Surname	Centre Number	Candidate Number
Other Names		0

wjec cbac

GCSE – NEW

3310U10-1

A16-3310U10-1

MATHEMATICS – NUMERACY
UNIT 1: NON-CALCULATOR
FOUNDATION TIER

WEDNESDAY, 2 NOVEMBER 2016 – MORNING

1 hour 30 minutes

ADDITIONAL MATERIALS

The use of a calculator is not permitted in this examination.

A ruler, a protractor and a pair of compasses may be required.

INSTRUCTIONS TO CANDIDATES

Use black ink or black ball-point pen. Do not use gel pen or correction fluid.

You may use a pencil for graphs and diagrams only.

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.

If you run out of space, use the continuation page at the back of the booklet, taking care to number the question(s) correctly.

Take π as 3·14.

INFORMATION FOR CANDIDATES

You should give details of your method of solution 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.

In question **3**, the assessment will take into account the quality of your linguistic and mathematical organisation, communication and accuracy in writing.

For Examiner's use only		
Question	**Maximum Mark**	**Mark Awarded**
1.	**10**	
2.	**5**	
3.	**8**	
4.	**9**	
5.	**3**	
6.	**6**	
7.	**3**	
8.	**7**	
9.	**6**	
10.	**4**	
11.	**4**	
Total	**65**	

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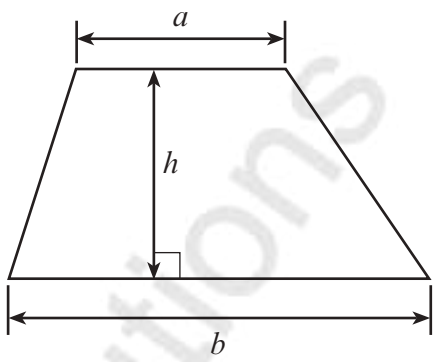
Formula List - Foundation Tier

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



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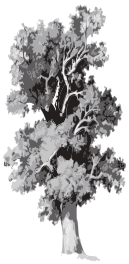
Examiner only

1. A landscape gardener designs gardens.
He uses a coordinate grid to show the position of plants and trees.
He has started to create a plan for one of his customers.
The table below shows some of the items that are to be put into the garden.

 Wooden table & chairs	 Fountain	 Flowering shrub
 Large tree	 Winter tree	 Flowering tree

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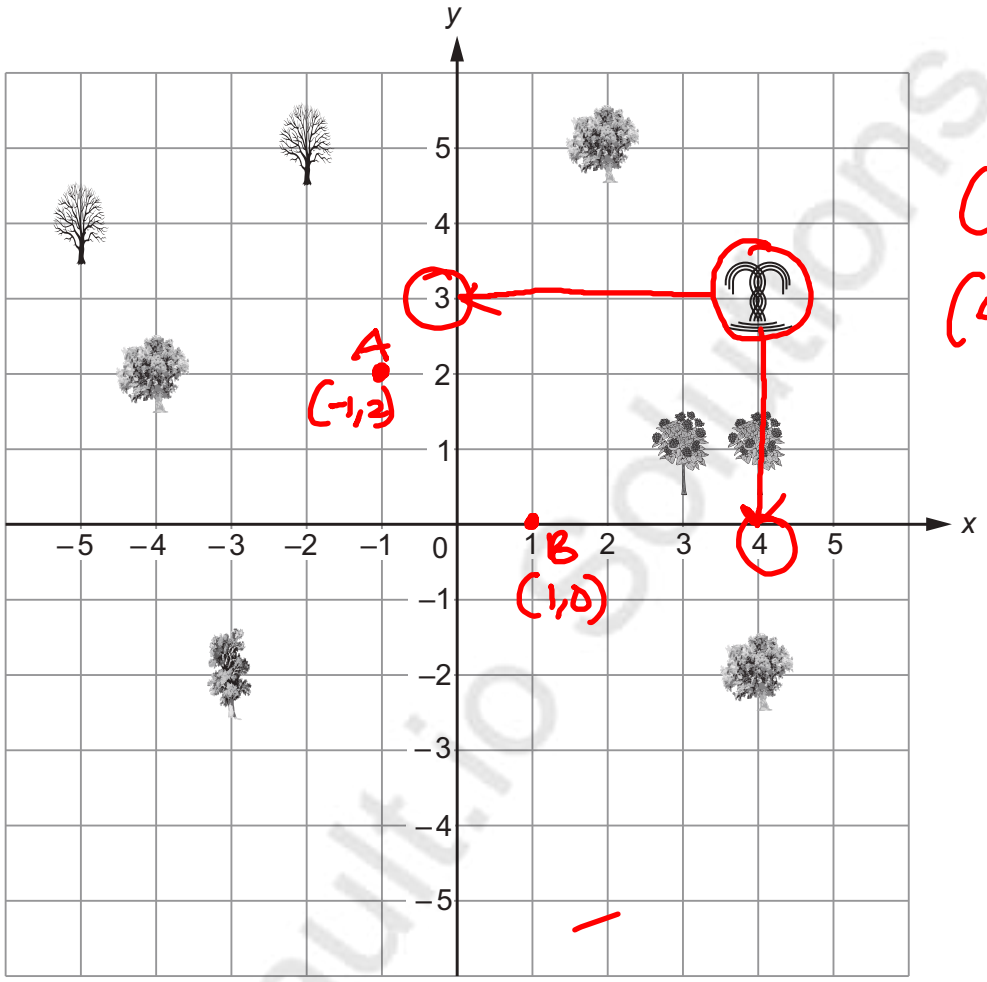
(a) What are the coordinates of the fountain?
Circle your answer. [1]

(4, 3) (3, 3) (3, –3) (3, 4) (4, –3)



(b) The gardener is going to place
- the wooden table and chairs at *A* (–1, 2)
- a flowering shrub at *B* (1, 0).

Plot the **positions** of points *A* and *B* on the grid above. [2]

(c) The lawn in the garden is rectangular.
It has length 4·5 metres and width 3 metres.

(i) What units should be used for the area of the lawn?
Circle your answer. [1]

m cm m^2 m^3 yards

(ii) What is the area of the lawn? [2]

$A = L \times W$

$A = 4 \cdot 5 \times 3 = 13 \cdot 5\ m^2$

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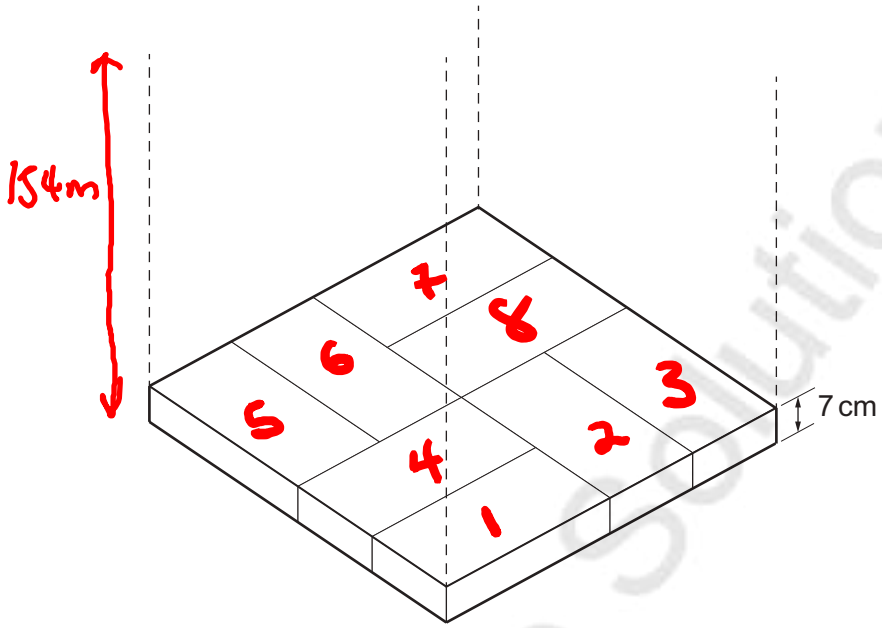
(d) The gardener has a stack of bricks to build a barbeque.
The stack is 154 cm tall.

Each layer of bricks has the pattern shown below.



The thickness of one layer of bricks is 7 cm.
How many bricks are there in the stack altogether? [4]

Total number of ~~bricks~~ layers = Total height / Each brick layer height

$$\frac{22}{7\overline{)154}} \quad -14 \quad 14 \quad -14 \quad \therefore$$

$$= \frac{154}{7}$$

$$= 22 \text{ layers}$$

Since 1 layer has 8 bricks

Then, total bricks is 22×8

$$\begin{array}{r} 22 \\ \times\ 8 \\ \hline 176 \end{array}$$

176 total bricks

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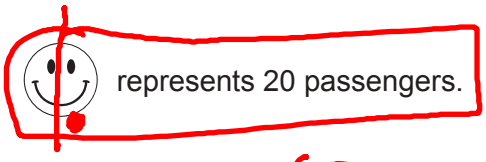
2. A flight to New York had 450 passengers.
A survey was completed to see what the 450 passengers did for most of their time during the flight.

- 120 passengers watched films
- 60 passengers played games
- 130 passengers listened to music
- 30 passengers read a book
- The rest slept.

Draw a pictogram to represent what the 450 passengers did for most of their time during the flight to New York. [5]

Key:  represents 20 passengers.

Time spent								
Watching films	20	20	20	20	20	20		
Playing games	20	20	20					
Listening to music	20	20	20	20	20	20	10	
Reading a book	20	10						
Sleeping	20	20	20	20	20	10		

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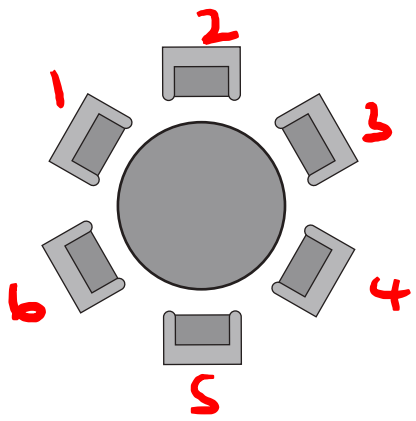
3. *In this question, you will be assessed on the quality of your organisation, communication and accuracy in writing.*

Aled plans a Christmas party.
He decides to use *Table Toppers* to supply tables, chairs and catering.
The circular tables each seat 6 people and the rectangular tables each seat 10 people.



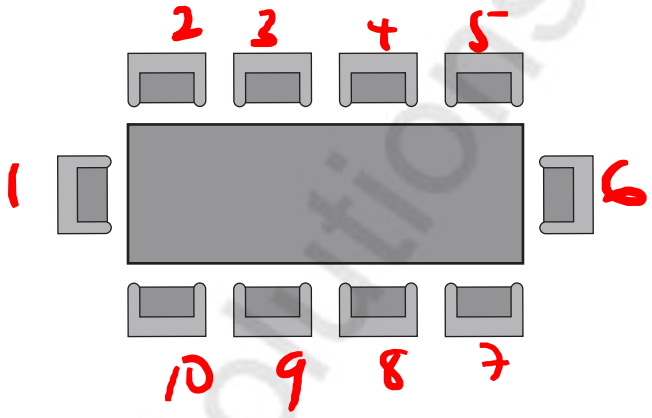


Table Toppers charge as shown below.

Table Toppers		
Hiring Fees	Circular tables	£3 each
	Rectangular tables	£4 each
	Chairs	£2 each
Catering	Buffet	£9 per person
	Hog Roast *	£12 per person

All the people invited to the party will fit around 3 circular tables and 2 rectangular tables.
There will be no spare seats.

Aled hires 3 circular tables, 2 rectangular tables, and a chair for each person at the party.
He decides to provide a buffet meal for each person.

How much does *Table Toppers* charge Aled in total?
You must show all your working. [6 + 2 OCW]

	Cost	Total (£)
Since, Aled needs		
(1) 3 circular tables	3 × 3	9
(2) 2 rectangular tables	2 × 4	8
(3) Food for 38 people [Buffet]	38 × 9	342
(4) Cost of 38 chairs	38 × 2	76
		£435

Total Cost

$$\begin{array}{r} 76 \\ 17 \\ \hline 435 \end{array}$$ 1

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Total invites:

Since 1 circular table will take 6 people

Then 3 circular table = 6×3 people = 18

Also, 1 rectangular table will take 10 people

Then, 2 rectangle table = 2×10 = 20 people

So, total invite = 20 + 18 = 38 people

Food cost = $\begin{array}{r} 38 \\ \times\ 9 \\ \hline 342 \end{array}$ 7 27

So, Aled was charged £435

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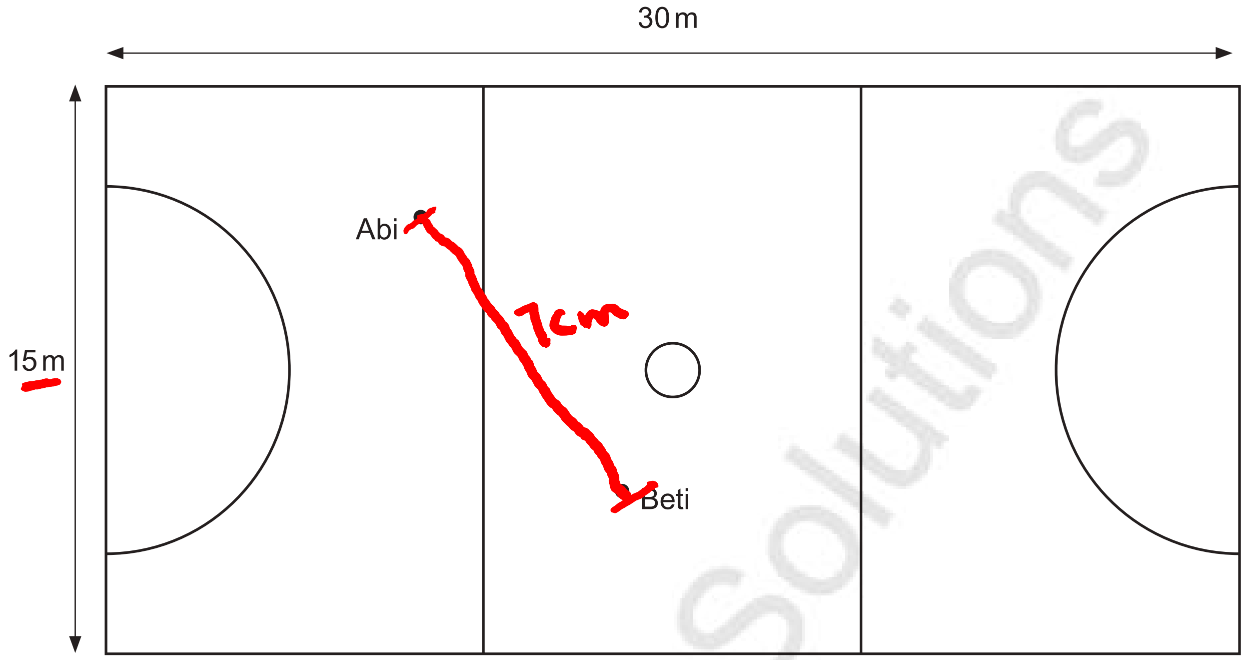
4. The diagram shows a scale drawing of a netball court.



(a) All of the **straight** lines on the netball court are to be painted white.
What is the total length of the white lines that need to be painted? [2]

Total lenght to be painted is
30+15+30+15+15+15
60+60
= 120m

(b) The scale used in the diagram is **1 cm represents 2 m**.

Abi passes the ball to Beti.
Use the scale to work out the distance between Abi and Beti in metres. [2]

1cm = 2m
The distance from Abi to Beti = 7cm
1cm = 2m
7cm = 7×2 = 14m

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(c) Abi, Beti, Cala and Delaney played a practice game.
Abi scored 9 goals.
Beti scored 6 goals.
Cala scored 5 goals.

The mean number of goals scored by all four players was 7.
How many goals did Delaney score? [4]

Abi → 9
Beti → 6
Cala → 5
Delaney → x

$\frac{x+9+6+5}{4} = \frac{7}{1}$

$x + 20 = 4 \times 7$

$x + 20 = 28$

$-20 \quad -20$

$x = 8$ //

Delaney = 8 goals

(d) The practice game started at 3:55 p.m.
Cala scored her first goal after 12 minutes.
At what time did Cala score her first goal?
Circle your answer. [1]

3:43 p.m. 15:67 **04:07** 3:07 p.m. 16:07

Time: Started 3:55pm

+ 12 mins

12 mins → 5 mins + 7 mins

3:55 mins + 5 mins + 7 mins

4:07 //

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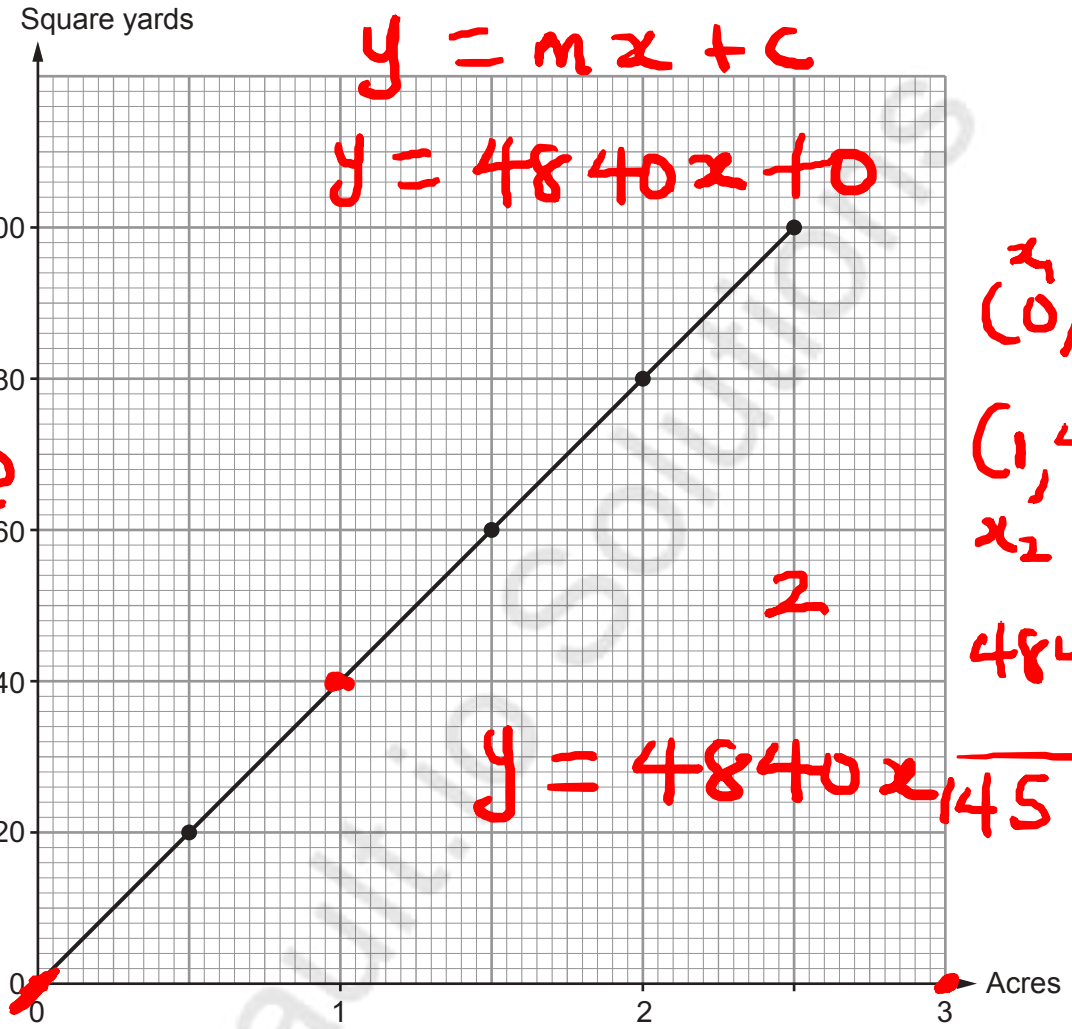
5. Marcus is a farmer.
He has his own conversion graph to change between acres and square yards.



Complete each of the following statements.

(a) 3 acres is equal to ..... square yards. [1]

(b) 5·5 acres is equal to ..... square yards. [2]

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6.

Small bottle
300 ml for 66p

Medium bottle
400 ml for 92p

Large bottle
500 ml for £1.25

£1 = 100p + 25 = 125

(a) Roland is going to buy some orange juice for a party.
Which size bottle of orange juice offers the best value for money?
You must show your working. [3]

Small bottle → 300ml for 66p
Medium bottle → 400ml for 92p
Large Bottle → 500ml for £1.25

Small bottle → 300ml for 66p ÷3
100ml for 22p ✱

Medium bottle → 400ml for 92p ÷4
100ml for 23p ✱

Large Bottle → 500ml for 125p ÷5
100ml for 25p

The 300ml for 66p offers best value for money

23
4)92
8
12
12
÷.

125
66
191

(b) Galina needs to buy **exactly** 800 ml of orange juice.
Which is the best option for Galina?
You must show your working and consider all options.
You must give a reason for your choice. [3]

Galina → 800ml

Two Cases
1st case: 300ml + 500ml
66 + 125
191p

Second case
2nd case: 400ml + 400ml
92 + 92
184p

92
92
184

So Galina needs to buy two medium bottle [400ml] for best value for money

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7. A survey was carried out to find how often teenagers buy DVDs.

The following two questions were asked in a questionnaire.

Q1. Where do you live?

Q2. How often do you buy DVDs?

Never	*1-10 times*	*10-15 times*	*More than 15 times*
☐	☐	☐	☐

(a) For each question give **one** reason why it is **not** suitable. [2]

Q1. This is not necessary, it is too personal and confidential.

Q2. This is okay, but the information is not enough, the number of time is not given specific period i.e 1–10 times per week or per month.

(b) The survey was carried out by leaving copies of the questionnaire on the DVD shelves in a supermarket.

Give **one** criticism of how the survey was carried out. [1]

This is not okay because putting DVD in a supermarket might not reach the target audience [Teenagers].

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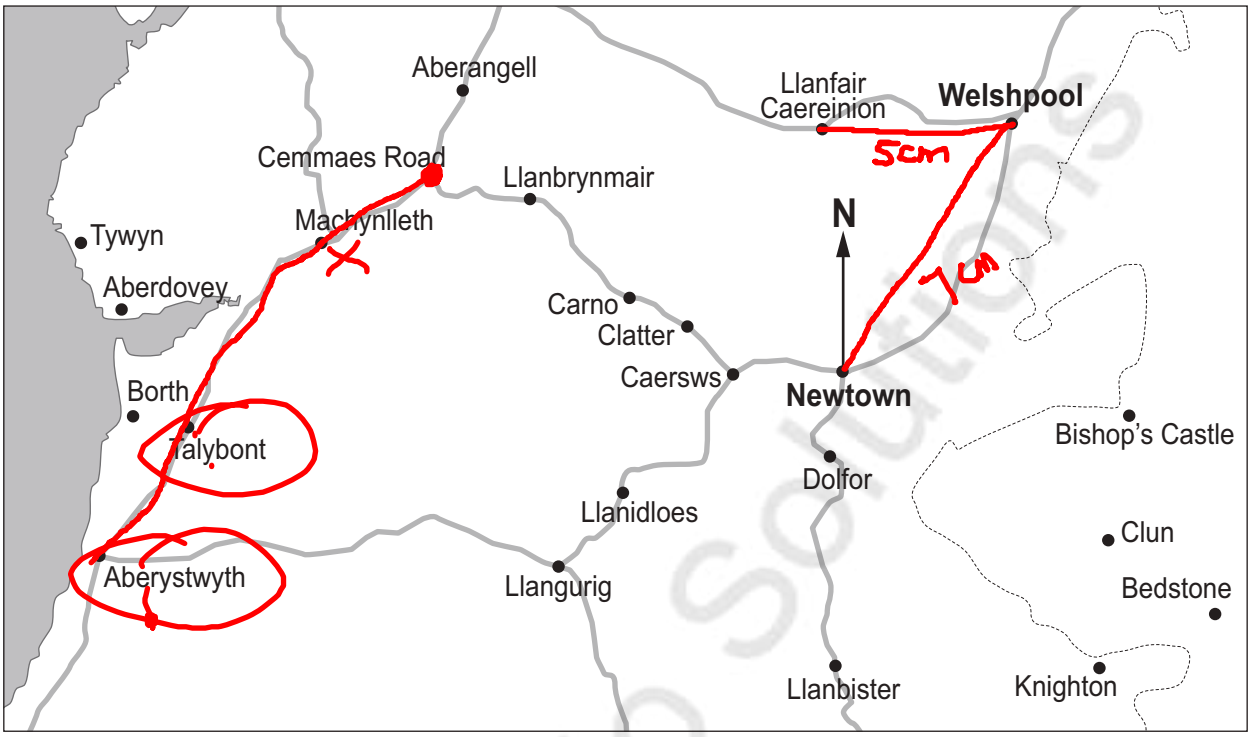
8. The map shows a part of Wales.
The position of Newtown is shown on the map.



(a) Write down the bearing of Welshpool from Newtown. [1]

N 35° E ..... °

(b) Name the place on the map that is on a bearing of 235° from Newtown. [2]

..... Llangurig .....

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(c) The distance from Newtown to Welshpool is approximately 14 miles by road.

(i) **Estimate** the distance by road from Welshpool to Llanfair Caereinion in miles. [1]

N → W = 14mile 7cm → 14miles
W — L = 5cm = 10miles 1cm → 2miles

10 miles

(ii) Megan lives in Cemmaes Road.
To travel to work, she starts by heading towards Machynlleth.
Her journey to work is approximately **40 km**.

Convert 40 km to miles. [2]

1cm to miles 1km → 0·62 miles

40km = 40 x 0·62 = 4 x 6·2

24·8 miles

(24·8) miles

6·2
x 4
24·8

In which town or village could Megan work? [1]

14miles = 7cm
24·8 miles = 12cm

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9. *(a)* Students are taking tests in English and Welsh.
The English test is marked out of 80.
The Welsh test is marked out of 70.

(i) Dyfed scores 35 in his English test.
Estimate Dyfed's score as a percentage.
Circle your answer. [1]

4% 20% 23% 44% 51%

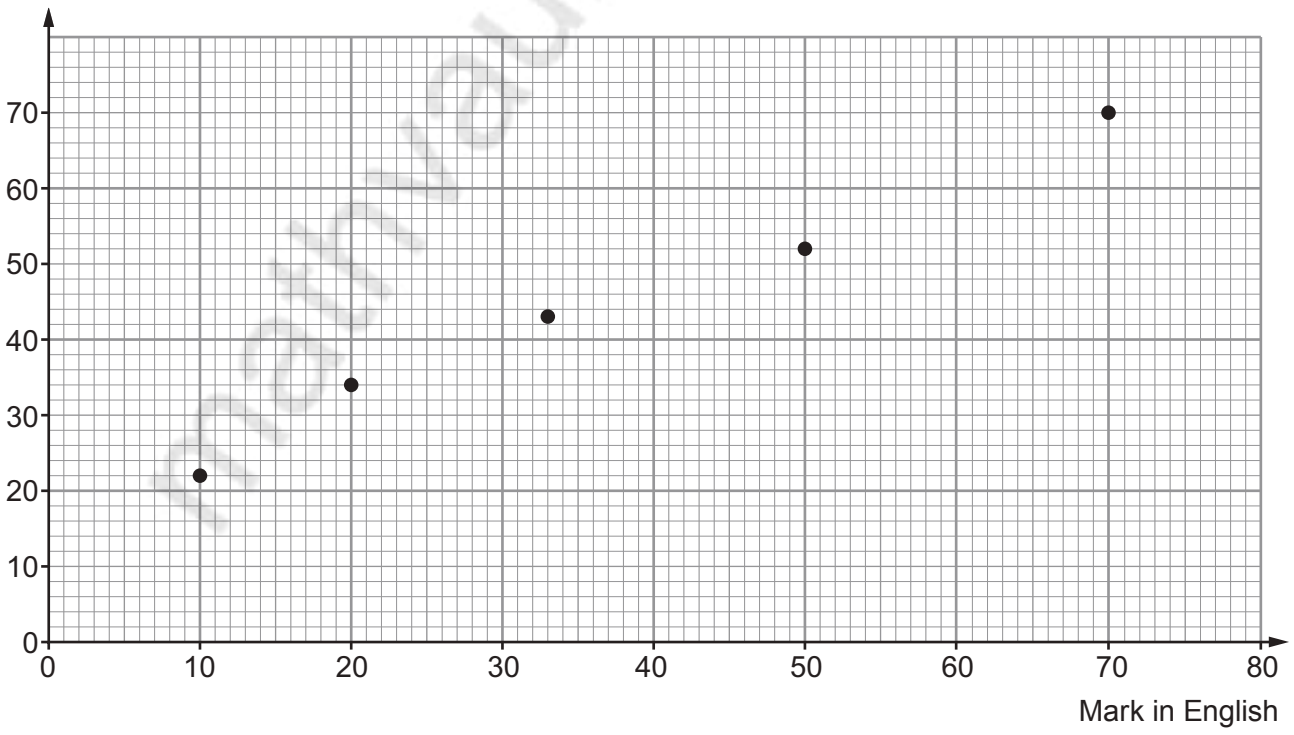
(ii) Liam scores 22 in his Welsh test.
Estimate Liam's score as a percentage.
Circle your answer. [1]

0·3% 3% 22% 31% 40%

(b) Rowena states a hypothesis,
'Boys do better than girls in their English tests.'

She displays the test marks for 5 girls and 5 boys in scatter diagrams.

Girls' test results



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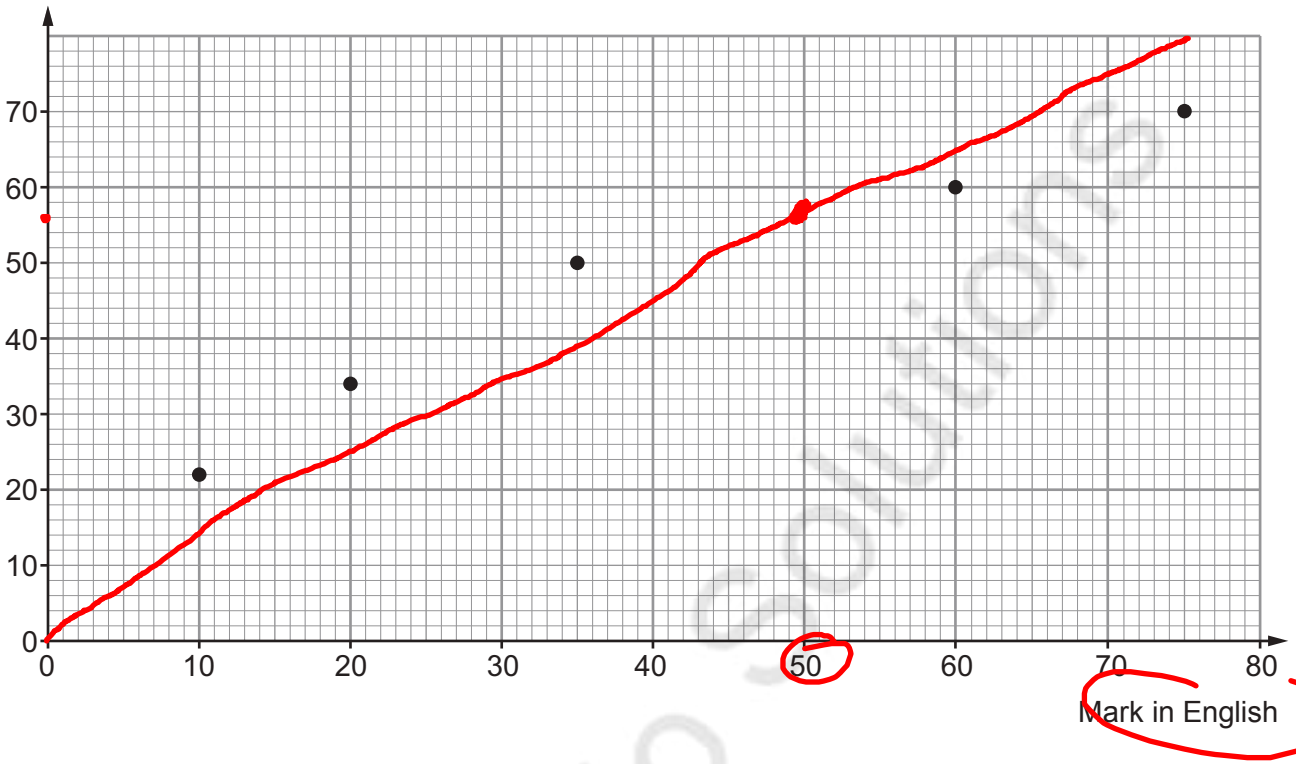
Boys' test results



(i) Does the data support Rowena's hypothesis?
You must give a reason for your answer. [1]

Boy in English | Girls in English
10, 20, 35, 60, 75 | 10, 20, 33, 50, 70

Yes, The data support that Boys did better than girls because they have a total higher mark than the girls.

(ii) How could Rowena improve the testing of her hypothesis? [1]

(1) Rowena needs to carry more experiment
(2) Rowena needs to repeat the experiment several time
(3) Rowena needs to add more data

(c) Draw, by eye, a line of best fit to estimate how many marks you might expect a **boy** to score in a Welsh test if he scored 50 marks in his English test. [2]

56 marks

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10. Marcin has a market stall to sell his printed T-shirts.

It costs him:
- £250 to buy 100 **plain** T-shirts,
- 50p to print a design on each T-shirt.

Marcin sells his printed T-shirts for £4.00 each.

At the start of the week:
- His bank account balance is £820.
- Marcin has 100 printed T-shirts ready to sell.
- He has already paid for these printed T-shirts.

During the week:
- Marcin sells his stock of 100 T-shirts.
- He pays all the money he takes from selling T-shirts into his bank account.
- He buys and prints another 400 T-shirts.
- Marcin **does not** sell any of these 400 T-shirts.

How much will Marcin have in his bank account at the end of this week?
You must show all your working. [4]

820
400
1220

100 plain → £250
1 design on T shirt → 50p
Selling price [1 unit] → £4
Bank account → £820

400
x 50
0000
2000
20000

Selling Price of selling 100 T shirt 400
100 x4 → £400
Total Bank account Balance → £1220

100 plain T shirt → £250
400 plain T shirt → £1000
Cost of printing on plain T shirt → 50p
for 400 plain T shirt → 50x400
→ 20000p
100p → 1£
20000p → £200

Total Cost = 1000 + 200 = £1200

Account Balance = 1220 − 1200
= £20

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11. When it is 21:30 on a Tuesday in London, it is 02:30 on a Wednesday in Dhaka, Bangladesh.

It takes 10 hours 30 minutes to fly from Dhaka to London.
A flight leaves Dhaka on Thursday at 13:00 local Dhaka time.

Time Difference = 19hrs

On what day and at what time should this flight arrive in London?
Give your answer in local London time. [4]

London

Present time: 21:30

13:00
+19:00
32'12:00
-24:00
8:00 Flight leaves
Friday 8:00

Dhaka

Present time: 02:30
Flight Dhaka: 13:00 (Thurs)

08:50
+ 10:30
18:30

18:30 [Friday]

Arrival in London:

Day ..... Time .....

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