SECONDARY SCHOOL ANNUAL EXAMINATIONS 2010

Directorate for Quality and Standards in Education
Educational Assessment Unit

FORM 2 **MATHEMATICS SCHEME A** **TIME: 30 minutes**
Non-Calculator Paper

Name: _____ **Class:** _____

Question	1	2	3	4	5	6	7	8	9	10	Total
Mark											

Instructions to Candidates

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

1. Which of the following is the **nearest** answer to: $\frac{23.2 \times 19.64}{\sqrt{16.3}}$?

(a) 0.1 (b) 1 (c) 10 (d) 100 (e) 1000

_____

(1 mark)

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2. Fill in with the unit which **best** describes the following:

(a) A bottle of mineral water holds 2 ____. (cm, cm^2, cm^3, ℓ, $m\ell$)

(b) The **area** of a football pitch is 1700 ____. (m, m^2, cm, cm^2, km^2)

(2 marks)

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3. (a) Michael got 48 marks out of 80 in his geography test. What percentage is this?

_____

(b) Write a fraction that lies between $\frac{1}{2}$ and $\frac{5}{6}$.

_____

(c) Express 240 as a product of its prime factors.

_____

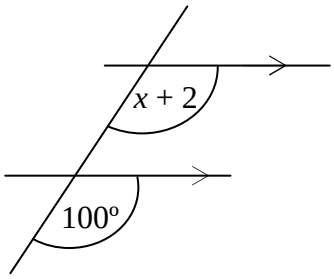
(d) Find the HCF of 30 and 45.

_____

(5 marks)

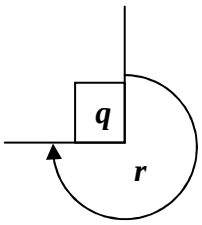
Name: _____ **Class:** _____

4. (a) Find the value of x.



x = _____ °

(b) (i) Write the ratio of the size of the angle marked ***q*** to that marked ***r***. Simplify the answer.



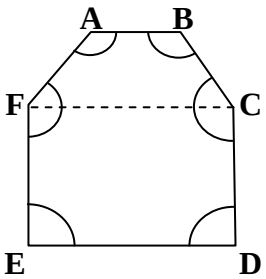
_____ : _____

(ii) Divide a wire 4.5 m long in the ratio of 2 : 3.

_____ _____

(5 marks)

5.



Fill in:

$\angle A + \angle B + \angle C + \angle D + \angle E + \angle F$ = _____ °

(1 mark)

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6. Brian and Helga record how long they take to run round the school track.

Brian's data		
1st run	2nd run	3rd run
5 mins	4 mins 55 sec	4 mins 45 sec

Helga's data		
1st run	2nd run	3rd run
4 mins 30 sec	4 mins 20 sec	4 mins 10 sec

a) Work out the **range** of the times of both children.

Brian's range _____

Helga's range _____

b) Helga says, "My running times have improved more than Brian's."
Is she right? Explain.

_____

_____

(3 marks)

7. (a)

−20ºC

Freezer A

−18ºC

Freezer B

Refrigerator

(i) What is the **difference** in the temperatures between the two **freezers**?

_____ ºC

(ii) The temperature of the **refrigerator** is 30ºC **higher** than that of **Freezer A**.
What is the temperature of the **refrigerator**?

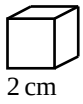
_____ ºC

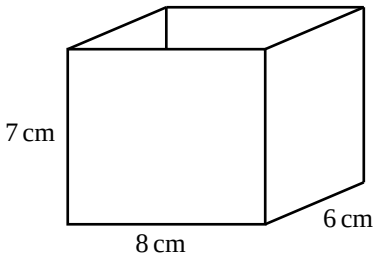
(b) Find the value of $r + q^2$ when $r = 2$ and $q = -3$.

_____

(4 marks)

8.





Roland wants to fit the **largest number of cubes** of side 2 cm into the box which measures 8 cm by 6 cm by 7 cm.

What is the **largest number of whole cubes** that he can fit?

_____

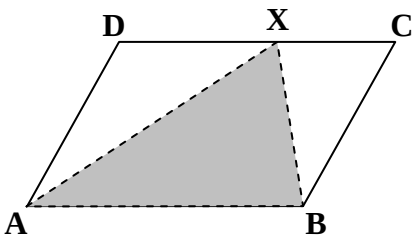
(2 marks)

9. How many $2\frac{1}{2}$ ℓ bottles can be filled from a jug containing 7.5 ℓ of water?

_____

(1 mark)

10.



ABCD is a parallelogram.

Fill in using a fraction:

Area of triangle AXB = _____ Area of parallelogram ABCD

(1 mark)

END OF PAPER

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1

FORM 2 **MATHEMATICS SCHEME A** **TIME: 1h 30min**

Main Paper

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

DO NOT WRITE ABOVE THIS LINE

Name: _____ **Class:** _____

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

1. (a) Write down the name of the **parallelogram** having

(i) equal sides and (ii) rotational symmetry of order 2.

(square, rectangle, rhombus, kite) _____

(b) The scores of two spinners are **added**.

(i) **Complete** the probability space.

(ii) What is the **probability** that the total score is a **square number**?

1st spinner

2nd spinner	**0**	**1**	**2**	**3**
2	2	3	4	5
4	4			
6				9

_____

(3 marks)

2. (a) Change the units:

(ii) Write 6 kg 20 g in kilograms. _____

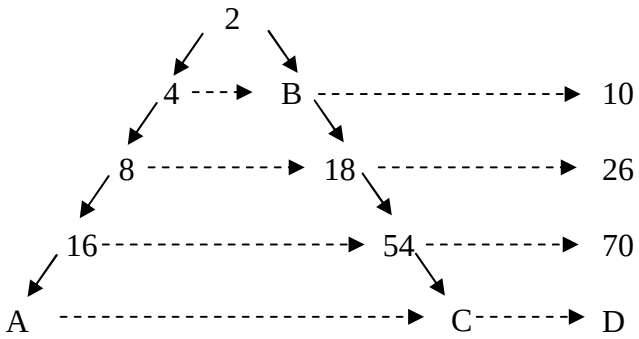
(ii) Write 8 h 15 mins in hours. _____

(b) Find the total cost of 20 ℓ and 400 $m\ell$ of petrol at 90 cent per *litre*.

_____

(3 marks)

3. (a) Find the value of A, B, C and D in the following pattern:



A = _____ B = _____

C = _____ D = _____

(b) Underline the **TWO** statements which are **FALSE**:

(i) 5 is a prime number. (ii) $5 > 0$.

(iii) 5 is a factor of 50. (iv) 5 is a multiple of 15.

(v) 5 is twice $2\frac{1}{2}$ (vi) 5 is 15% of 20.

(5 marks)

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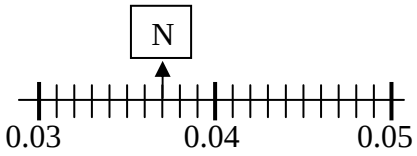
4. (a)



What number is shown marked by an arrow on the number line? N = _____

(b) (i) Write as decimals:

0.511×100, $\frac{12}{25}$, $\frac{300}{800}$, $0.82 \div 10$

_____, _____, _____, _____

(ii) Put in ascending order of size.

_____

(c) Work out: $1\frac{3}{4} - \frac{5}{6}$

_____

(4 marks)

Name: _____ **Class:** _____

5. (a) The diagram is part of a spreadsheet that shows Monica's marks in five Mathematics tests.

	A	B
1	70	
2	82	
3	83	
4	90	
5	75	
6		mean

(i) Which **formula** should Monica write in cell **A6** to find the **mean** mark?

= (A1 + A5)/5

= SUM A1 : A5/5

= SUM (A1: A5)/5

_____

(ii) What is her **mean** mark?

Mean mark: _____

(iii) What is her **median** mark?

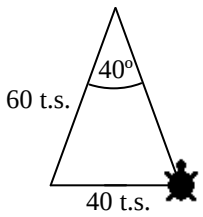
Median mark: _____

(iv) After doing another test, Monica **increases** her **mean** mark by 1.
How much did she get in her 6^{th} test?

_____

(b) Fill in the missing LOGO command to draw the **isosceles** triangle below.
(t.s. stands for turtle steps)

PD LT 90 FD 40 ____ ____ FD 60 HOME



(6 marks)

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6. (a) Which of the following is equal to $3a^2$?

3 + *a* + *a* **3*a* + *a*** **3 × *a* × *a***

_____

(b) Simplify:

$3(h + j) - (h - j) =$

_____

(c) Factorise **completely**:

$18g - 27 =$

_____

(5 marks)

7. One day Paul records the **ages** of the people entering a gymnasium.

21	29	22	28	24	30
40	31	28	25	26	29

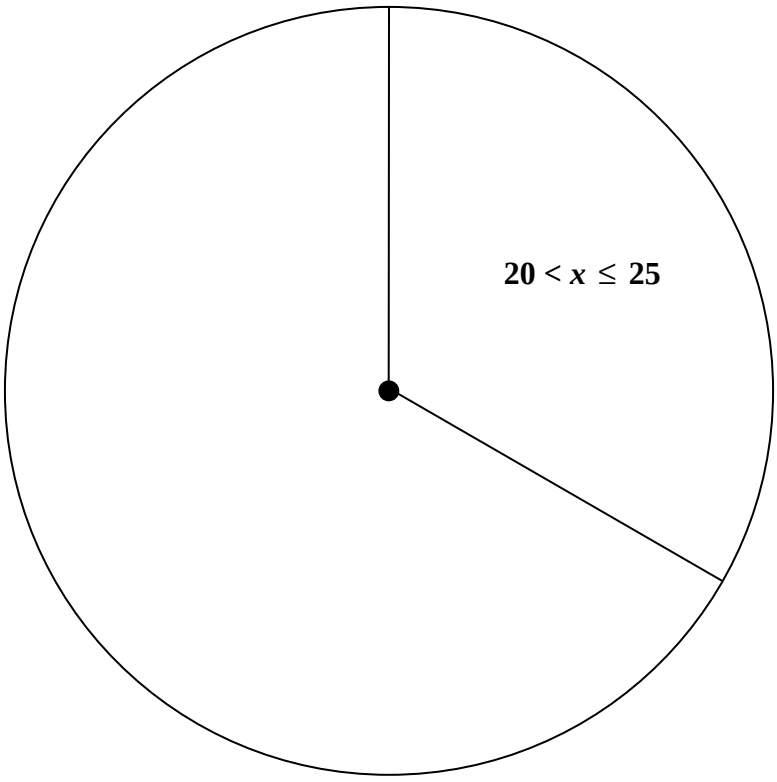
(a) Complete Paul's frequency table from the above data.

Age (in years)	**Frequency**	**Angle in Pie Chart**
$20 < x \leq 25$	4	120º
$25 < x \leq 30$		
$30 < x \leq 35$		
$35 < x \leq 40$		
Total	12	360º

(b) How many persons entering the gymnasium are **older** than 25 years?

_____

(c) Complete and **label** the pie chart.



(6 marks)

Name: _____ **Class:** _____

8. (a) A tin of baked beans weighs q grams.

(i) What is the weight in **grams** of N similar tins?

_____ grams

A box weighs P grams when **empty**.

(ii) Write down the formula for W when W **grams** is the weight of the box filled with N tins.

W =_____

(iii) The **full** box weighs 10 **kg**, the **empty** box weighs 1 **kg** and each **tin** weighs 200 **grams**.

Use your formula to find the **number** of tins that are in a **full** box.

_____ tins

(b) Solve: $4 - 2(x - 3) = 8$

x = _____

(8 marks)

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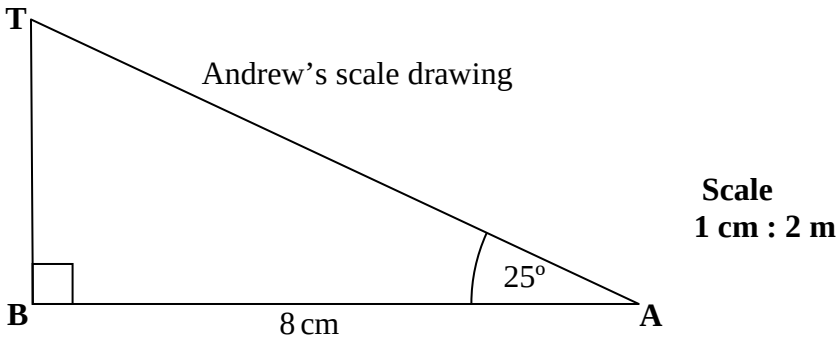
9. (a) Andrew makes this scale drawing to find the height of a building, TB.



Scale
1 cm : 2 m

(i) On the scale drawing, the angle of elevation of the top of the building from point A, is 25°.
What is the **actual** angle of elevation?

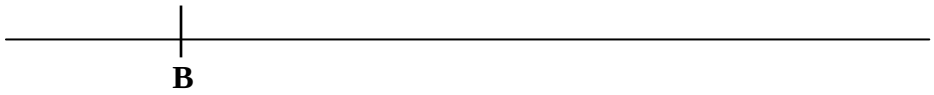
_____ °

(ii) By measuring TB, work out the **actual** height of the building.

_____

9. (b) In this question all construction lines must be shown.

Use ruler and compasses only.



(i) On the given line mark point C such that BC = 8 cm.

(ii) Construct and label triangle ABC such that angle B = 90º and CA = 10 cm.

(iii) Measure AB and give the answer correct to the nearest mm.

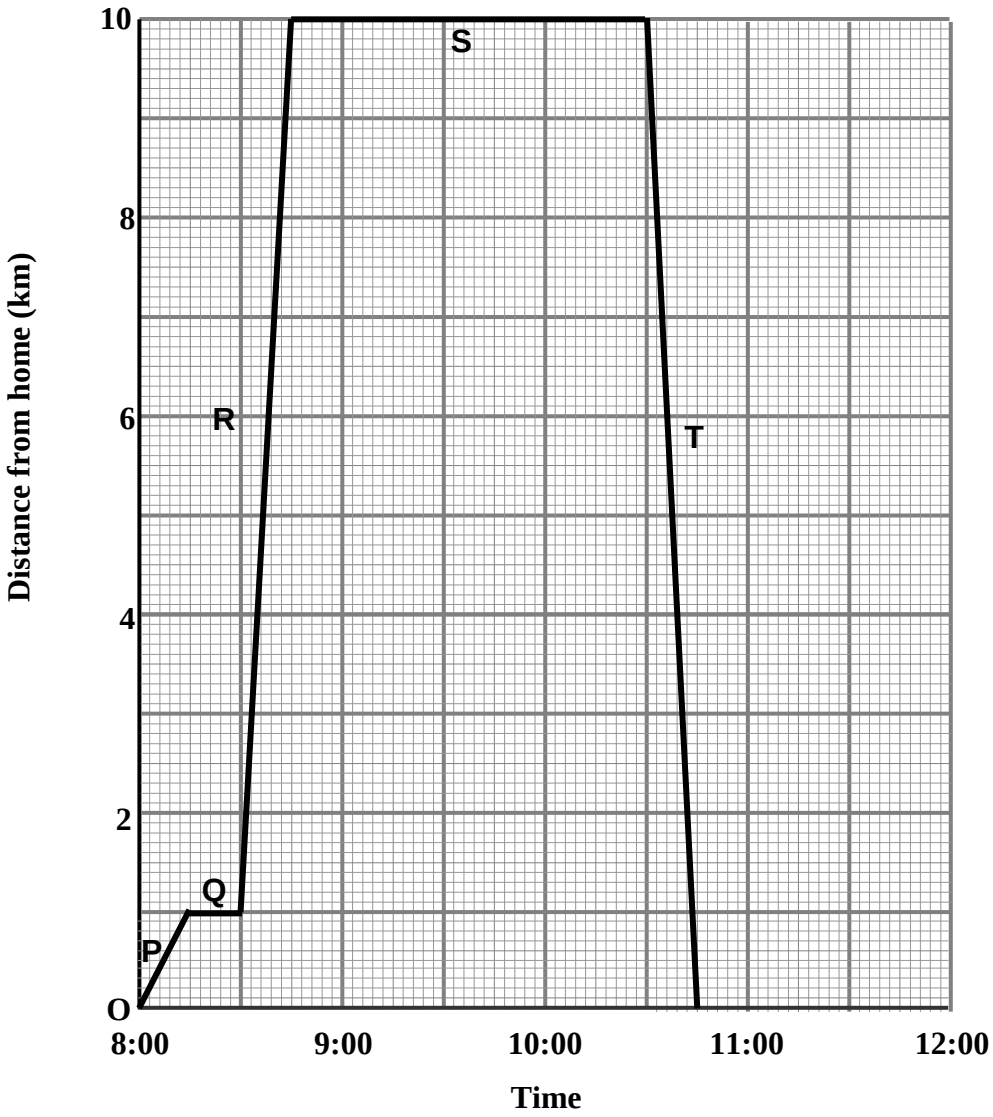
AB = _____

(iv) Calculate the area of triangle ABC.

Area of ΔABC = _____

(9 marks)

10. The graph shows Kyle's journey last school holiday.
He walked from home to the bus stop and then took the bus to the gymnasium.
After his session he returned home.



(a) How **far** from home is the bus stop?

_____

(b) How **long** did Kyle stay at the gym?

_____

(c) Which was the **fastest** part of the journey: P, Q, R, S or T?
Explain.

_____

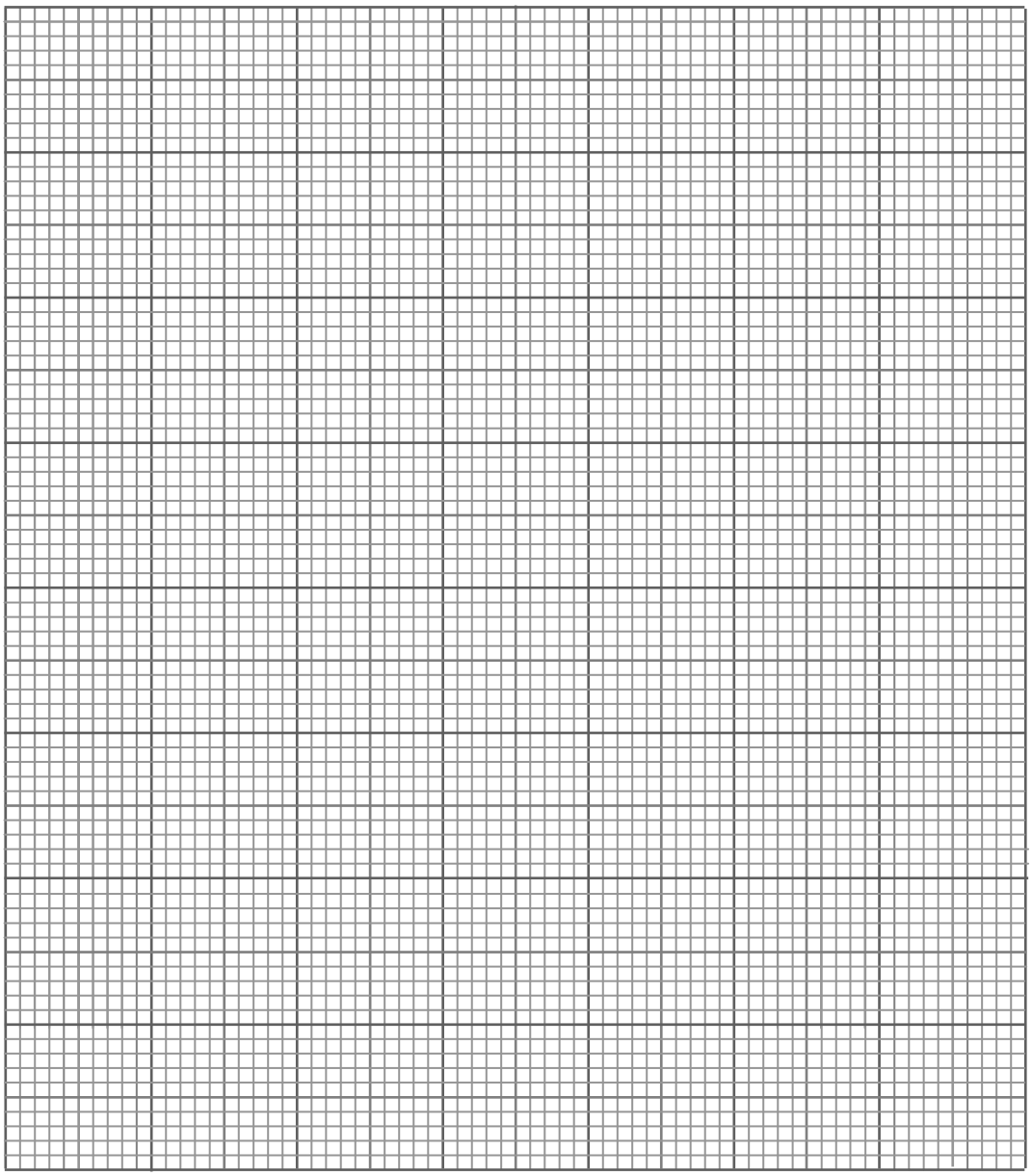
_____

(4 marks)

11. (a) Complete the table for the straight line graph $y = 3x - 4$.

x	-1	0	2	4
$3x$	-3			
-4	-4	-4	-4	-4
y	-7		2	

(b) Draw the graph $y = 3x - 4$. Label the axes.



(c) What is the gradient of the graph?

_____

(d) Find the value of y when $x = 3$.

_____

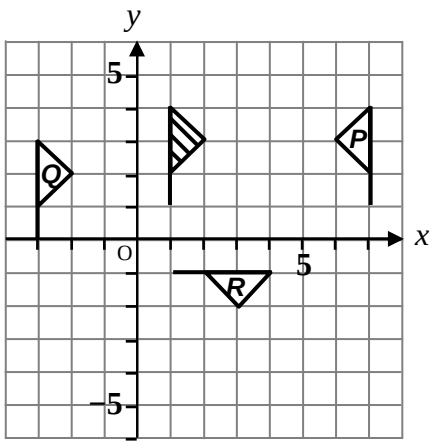
(e) Which of the following lines is parallel to the line $y = 3x - 4$?

$y = 3x + 6$ $y = x - 4$ $y = 4x - 3$

_____

(9 marks)

12.



Choose your answers from the table below to describe **fully** the transformation which maps:

a) the shaded flag onto flag ***P***.

_____ _____

b) the shaded flag onto flag ***Q***.

_____ _____ _____

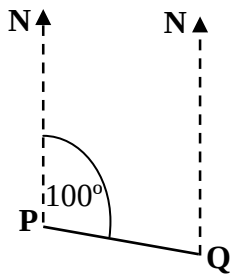
c) the shaded flag onto flag ***R***.

_____ _____ _____

Translation	Rotation	Reflection	6 right	in line $x = 4$
about origin	4 left	90º clockwise	90º anticlockwise	1 down

(6 marks)

13. (a)



(i) What is the bearing of Q **from** P?

_____

(ii) **Mark** point R on the diagram such that R is on a bearing of 045° **from** Q.

(b)

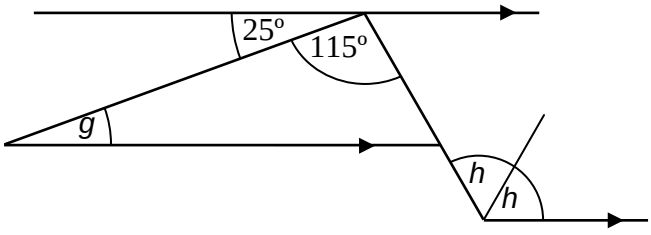


diagram not drawn to scale

(i) Find the size of the angle marked *g*.

g = _____ ° Reason: _____

(ii) Find the size of the angle marked *h*.

h = _____ ° Reason: _____

(7 marks)