2 A student investigates a transformer.

This is the student's method.

- use a primary coil with 10 turns
- connect the primary coil to a constant maximum input voltage
- measure the output voltage across the secondary coil
- repeat using an increasing number of turns on the primary coil

The table shows the student's results.

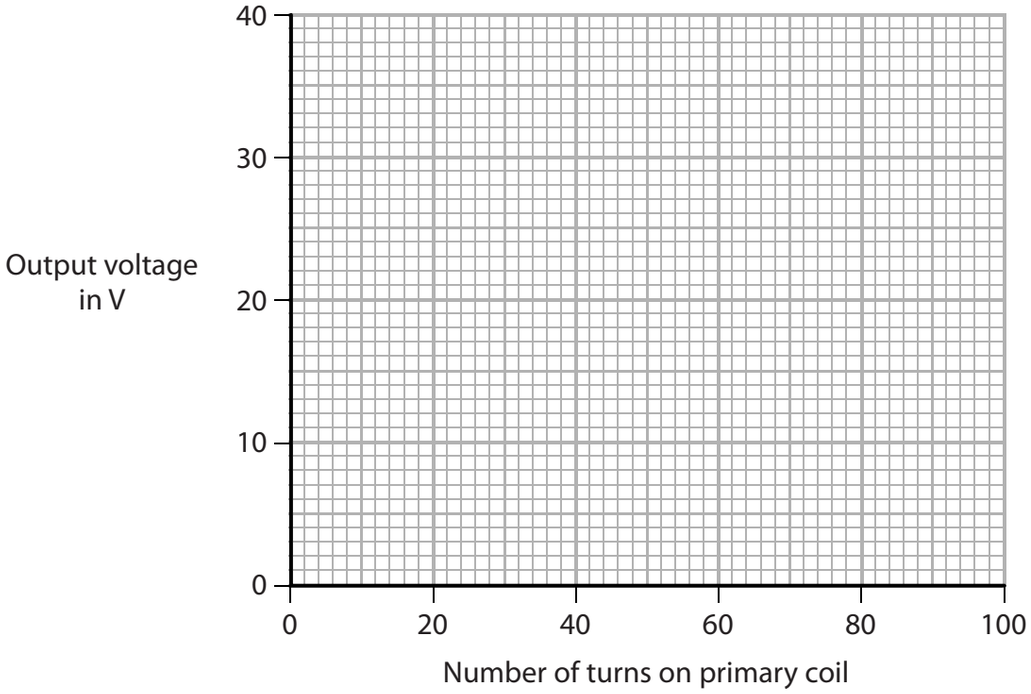
Number of turns on primary coil	Output voltage in V
10	39.6
20	19.7
40	9.9
60	6.6
80	5.0
100	4.0

(a) (i) Plot a graph of the student's results on the grid.

(1)

(ii) Draw a curve of best fit.

(1)



(iii) Describe the relationship between the output voltage and the number of turns on the primary coil.

(2)

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(b) (i) State the formula linking input and output voltages and the turns ratio for the transformer.

(1)

(ii) The input voltage of the transformer is 6.8 V.

Calculate the number of turns on the secondary coil.

(2)

number of turns = ...

(Total for Question 2 = 7 marks)