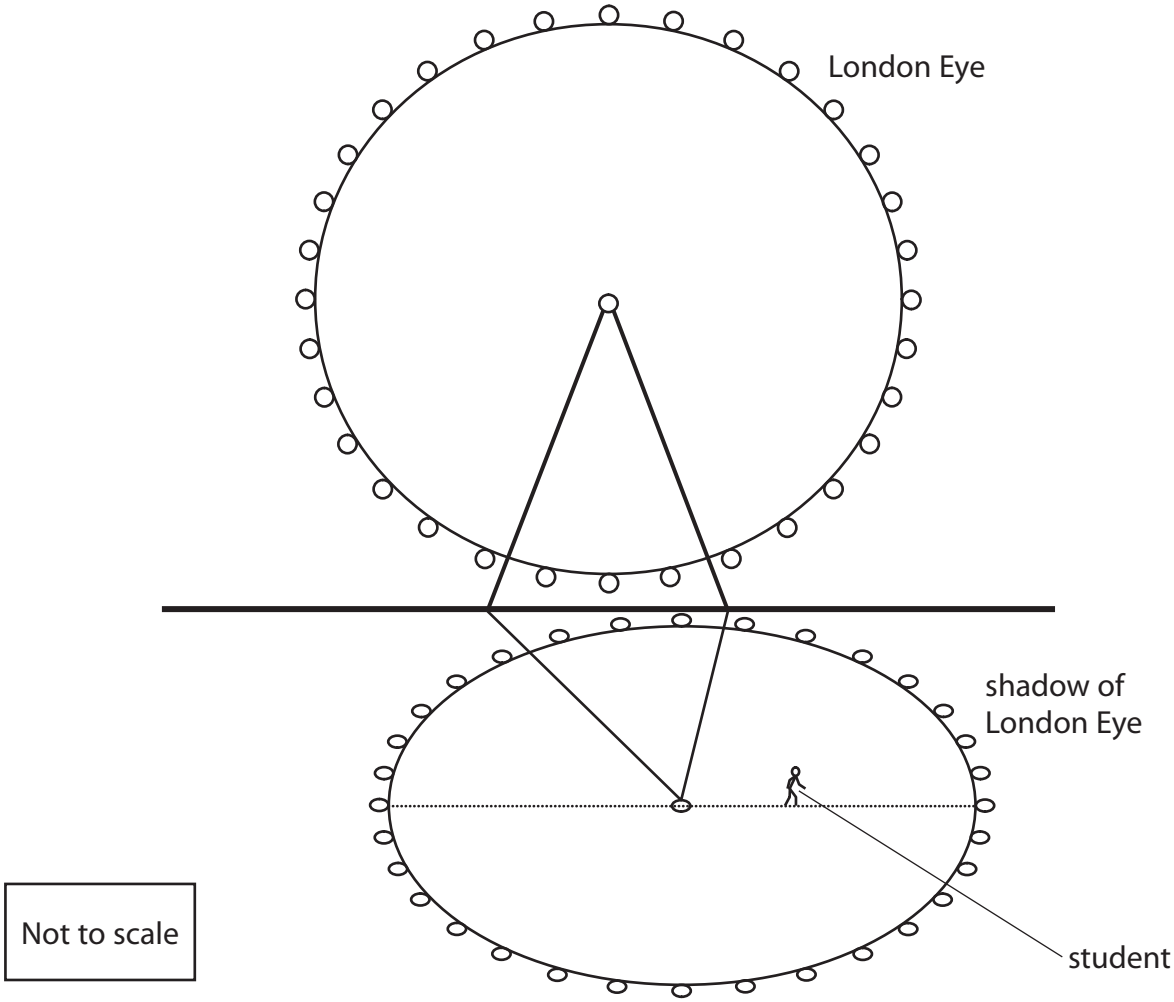
6 The London Eye is a large Ferris wheel.

A student measures the diameter of the London Eye using two methods.

(a) Her first method is to walk across the shadow of the wheel and count her steps.



She counts 170 steps across the diameter of the wheel.

She estimates that each of her steps is 0.74 m long.

(i) Calculate the diameter of the wheel using the student's data.

Give your answer to the nearest metre.

(2)

Diameter = ... m

(ii) Suggest **two** reasons why this value may not be accurate.

(2)

1 .....

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2 .....

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(iii) Suggest **one** way that the student could improve this method to give a more accurate value.

(1)

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(b) Her second method is to use an altimeter. The altimeter can measure height to the nearest 5 m.

The student goes for a ride on the London Eye. She notes her height above the ground every five minutes.

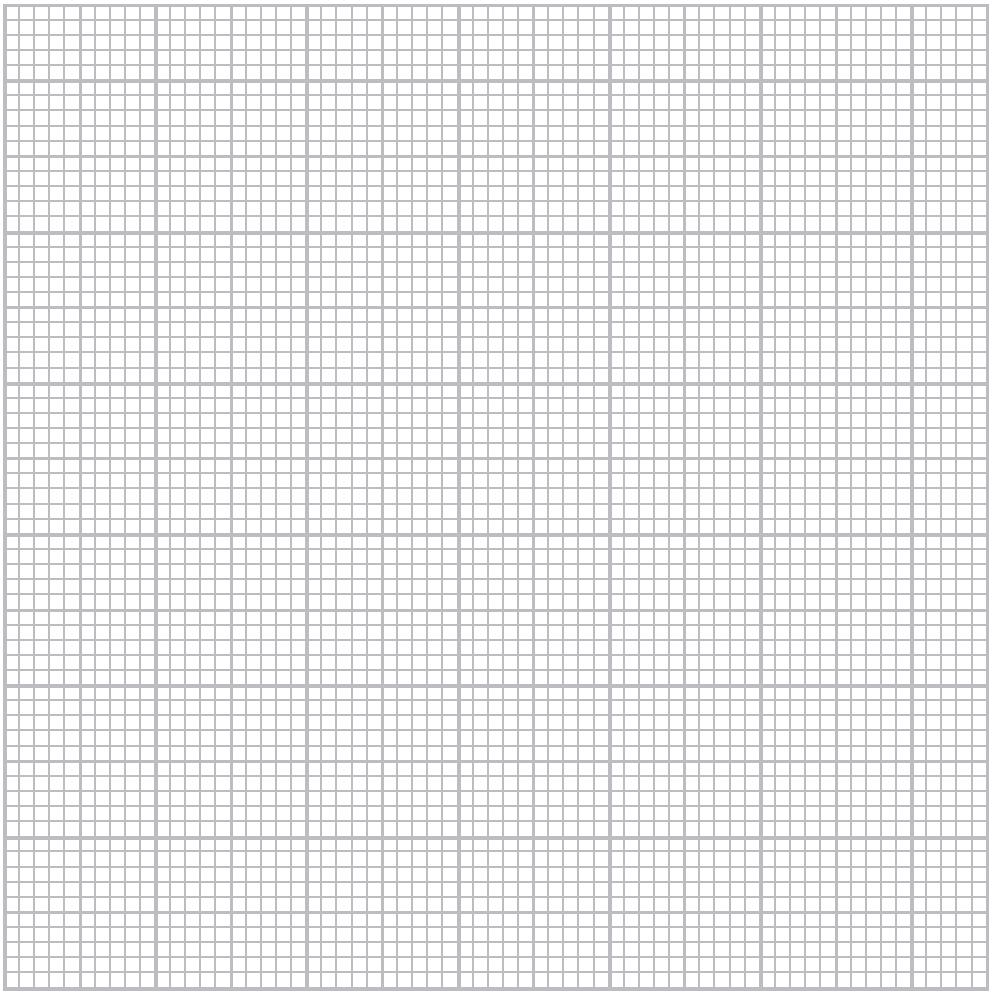
Her results are shown in the table.

Time in minutes	0	5	10	15	20	25	30
Height in m	0	30	90	120	90	30	0

(i) Use the grid to plot a graph of these results.

Draw a curved line of best fit.

(5)



(ii) Use your graph to find the diameter of the wheel according to the altimeter readings.

(1)

Diameter of the wheel according to the altimeter = ... m

(iii) The London Eye website gives the diameter of the wheel as 122 m.

Does the value for the diameter of the wheel from the student's altimeter readings agree with the website value?

Give a reason for your answer.

(1)

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(Total for Question 6 =12 marks)