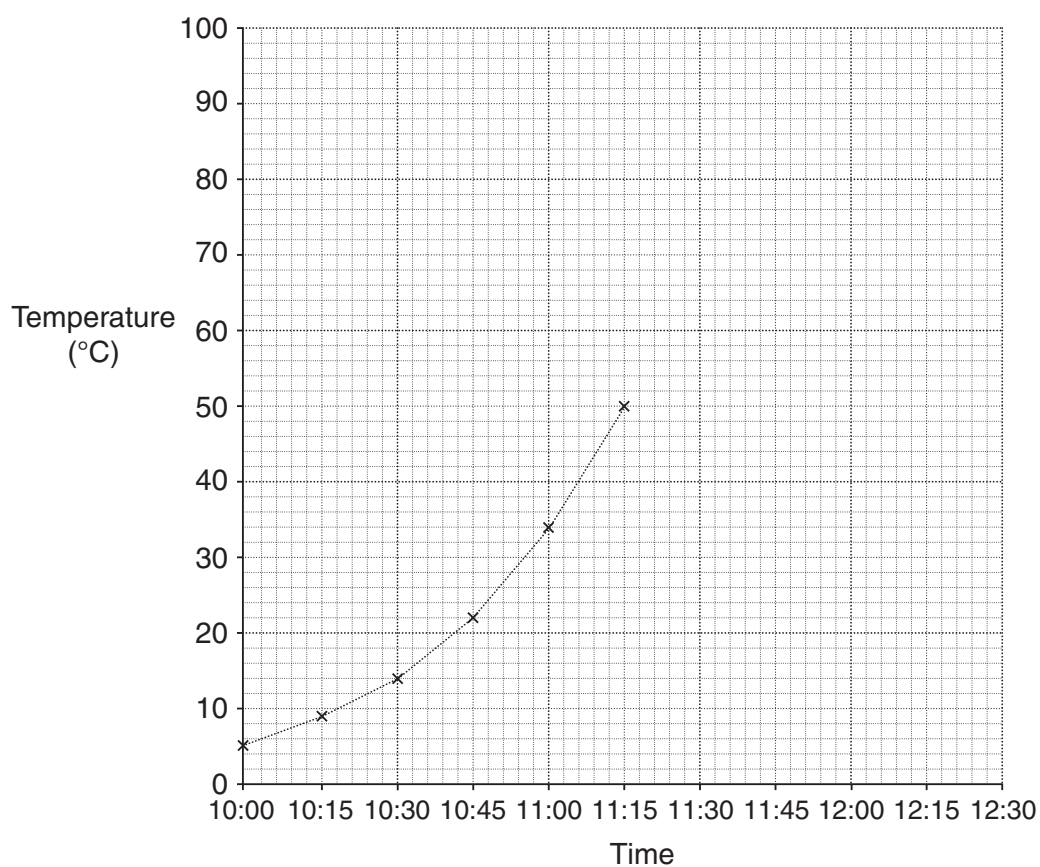


- 1 Maxine is cooking a chicken.  
She uses a meat thermometer to check when her chicken is cooked.  
She puts the chicken in the oven at 10:00.  
This table shows the temperature in the chicken every 15 minutes.

Time	10:00	10:15	10:30	10:45	11:00	11:15	11:30	11:45	12:00	12:15	12:30
Temperature (°C)	5	9	14	22	34	50	65	77	87	92	80

- (a) Complete this time series graph to show Maxine's data.  
The first six points have been plotted for you.



[2]

(b) Maxine turns the oven off when the temperature in the chicken first reaches  $83^{\circ}\text{C}$ .  
Use your graph to estimate the following.

(i) The time that Maxine turned the oven off.

(b)(i) ..... [1]

(ii) The number of **minutes** that the chicken took to first reach  $83^{\circ}\text{C}$ .

(ii) ..... minutes [1]

- 2 A ball is kicked into the air.  
 The height,  $h$  metres, of the ball above the ground after  $t$  seconds is given by this formula.

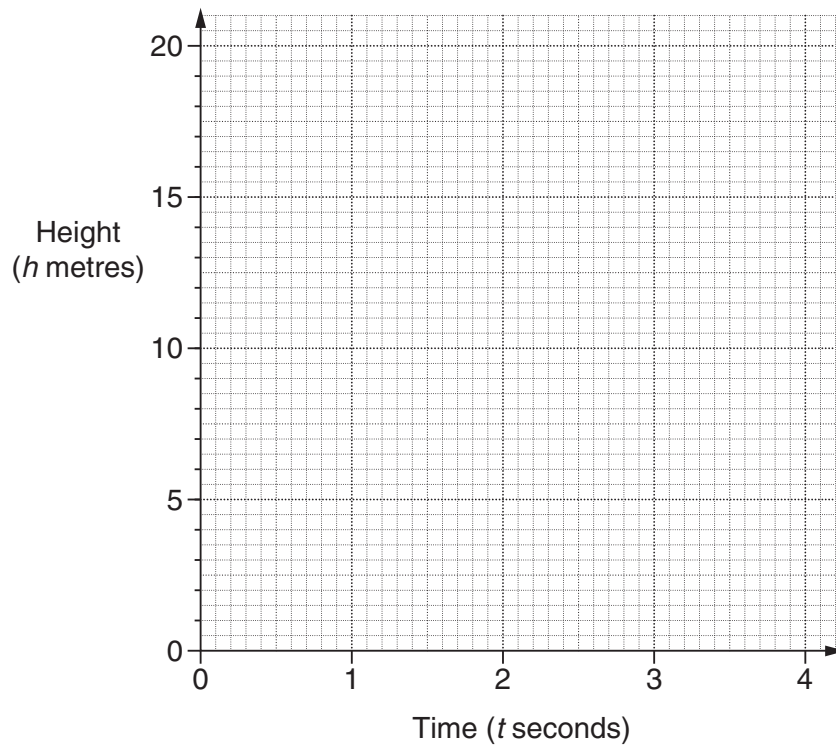
$$h = 17t - 5t^2$$

- (a) Complete the table of values.

$t$	0	0.5	1	2	2.5	3
$h$	0	7.25		14		6

[2]

- (b) Draw the graph of  $h = 17t - 5t^2$ .



[2]

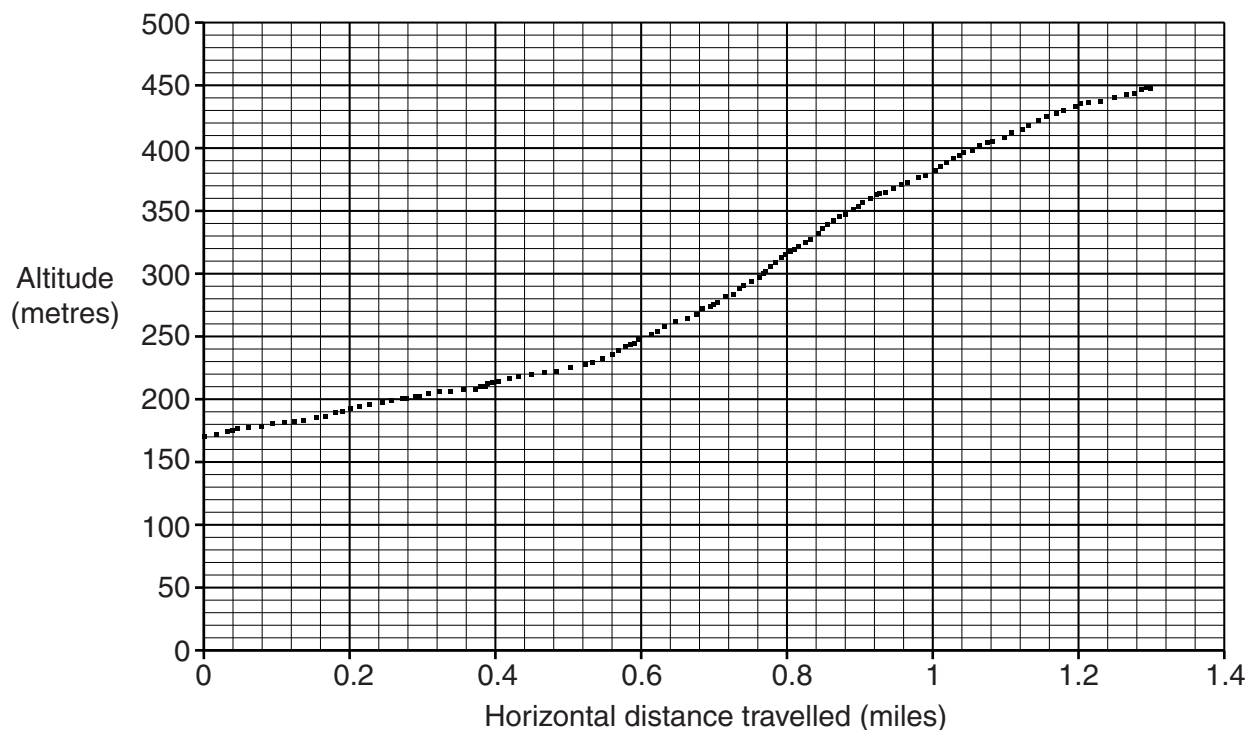
- (c) Use your graph to estimate the maximum height of the ball.

(c) ..... m [1]

- (d) Use your graph to estimate the time when the ball hits the ground.

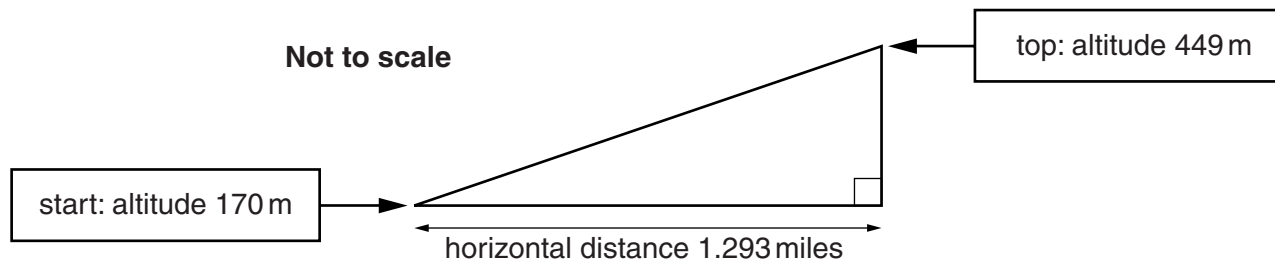
(d) ..... seconds [1]

- 3 Colin and Peter climbed Binsey Hill in the Lake District.  
Peter printed out this graph from his satnav.



Colin wanted to know how far they had actually walked.

- (a) He used this triangle to estimate the distance they walked going up Binsey Hill.



Calculate the distance in metres along the hypotenuse of this triangle.  
Use the fact that 1 mile = 1609 metres.

(a) \_\_\_\_\_ metres [5]

- (b) Describe how Colin's method could be improved to calculate a better estimate of the actual distance they walked on their way up Binsey Hill.  
You do not need to carry out any calculations.

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[1]

- 4 (a) Form 11T had 30 students.  
Sasha asked each of the students how many items they had downloaded the previous day.  
This table summarises their responses.

Number of downloads	Frequency
0	4
1 – 5	2
6 – 10	8
11 – 15	7
16 – 20	6
21 – 25	2
26 – 30	1

- (i) Write down the modal class.

(a)(i) ..... [1]

- (ii) Calculate an estimate of the mean number of downloads.

(ii) ..... [4]

- (b) Sasha decides to ask a random sample from the whole school how many items they had downloaded the previous day.  
 This sample is to be representative of the different year groups.  
 She decides to use a sample size of 50.

Here are the numbers in each year group.

Year	Number of students
7	155
8	170
9	178
10	180
11	165
12	102
13	93
Total	1043

- (i) Calculate how many Year 13 students should be in the sample.

(b)(i) ..... [2]

- (ii) State one advantage and one disadvantage of Sasha using a larger sample size than 50.

Advantage: .....

.....

Disadvantage: .....

..... [2]

- 5 (a) Josh is designing a survey about the trees people have in their gardens.

Complete this part of the survey by adding suitable response boxes for this question.

What is the height of the tallest tree in your garden?
--

[2]

- (b) Josh wants to survey a sample of 50 students from his school.  
The sample is to be representative of the different year groups.

This table shows how many students there are in each year group.

Year	Number of students
7	202
8	178
9	162
10	139
11	142
Total	823

Calculate how many of the students in the sample should be from year 7.

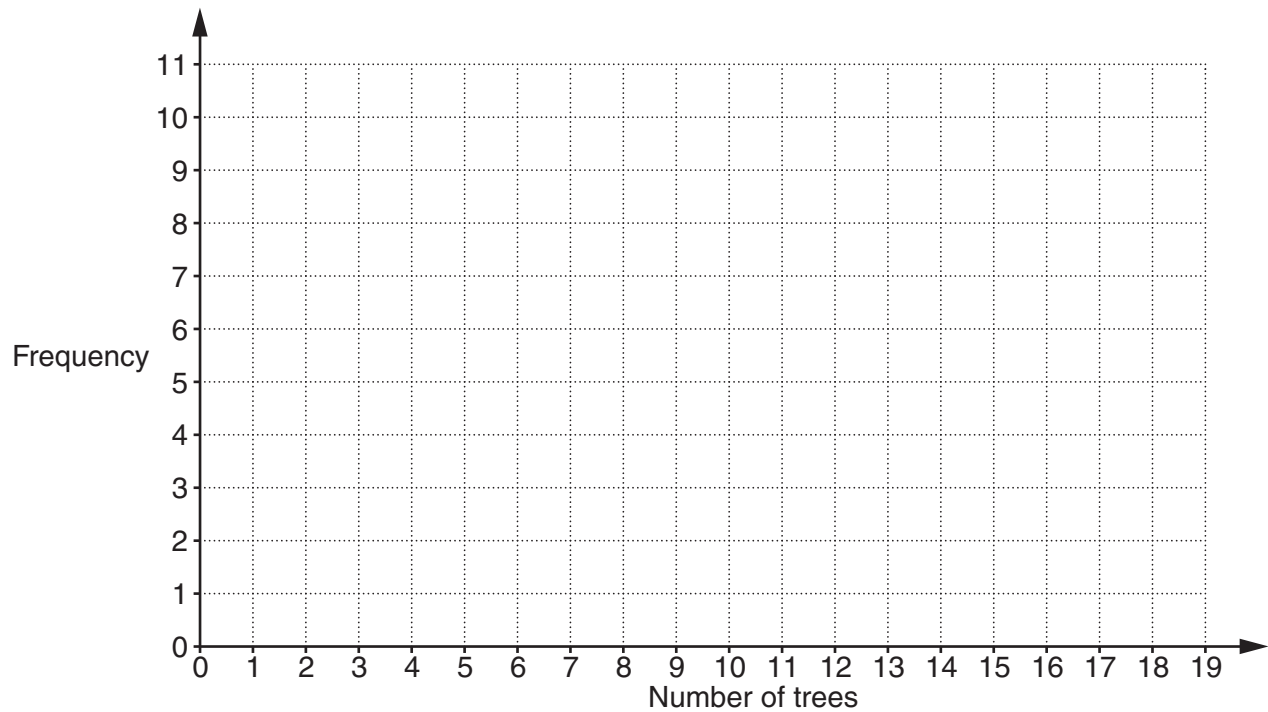
(b) \_\_\_\_\_ [2]



(c) This table summarises the number of trees in the gardens of the 25 houses in Brackley Close.

Number of trees	Frequency
0 – 4	7
5 – 9	10
10 – 14	6
15 – 19	2

(i) Draw a frequency polygon to represent this information.



[3]

(ii) Calculate an estimate of the mean number of trees in a garden in Brackley Close.

(c)(ii) \_\_\_\_\_ [4]

- 6** Anil is doing a traffic survey.  
He is recording how much of the traffic approaching his town goes to the town centre and how much uses the ring road around the town.

Every Monday for three weeks, Anil stands at the junction of the road to the town centre and the ring road.

He counts the number of cars going in each of these directions.

Here are his results.

Direction	Number of cars		
Town centre	275	255	241
Ring road	174	195	170

- (a)** Explain why it is reasonable to estimate the probabilities of cars travelling in each of these directions from this survey.

\_\_\_\_\_

\_\_\_\_\_ [1]

- (b)** Use the figures to estimate the probability that next Monday a randomly chosen car approaching the town will go to the town centre.

**(b)** \_\_\_\_\_ [3]