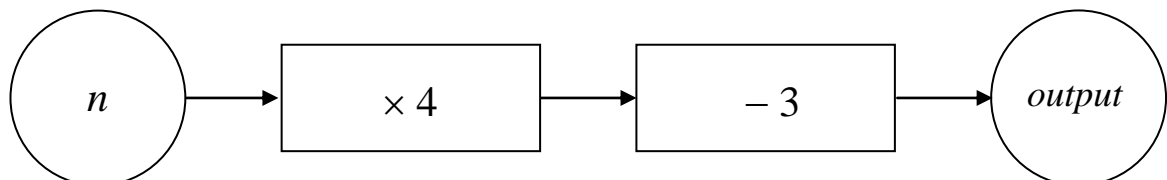
- (ii)  $x \times x$

Ans: \_\_\_\_\_

- (iii)  $7y + 5 - 2y + 3 - y$

Ans: \_\_\_\_\_

- (b) Look at the **number machine** below.



- (i) **Complete** the table.

$n$	1	2	3	4	5
$output$		5			

- (ii) Write down the **rule** in terms of  $n$ .

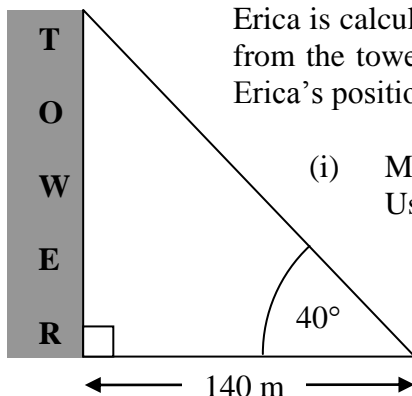
Ans: \_\_\_\_\_

(7 marks)

- 11 (a) (i) Draw a **circle** of radius 4 cm. Use the point O below as the centre of the circle.
- (ii) Hence, construct an **inscribed regular hexagon** of side 4 cm using ruler and compasses only.

• O

- (b) Erica is calculating the height of a tower. She stands 140 metres away from the tower. The angle of elevation of the top of the tower from Erica's position is  $40^\circ$ .



- (i) Make a **scale drawing** of the diagram shown. Use a scale of 1 cm to represent 20 m.

**Not drawn to scale**

- (ii) Use your drawing to calculate the **actual height** of the tower to the nearest metre.

Ans: \_\_\_\_\_m

(8 marks)



**12** (a) Kyle throws an ordinary dice. Find the **probability** that Kyle gets a

(i) 6 Ans: \_\_\_\_\_

(ii) prime number Ans: \_\_\_\_\_

(iii) 5 or more Ans: \_\_\_\_\_

(b) Michael says that the probability that it will rain is  $\frac{6}{5}$ . Tick one of the boxes below to show whether you **agree or disagree** with Michael. Give a **reason** for your answer.

☐

Agree

☐

Disagree

Reason: \_\_\_\_\_

(c) The heights, to the nearest centimetre, of 10 girls are:

159, 155, 153, 154, 157, 162, 152, 160, 161 and 154. Find:

(i) their **median** height

Ans: \_\_\_\_\_ cm

(ii) the **range** of their heights

Ans: \_\_\_\_\_ cm

(7 marks)

**13** (a) **Complete** the table for  $y = 3x + 2$ .

$x$	-2	-1	0	1	2	3	4
$3x$	-6			3		9	
+2	+2		+2		+2		
$y$	-4		2	5		11	14

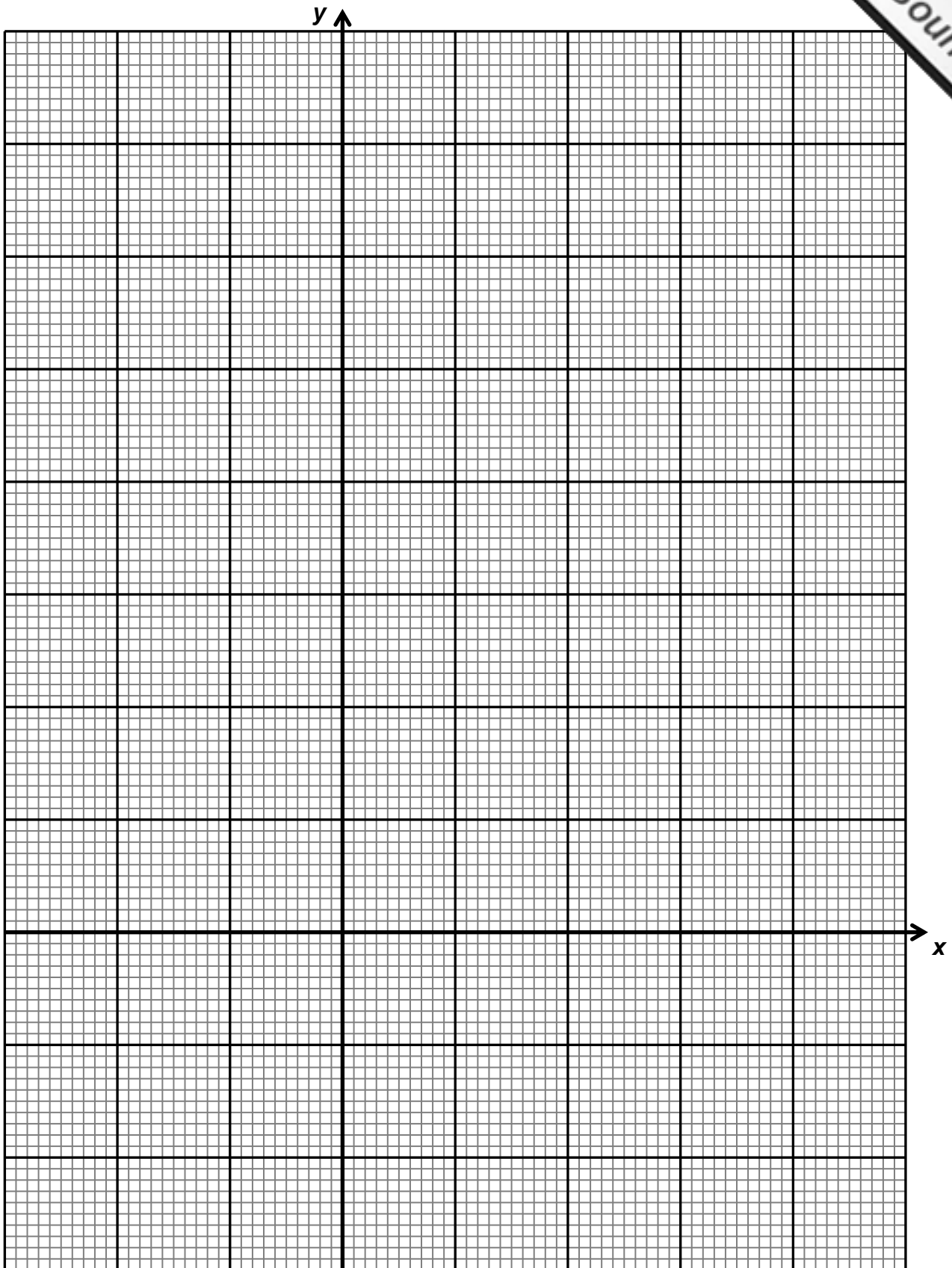
(b) **Plot** the points on the graph paper found on page 8. Use 2 cm for each unit on the  $x$ -axis and 1 cm for each unit on the  $y$ -axis.

(c) **Draw the graph** of  $y = 3x + 2$  on the same graph paper.

(d) **Mark and label** the points A (0, 2) and B (3, 11) on the graph.

(e) Use these two points to find the **gradient** of the line AB.

Ans:



(8 marks)

**END OF PAPER**