DIRECTORATE FOR QUALITY AND STANDARDS IN EDUCATION
Department for Curriculum Management and eLearning
Educational Assessment Unit
Annual Examinations for Secondary Schools 2012

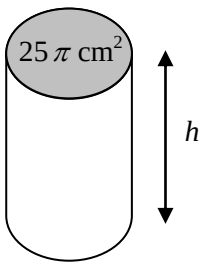
FORM 4 **MATHEMATICS SCHEME B** **TIME: 20 minutes**
Non Calculator Paper

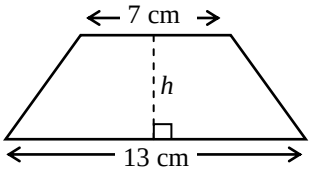
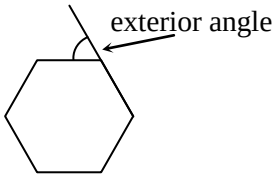
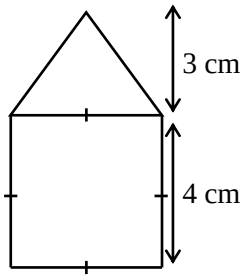
Name: _____ **Class:** _____

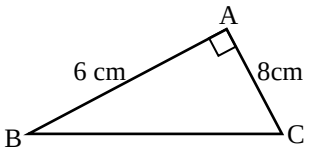
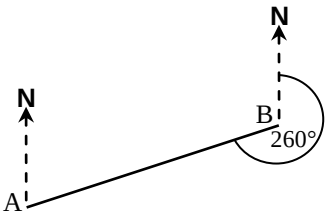
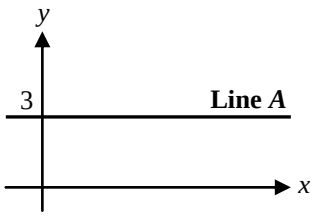
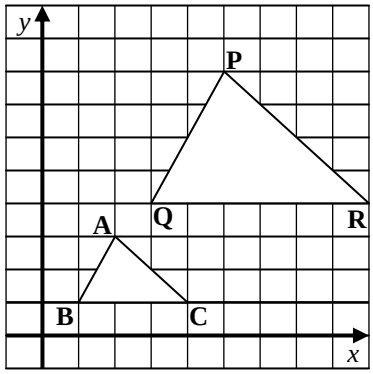
Mark

Instructions to Candidates

- **Answer ALL questions.**
- **This paper carries a total of 20 marks.**
- **Calculators and protractors are NOT ALLOWED.**

No.	QUESTION	Space for Wor... Required
1.	Simplify: $3x + 9y + 2x - 7y$ Ans: _____	
2.	Work out: $a^7 \times a^0 \times a^{-5}$ Ans: _____	
3.	Write 0.0024 in standard form. Ans: _____	
4.	Find the sum of the smallest prime number and the largest prime number from the following: **9, 11, 15, 17, 21, 29, 32** Ans: _____	
5.	Work out: $\frac{2x}{3} + \frac{x}{6}$ Ans: _____	
6.	Fill in the blanks so that this **Logo** Program draws a regular pentagon of side 40 turtle steps: **REPEAT ____ [FD ____ RT 72]**	
7.	Round each figure to 1 significant figure and give an estimate for: $\frac{37.4 \times 93.25}{109.8}$ Ans: _____	
8.	The volume of a cylinder is 500π cm^3. The cross-sectional area of the cylinder is 25π cm^2. Calculate the height, h, of the cylinder.  Ans: _____cm	

No.	QUESTION	Space for Wo… Required
9.	A bag contains 3 yellow beads, 2 green beads and 5 pink beads. What is the probability that a bead picked at random from the bag is **NOT** green? Ans: _____	
10.	Make a the subject of the formula: $b = 3a - 12$ Ans: _____	
11.	Each month Petra spends her money on food, clothes and other expenses in the ratio 3 : 4 : 5. In May Petra earned €1200. How much did she spend on food? Ans: €_____	
12.	The trapezium has an area of 94 cm^2 and a height, h. Find h.  Ans: _____cm	
13.	Calculate the size of one exterior angle of a hexagon.  Ans: _____	
14.	Find the area of the shape below:  Ans: _____cm^2	
15.	The n^{th} term of a sequence is $3n^2 - 2$. Calculate the 3^{rd} term of the sequence. Ans: _____	

No.	QUESTION	Space for Wor... Required
16.	Work out: $3\frac{3}{8} \div 2\frac{1}{4}$ Ans: _____	
17.	Find the length of side BC.  Ans: _____cm	
18.	What is the bearing of B from A?  Ans: _____	
19.	Write down the equation of **Line *A***.  Ans: _____	
20.	Triangle ABC is enlarged to form triangle PQR. Which **one** of the following is TRUE?  **A.** AB = PQ and AC = PR. **B.** $\hat{A} = \hat{P}$ and $\hat{B} = \hat{Q}$. **C.** The perimeter of ΔABC is equal to the perimeter of ΔPQR. **D.** The area of ΔABC is equal to the area of ΔPQR. Ans: _____	

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FORM 4 **MATHEMATICS SCHEME B** **TIME: 1h 40min**
Main paper

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	Total Main	Non Calc	**Global Mark**
Mark																

Name: _____ **Class:** _____

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

1. a) Janice works 9 hours a week at a part-time job. She earns €3.50 an hour. She is saving to buy a mobile phone costing €180. How many weeks must she work to have enough money to buy the mobile phone?

Ans. _____weeks

b) If Mike types 6 pages a day he finishes a document in 45 days. How long will he take if he types 9 pages a day?

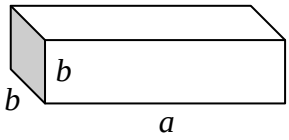
Ans. _____days

(6 marks)

2. a) A cuboid has square ends. Its volume, V, is given by the formula $V = ab^2$.

The spreadsheet below is used to find the volume of the cuboid.

	A	B	C
1	*a*	*b*	
2	8	3	
3			



(i) What formula would you write down in cell C2 to find the volume of the cuboid?

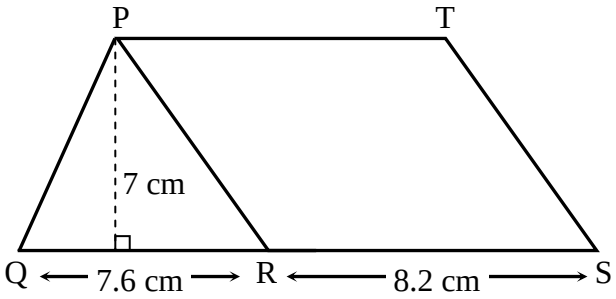
_____

(ii) What value is displayed in cell C2 when ENTER is pressed?

Ans. _____

b) The flat shape below consists of a **triangle PQR** and a **parallelogram PRST**.

Find the total area of the shape PQST.



Ans. _____ cm^2

(5 marks)

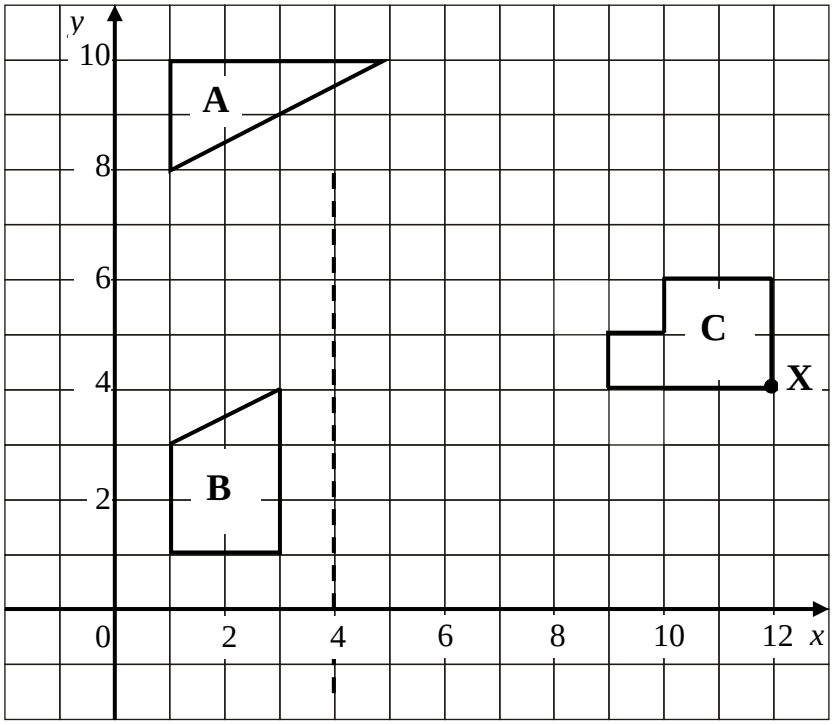
Name: _____ **Class:** _____

3. On the grid below:

a) Translate Shape **A** by column vector $\begin{pmatrix} 5 \\ -3 \end{pmatrix}$. Label the image **A′**.

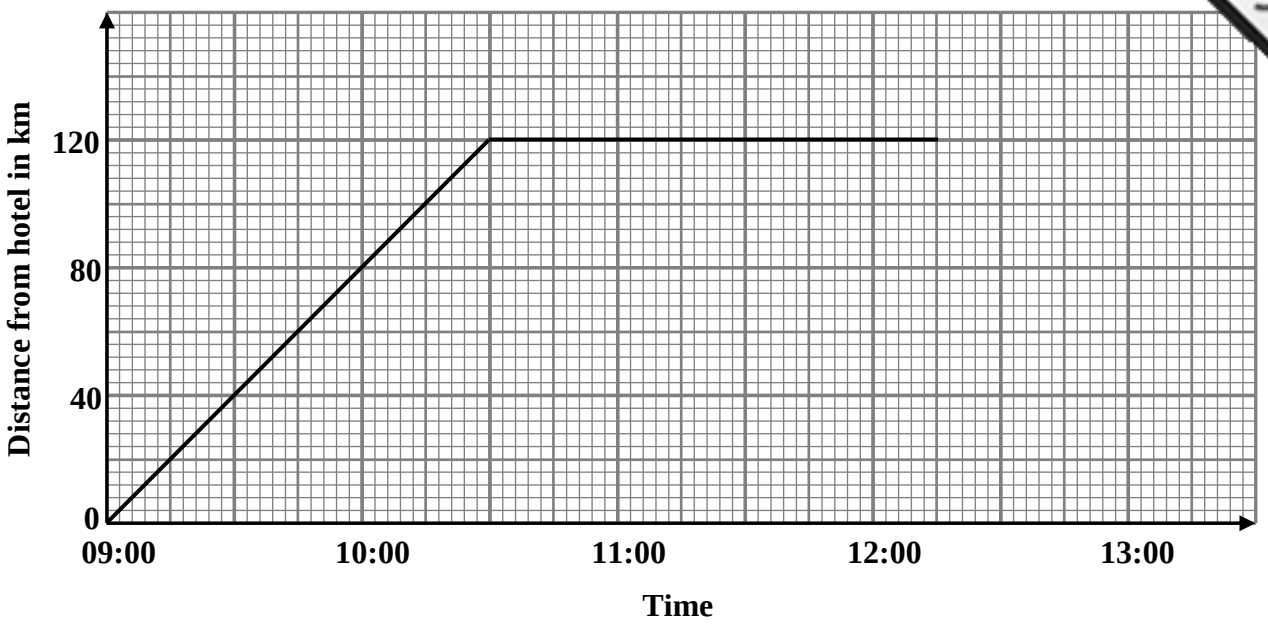
b) Reflect Shape **B** in the line $x = 4$. Label the image **B′**.

c) Rotate Shape **C** 90° anticlockwise about point **X**. Label the image **C′**.



(5 marks)

4. The distance-time graph represents a journey by coach from a hotel to a park. The c
hotel at 09:00. It arrived at the park and stopped for some time. It then returned to the h



a) How long did the coach take to arrive at the park?

Ans. _____

b) At what speed did the coach travel from the hotel to the park?

Ans. _____km/h

c) At what time did the coach start its return journey?

Ans. _____

d) On its return journey, the coach travelled at 96 km/h. How long did the return journey take?

Ans. _____

e) At what time did the coach arrive back at the hotel?

Ans. _____

(8 marks)

Name: _____ **Class:** _____

5. *Worthy* Supermarket and *Priceless* Supermarket both employ 8 cashiers. The annual salary of each cashier is given in the tables below:

Annual salaries at *Worthy* Supermarket, in €							
7600	8000	8200	8500	8600	8700	9000	9000

Annual salaries at Priceless Supermarket, in €							
7300	7500	7600	8600	8600	8800	9200	9600

a) Use the information given above to fill in the following tables:

***Worthy* Supermarket**	
Mean	**Median**

***Priceless* Supermarket**	
Mean	**Median**
€8400	

b) Which supermarket gives a better salary? Give a reason for your answer by comparing your results in part (a).

Supermarket:_____

Reason: _____

_____

(5 marks)

6. Sticks were used to make the shapes below.

Shape 1 **Shape 2** **Shape 3**

a) Complete the following table:

Shape Number	1	2	3	4	5
Number of sticks	4	7	10		

b) Find the number of sticks in**:**

(i) Shape *N*.

Ans. _____

(ii) Shape 100.

Ans. _____

c) Which shape has 34 sticks?

Ans. _____

(5 marks)

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7. a) Solve the equation: $7(3a - 1) = 56$

Ans. _____

b) Factorise completely: $4x^2 - 6xy$

Ans. _____

c) Expand and simplify: $5(2a + 3) + 3(4 - 3a)$

Ans. _____

d) Simplify: $\dfrac{3a^2b^4}{27a^2b}$

Ans. _____

(8 marks)

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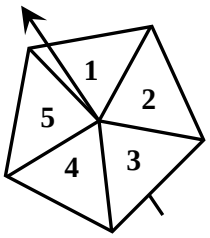
8. A five-sided spinner and a coin are tossed together.

a) Complete the possibility space for this event:



Spinner	Coin: H	Coin: T
1		1, T
2	2, H	
3	3, H	3, T
4		
5		5, T

b) What is the probability of obtaining a number 5 and a Tail?

Ans. _____

c) What is the probability of obtaining an even number and a Head?

Ans. _____

(4 marks)

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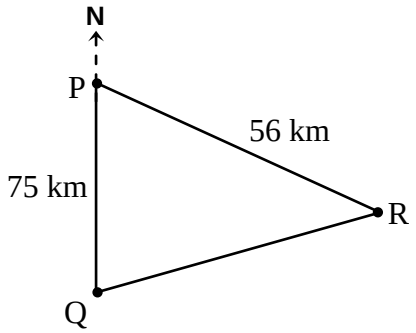
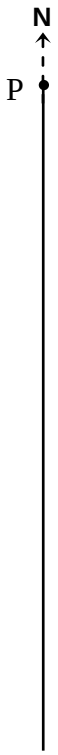
9. The diagram below represents three villages P, Q and R. The bearing of R from P
The distance between P and R is 56 km. Q is 75 km due south of P.



a) Use a scale of 1 cm to represent 10 km. Draw and label a scale diagram to illustrate the position of the three villages.



b) Measure the length QR. Ans. _____cm

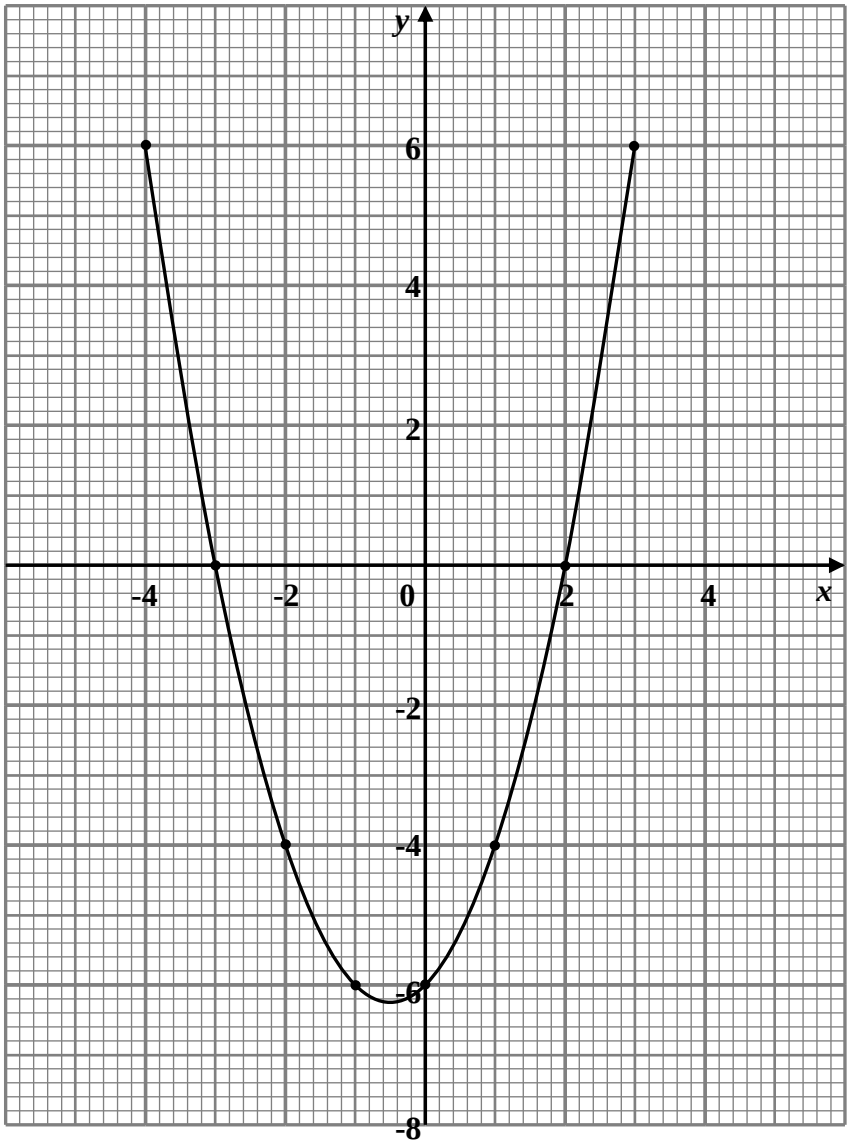
c) What is the actual distance between village Q and village R?

Ans. _____km

d) What is the bearing of village R from village Q? Ans. _____

(5 marks)

10. The curve represents the graph of $y = x^2 + x - 6$.



From your graph, find:

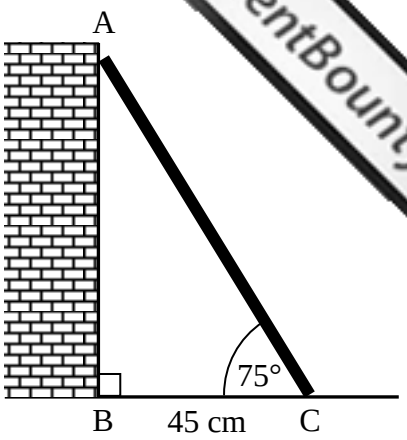
a) the value of y when $x = -2.5$ Ans. _____

b) the values of x when $y = 4.6$ Ans. _____, _____

c) the minimum value of y. Ans. _____

(4 marks)

11. a) John places a ladder, AC, at an angle of 75° to the ground as shown in the diagram. BC = 45 cm.
Giving your answers correct to 1 decimal place, find:



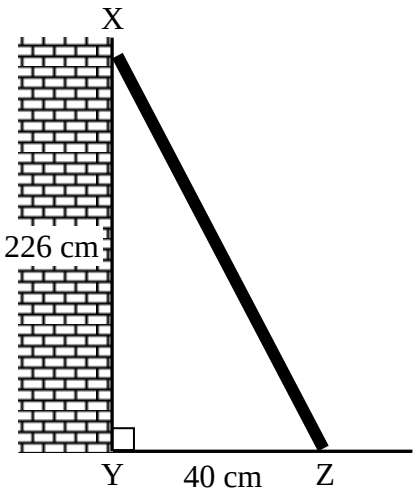
(i) AB, the height reached by the ladder.

Ans. _____cm

(ii) AC, the length of the ladder.

Ans. _____cm

b) Peter uses a longer ladder such that XY = 226 cm and YZ = 40 cm.



(i) Find XZ, the length of the ladder.
Give your answer correct to 1 decimal place.

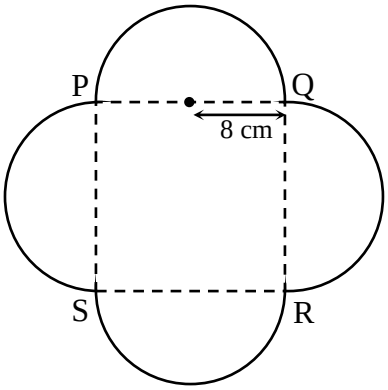
Ans. _____cm

(ii) Find angle $X\hat{Z}Y$, the angle the ladder makes with the ground.
Give your answer correct to the nearest degree.

Ans. _____

(9 marks)

12. The diagram below is made up of a square, PQRS, and four semicircles. The radius of each semicircle is 8 cm.



a) What is the length of one side of the square PQRS?

Ans. _____cm

b) Calculate the area of the square.

Ans. _____cm^2

c) Calculate the area of one semicircle, **correct to 1 decimal place**.

Ans. _____ cm^2

d) Calculate the area of the whole shape, **correct to 1 decimal place**.

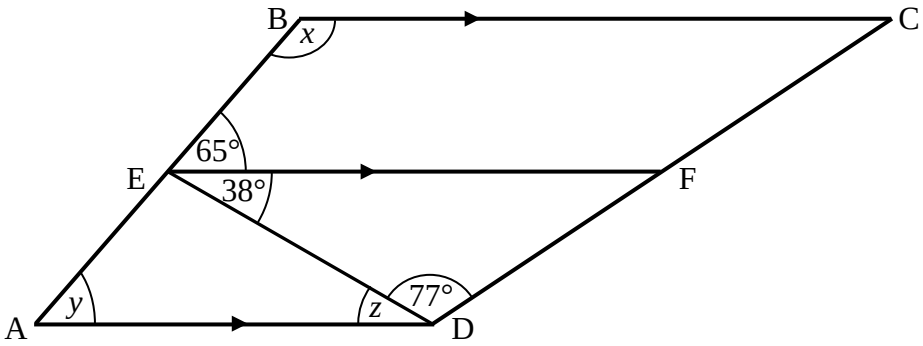
Ans. _____ cm^2

e) Find the perimeter of shape PQRS, **correct to 1 decimal place**.

Ans. _____ cm

(8 marks)

13. ABCD is a quadrilateral. E and F are two points on AB and DC respectively such that AD, EF and BC are parallel to each other. Angle $B\hat{E}F = 65°$, $D\hat{E}F = 38°$ and $E\hat{D}F = ?$



a) Find the value of angles ***x***, ***y*** and **z**.

Angle *x* = _____

Reason: _____

Angle *y* = _____

Reason: _____

Angle z = _____

Reason: _____

b) Explain why AB is parallel to DC.

_____

_____

c) What type of quadrilateral is EBCD?

_____

(8 marks)

END OF PAPER