

Candidate Name	Centre Number	Candidate Number
		0



GCSE

185/12

MATHEMATICS

WALES PILOT

FOUNDATION TIER

PAPER 2

A.M. FRIDAY, 10 June 2011

2 hours

Grade G F E D C
Mark 20 30 45 55 70

ADDITIONAL MATERIALS

A calculator will be required for this paper.

INSTRUCTIONS TO CANDIDATES

Use black ink or black ball-point pen.

Write your name, centre number and candidate number in the spaces at the top of this page.

Answer **all** the questions in the spaces provided.

Take π as 3.14 or use the π button on your calculator.

INFORMATION FOR CANDIDATES

You should give details of your method of solution especially when appropriate.

Unless stated, diagrams are not drawn to scale.

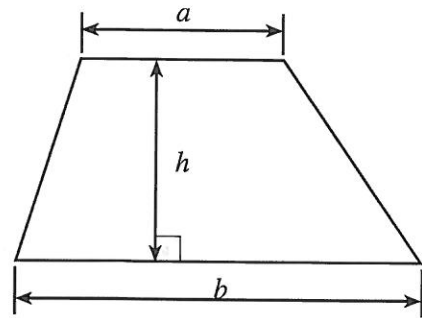
Scale drawing solutions will not be acceptable where you are asked to calculate.

The number of marks is given in brackets at the end of each question or part-question.

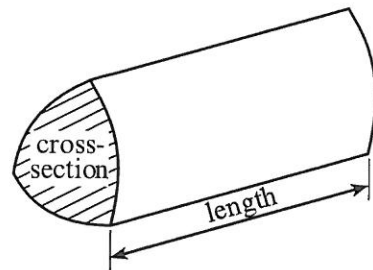
For Examiner's use only		
Question	Maximum Mark	Mark Awarded
1	7	7
2	8	15
3	7	22 \Rightarrow G
4	4	26
5	4	30 \Rightarrow F
6	6	36
7	3	39
8	6	45 \Rightarrow E
9	3	48
10	5	53
11	4	57 \Rightarrow D
12	8	65
13	4	69 \Rightarrow C
14	8	
15	6	
16	5	
17	8	
18	4	
TOTAL MARK		

Formula List

Area of trapezium = $\frac{1}{2}(a + b)h$



Volume of prism = area of cross-section \times length



1. (a) Jenny visits a local shop and buys the following items. Complete her bill.

Item	Cost
Coat	£ 48.62
3 pairs of jeans @ £11.99 per pair	£ 35.97
4 blouses @ £5.49 each	£ 21.96
5 magazines @ 67p each	£ 3.35
Total	£ 109.90

[4]

- (b) Jenny receives a discount of 10%.

- (i) How much is the discount on this bill?

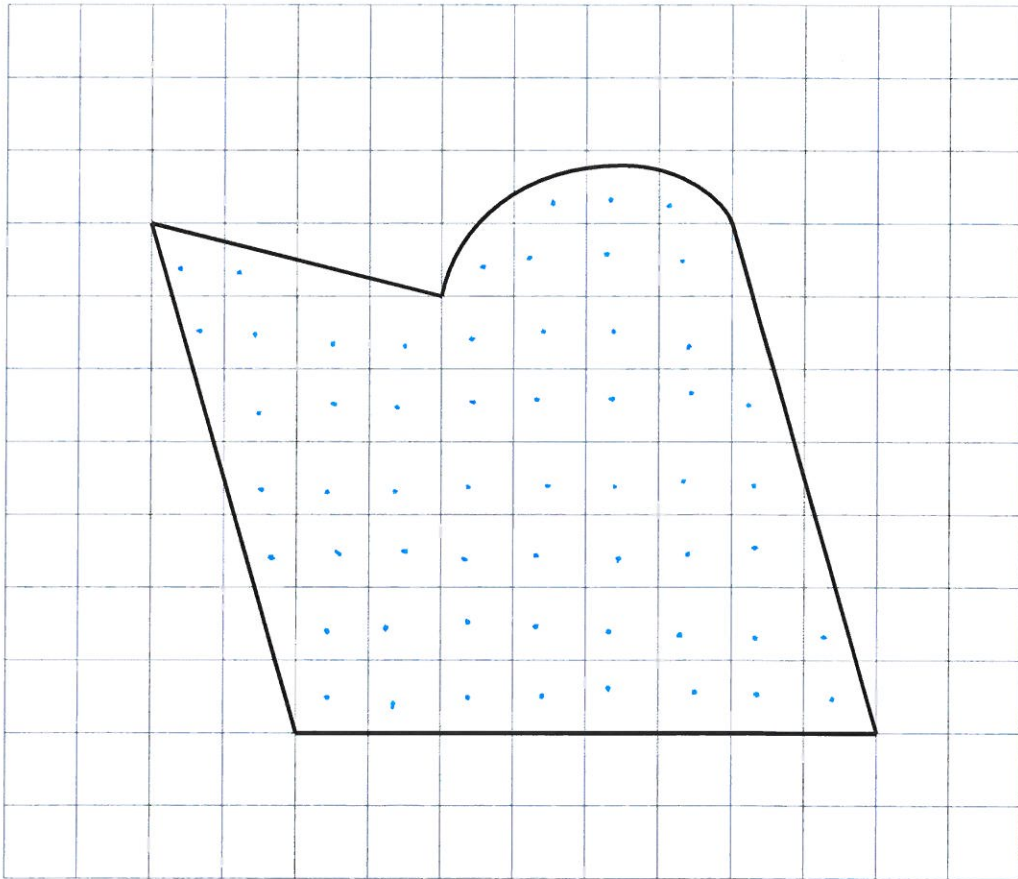
$$0.10 \times 109.90 = \pounds 10.99$$

- (ii) How much is left for Jenny to pay?

$$109.90 - 10.99 = \pounds 98.91$$

[3]

2. (a)



The above shape, drawn on a square grid, represents a playground.

By counting squares, estimate the area of the playground if every square represents an area of 10m^2 .

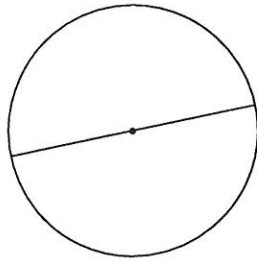
$$57 \text{ squares} \times 10 = 570\text{m}^2$$

(53 → 57 squares acceptable)

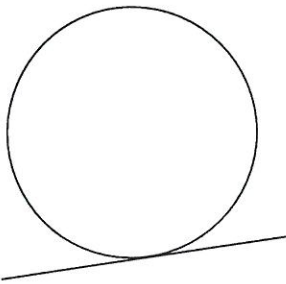
[3]

(b) Write down the special name of the straight line shown in **each** diagram below.

[2]



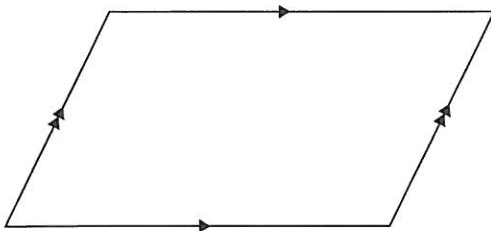
diameter



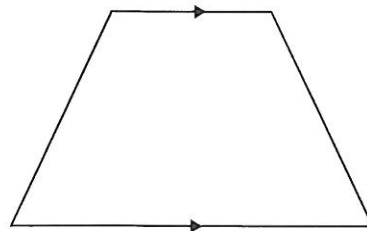
tangent

(c) Write down the name of **each** of the shapes shown below.

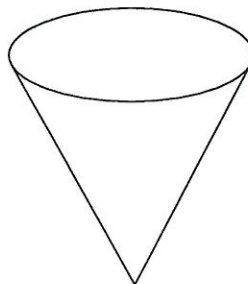
[3]



parallelogram



trapezium



Cone

3. Forty people were asked to state which of the following political parties they supported.

Conservative (C), Labour (L), Lib-Dem (D) or Plaid Cymru (P)

The following are the results of their replies.

C	L	L	C	D	C	L	C	P	L
L	C	D	D	C	L	L	P	C	P
C	P	C	L	D	L	C	C	L	L
L	D	C	L	C	L	P	C	L	P

- (a) Complete the frequency table below.

Political Party	Tally	Frequency
C	1477 1111	14
L	477 477	15
D		5
P	1	6

[2]

- (b) Write down the mode.

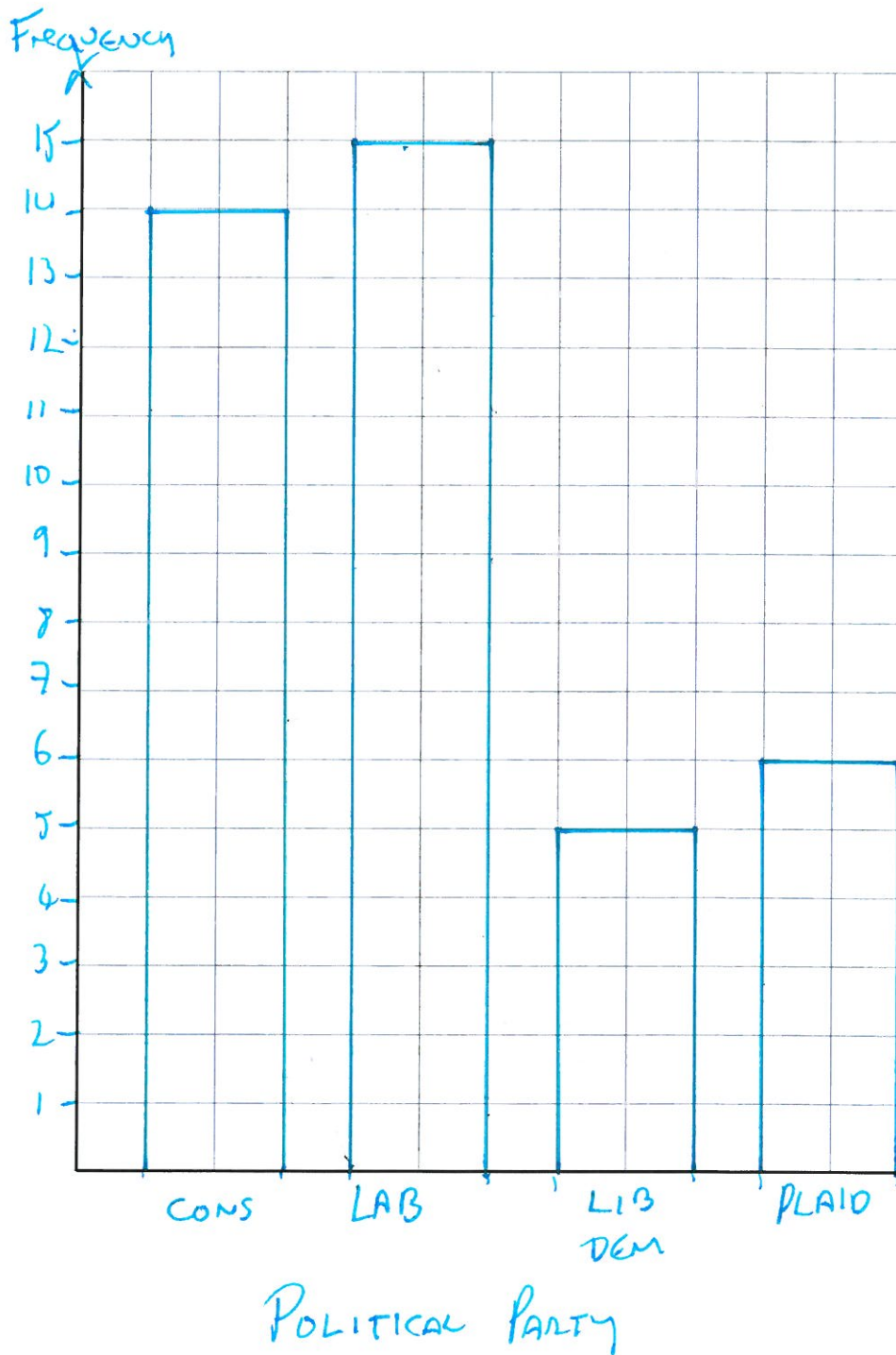
Labour

[1]

- (c) Using the square grid on the next page, draw a suitable bar chart for the data given in the table.

[4]

For use with question 3.



6

4. The formula to find the **Total Cost**, in pounds, of taking students on a trip to a concert is

$$\text{Total Cost} = \text{Number of students} \times \text{£9.50} + \text{Hire charge for bus}$$

- (a) Find the **Total Cost**, when the **Number of students** is 33 and the **Hire charge** is £150.

$$\begin{aligned} \text{Total Cost} &= 33 \times 9.50 + 150 \\ &= 313.50 + 150 \\ &= \text{£}463.50 \end{aligned}$$

[2]

- (b) Find the **Number of students**, when the **Total Cost** is £372 and the **Hire charge** is £125.

$$\begin{aligned} 372 &= N \times 9.50 + 125 \\ 372 - 125 &= N \times 9.50 \\ 247 &= N \times 9.50 \\ \frac{247}{9.50} &= N \end{aligned}$$

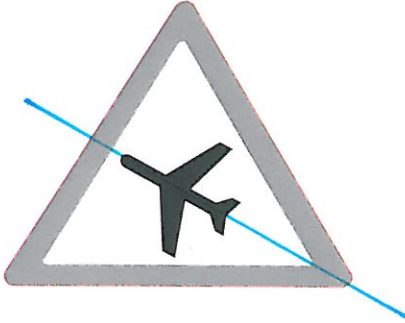
[2]

$$N = 26$$

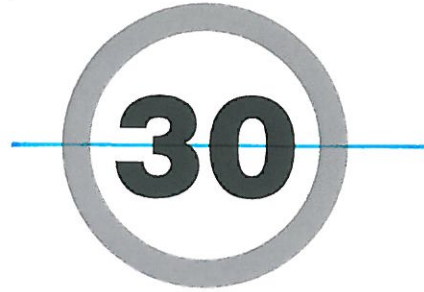
5. Draw **all** the lines of symmetry on the following diagrams of road signs.

[4]

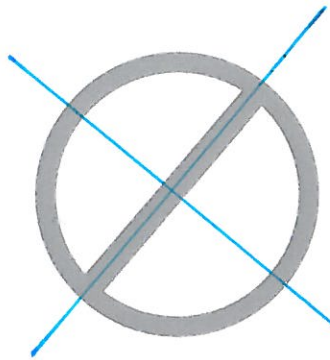
(a)



(b)

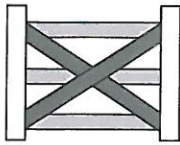


(c)

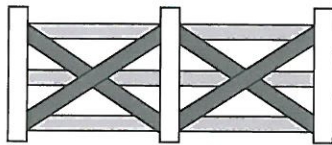


(P)

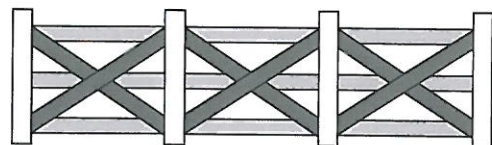
6. A fence is built in the following stages.



Stage 1

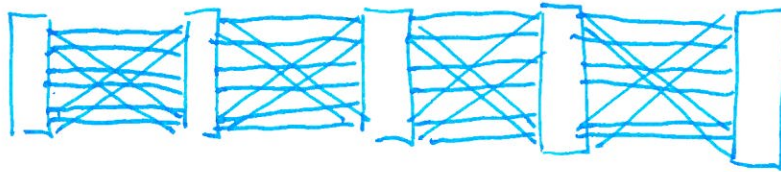


Stage 2



Stage 3

- (a) Draw Stage 4 in the space below.



[1]

- (b) Complete the following table.

Stage	1	2	3	4
Number of vertical posts	2	3	4	5
Number of horizontal planks	3	6	9	12
Number of cross pieces	2	4	6	8

5
6
15
10

[1]

- (c) Without drawing a diagram, write down how many vertical posts there are at Stage 10.

11

[1]

- (d) At a certain Stage, the fence has 15 horizontal planks.

- (i) How many vertical posts are there?

6

- (ii) How many cross pieces are there?

10

[3]

7. The table below gives the warmest and coldest temperatures recorded in London during 2009.

London 2009	°C
Warmest day	30
Coldest day	-1
Warmest night	18
Coldest night	-6

- (a) What was the coldest temperature recorded?

-6°C

[1]

- (b) What is the difference between the temperatures of the coldest day and the coldest night?

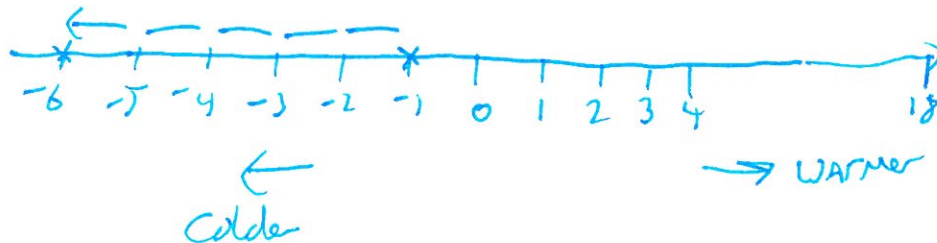
-5°C

[1]

- (c) What is the difference between the temperatures of the warmest night and the coldest night?

-24°

[1]



8. The following is a list of the weights, in kg, of the 8 members of a 'keep fit' class:

$$75 + 58 + 65 + 42 + 59 + 53 + 73 + 81 = 506$$

- (a) Find the mean weight of the members of the class.

$$\frac{506}{8} = 63.25$$

[3]

- (b) Find the range for the weight of the members of the class.

$$81 - 42 = 39$$

[1]

- (c) Find the median for the weight of the members of the class.

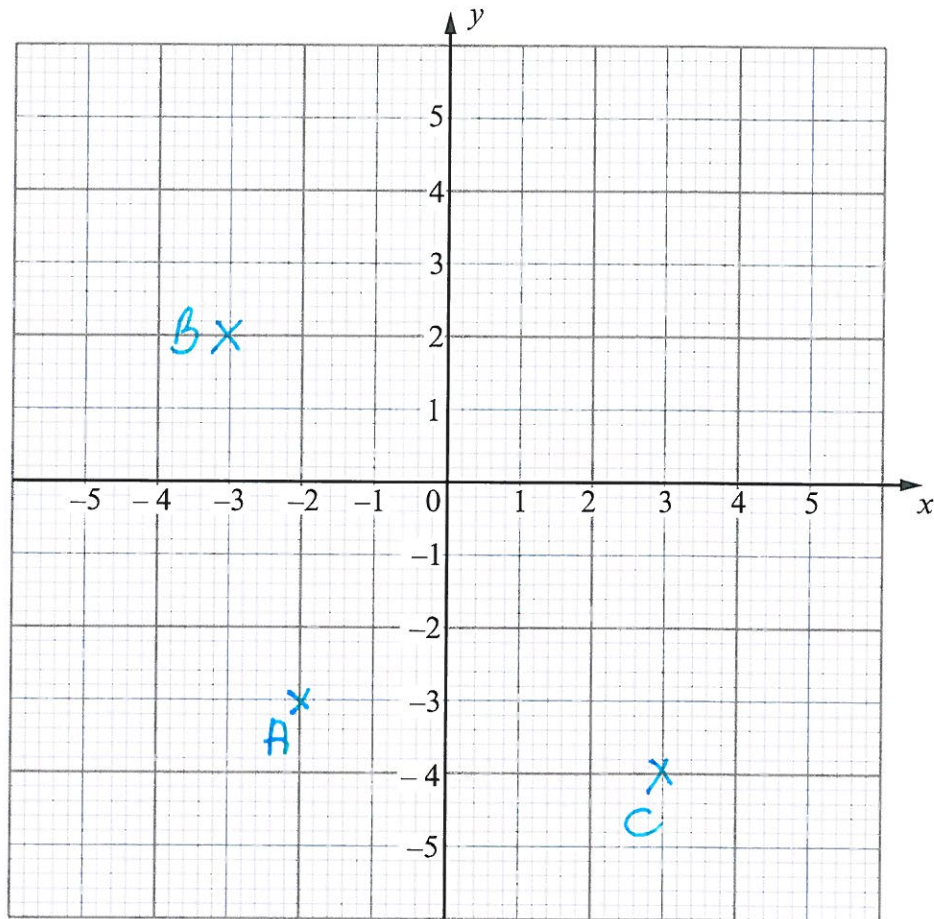
$$\begin{array}{ccccccc} 42 & 53 & 58 & 59 & 65 & 73 & 75 & 81 \\ & & & \underline{\quad} & & & & \\ & & & \downarrow & & & & \\ & & & 62 & & & & \end{array}$$

[2]

(E)

9. Plot the points $A(-2, -3)$, $B(-3, 2)$ and $C(3, -4)$.

[3]



10. (a) Calculate 36% of £158.

$$0.36 \times 158 = £56.88$$

(b)

[2]

Cement mixer for hire

£16.99 (first day)

+ £6.25 per additional day

Rhian hires the cement mixer for a total cost of £48.24.
For how many days did she hire the cement mixer?

$$\begin{aligned} \text{daily rate} &= 48.24 - 16.99 = £31.25 \\ \text{additional days} &= 31.25 \div 6.25 = 5 \text{ days.} \end{aligned}$$

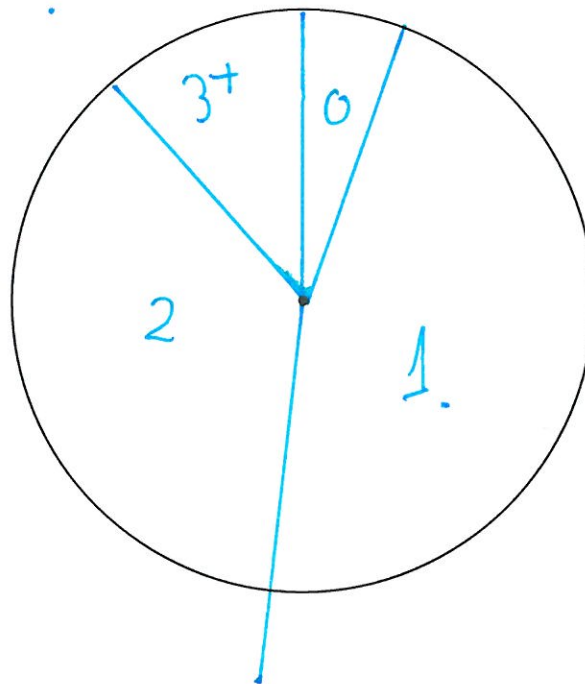
So hired for 6 days.

[3]

11. A survey of 90 families was carried out to find how many cars each family had. The table shows the results.

Number of cars	Number of families
0	5 $\times 4 = 20^\circ$
1	42 $\times 4 = 168^\circ$
2	33 $\times 4 = 132^\circ$
3 or more	10 $\times 4 = 40^\circ$

Draw a pie chart to illustrate this data. You should show how you calculate the angles of your pie chart.



$$360^\circ \div 90 = 4^\circ$$

[4]

Turn over.

12. The following table is an extract from a coach timetable for coaches going from Swansea to Gatwick North and Gatwick South airport terminals.

Departure times	Place	Coaches				
	Swansea	02:15	04:15	06:15	07:00	08:30
	Port Talbot	02:30	04:30	06:30	07:15	08:45
	Bridgend	02:45	04:45	06:45	07:30	09:00
	Cardiff	03:20	05:20	07:25	08:30	09:45
	Newport	03:45	05:45	07:55	09:00	10:15
	Heathrow	06:35	08:55	11:05	13:00	12:55
	Gatwick North	07:35	09:45	11:55	13:50	14:00
	Gatwick South	07:45	09:55	12:05	14:00	14:10

- (a) How many coaches arrive at Newport between 4 a.m. and 10 a.m.?

3 coaches

[1]

- (b) Mary catches the 04:45 coach from Bridgend to go to Gatwick South. How long should she be on the coach?

Mary should be on the coach for 5 hours 10 minutes

[2]

- (c) Mr and Mrs Williams are booked on the 15:20 flight from Gatwick North. They catch the 07:25 coach from Cardiff. How long will they have at the airport before their flight takes off?

Mr and Mrs Williams will have 3 hours 25 minutes in the airport

[3]

- (d) One of the coaches diverts to another town between Newport and Heathrow. Which coach is it and explain how you know.

09:00 coach because it takes a different amount of time

[2]

13. (a) Calculate the volume of a metal cuboid measuring 12 cm by 7 cm by 11 cm.

$$12 \times 7 \times 11 = 924 \text{ cm}^3$$

[2]

- (b) The above metal cuboid is melted down and made into a different cuboid, as shown below, with a base measuring 6 cm by 13 cm. Calculate the height h cm, of this cuboid, correct to 1 decimal place.

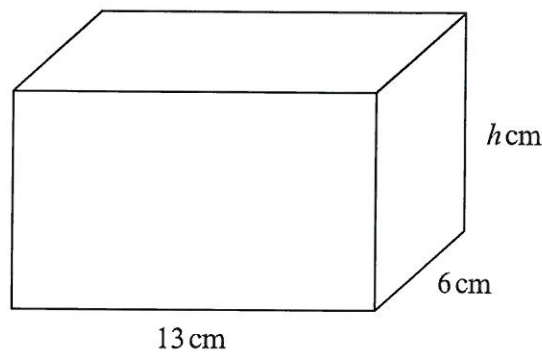


Diagram not drawn to scale

$$13 \times 6 \times h = 924$$

$$78 \times h = 924$$

$$h = \frac{924}{78} = 11.8 \text{ cm}$$

[2]

14. Peter decides to cover the floor of a room with a striped carpet. A shop sells this striped carpet from a roll that is 3 metres wide at a price of £25 per metre length.

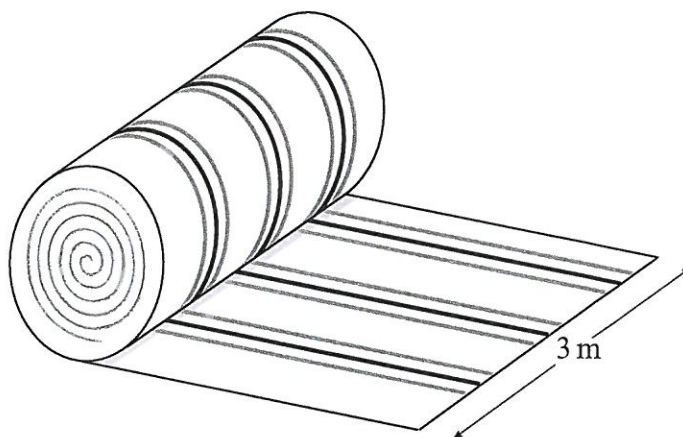


Diagram not drawn to scale

His floor is rectangular in shape with length 13 m and breadth 8 m.

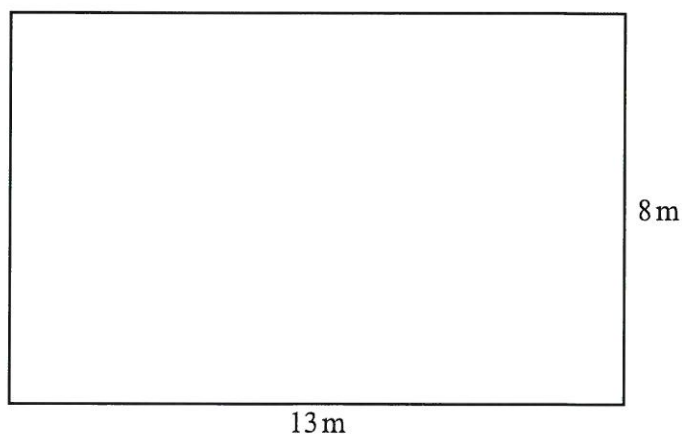


Diagram not drawn to scale

The carpet is laid to ensure that the stripes on the carpet are parallel to two of the sides of the room and lie in one direction only.

STRIPES RUNNING UP

Need 5 widths of length 8m

Cost $5 \times 8 \times £25 = £1000$

STRIPES RUNNING ACROSS

Need 3 widths of length 13m

Cost $3 \times 13 \times £25 = £975$

So stripes running ^{across} ₅ will be cheapest.

[illegible]

(0185-12)

Turn over.

15. At 11.00 a.m. a ship sets off from A and another ship sets off from B .

Each ship travels in a straight line.

The ship from A maintains an average speed of 30 km/hour whilst the ship from B keeps to an average speed of 20 km/hour.

The ships meet at 3.00 pm.

Giving **full** details of your working and reasoning, find the position where the two ships meet. Write down the bearing of this point from B .

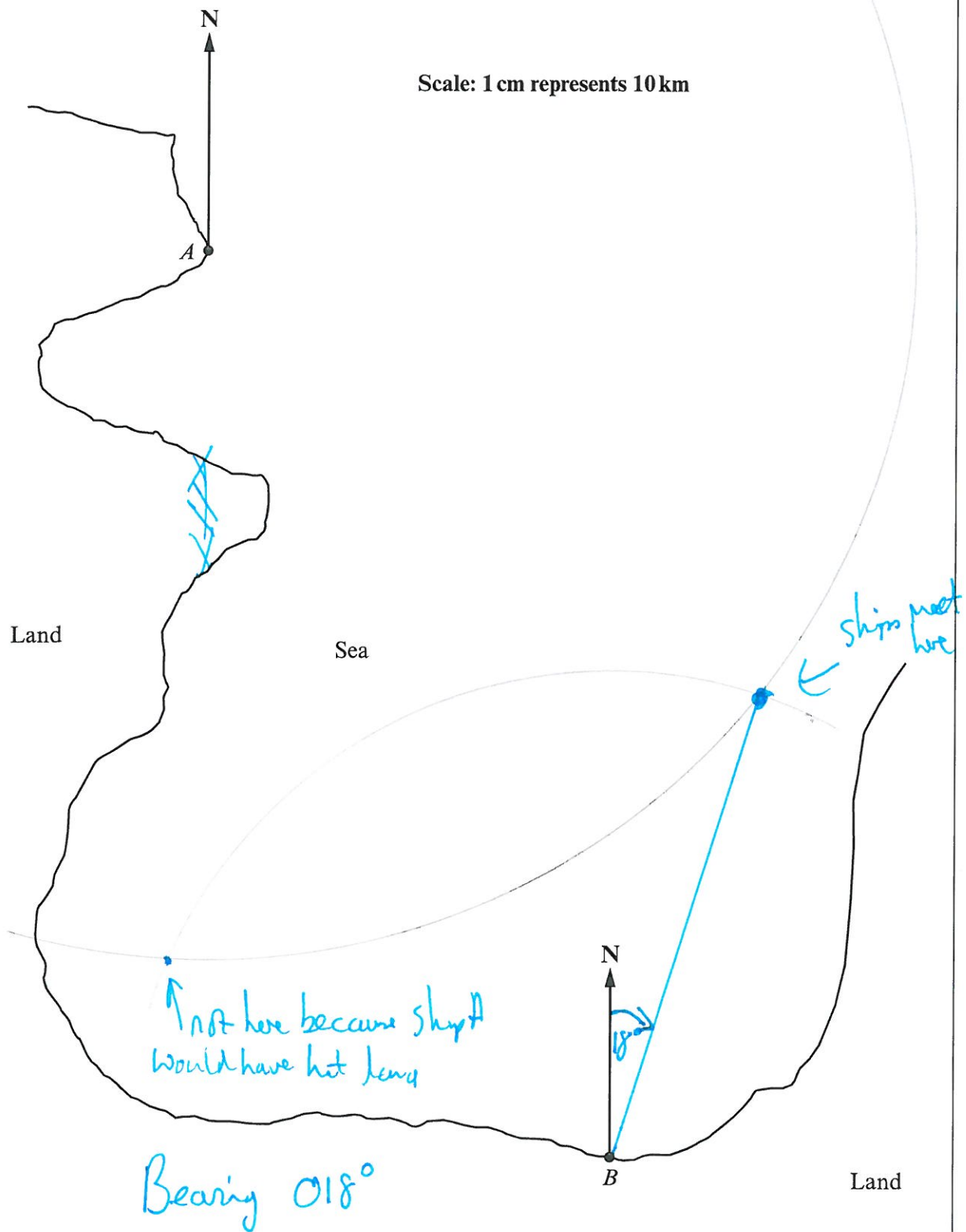
Ships have been travelling for 4 hours.

So Ship A has travelled $4 \times 30 = 120 \text{ km}$

Ship B " " $4 \times 20 = 80 \text{ km}$

[6]

For use with question 15.



16. A truck driver is travelling across Europe to drop off goods in Switzerland and in Italy. He will return to Switzerland on his way home to pick up another load before returning to the UK.

Before leaving home in the UK, he exchanged some currency for the trip.

Exchange rates		
£ 1 buys	Euros	1.09 €
	Swiss Francs	1.66 CHF

The truck driver has been planning to buy a new camera.

In Switzerland, he sees the camera on sale for 70 CHF.

In Italy, he sees the same camera on sale for 46.35 €.

- (a) Convert each of the prices to pounds, giving your answers to the nearest penny.

$$\text{Swiss Camera} = 70 \div 1.66 = \pounds 42.17$$

$$\text{Italian Camera} = 46.35 \div 1.09 = \pounds 42.52$$

- (b) Should he buy the camera while he is in Italy or wait until he is travelling back through Switzerland? Give a reason for your answer.

buy in Switzerland as it will be cheaper.

[5]

17. (a) Find the n th term of the sequence 7, 10, 13, 16, 19,

+3 +3 +3

$$3n + 4$$

[2]

- (b) Rearrange the formula $m = 5n - 32$ into the form $n =$

$$m + 32 = 5n$$

$$\frac{m + 32}{5} = n$$

[2]

- (c) In a sequence of four numbers, the difference between each number is 7.
The sum of the four numbers is 6.
What are the numbers in the sequence?

$$0 + 7 + 14 + 21 = 42$$

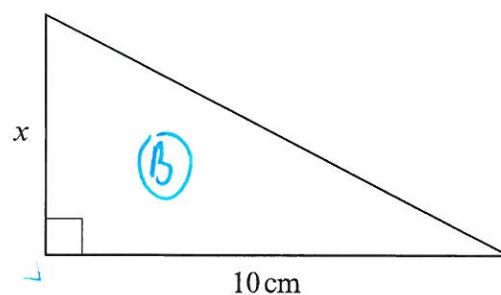
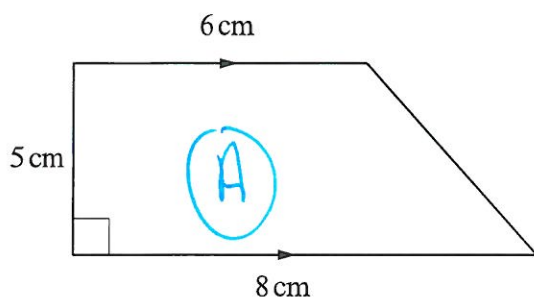
$$-5 + 2 + 9 + 16 = 22$$

$$-10 + -3 + 4 + 11 = 2$$

$$-9 + -2 + 5 + 12 = 6$$

[4]

18. The triangle and trapezium below both have the same area.



Diagrams not drawn to scale

Calculate the length of the side marked x .

$$\text{Area of A} = \frac{1}{2}(6+8) \times 5 = 35 \text{ cm}^2$$

$$\begin{aligned} \text{Area of } \triangle B &= \frac{1}{2} \times 10 \times x = 5x = 35 \\ x &= \frac{35}{5} = 7 \text{ cm} \end{aligned}$$

[4]