Question 11 **(8 marks)**

A plant grew from a seed to a height of 120 cm in its first year. The growth of the plant in subsequent years is expected to be 60% of its growth in the previous year.

(a) Determine

(i) the growth of the plant during the second year. (1 mark)

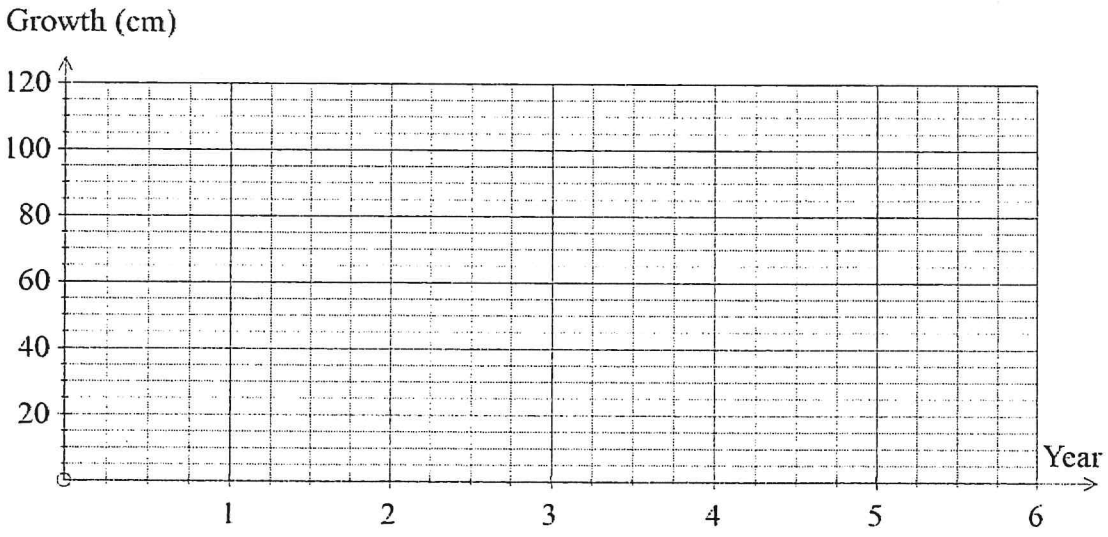
(ii) the height of the plant after two years. (1 mark)

The growth of the plant during the n^{th} year can be given by $T_{n+1} = 0.6T_n, \quad T_1 = 120$.

(b) Complete the growth table below. (2 marks)

Year	1	2	3	4	5
Growth (cm)	120				

(c) Plot the annual growth of the plant on the axes below for the first five years. (2 marks)



(d) In which year is the growth of the tree first less than 1 cm? (1 mark)

(e) Describe height of the tree in the long-term. (1 mark)

Question 11 **(8 marks)**

A plant grew from a seed to a height of 120 cm in its first year. The growth of the plant in subsequent years is expected to be 60% of its growth in the previous year.

(a) Determine

(i) the growth of the plant during the second year. (1 mark)

$120 \times .6 = 72$ cm

(ii) the height of the plant after two years. (1 mark)

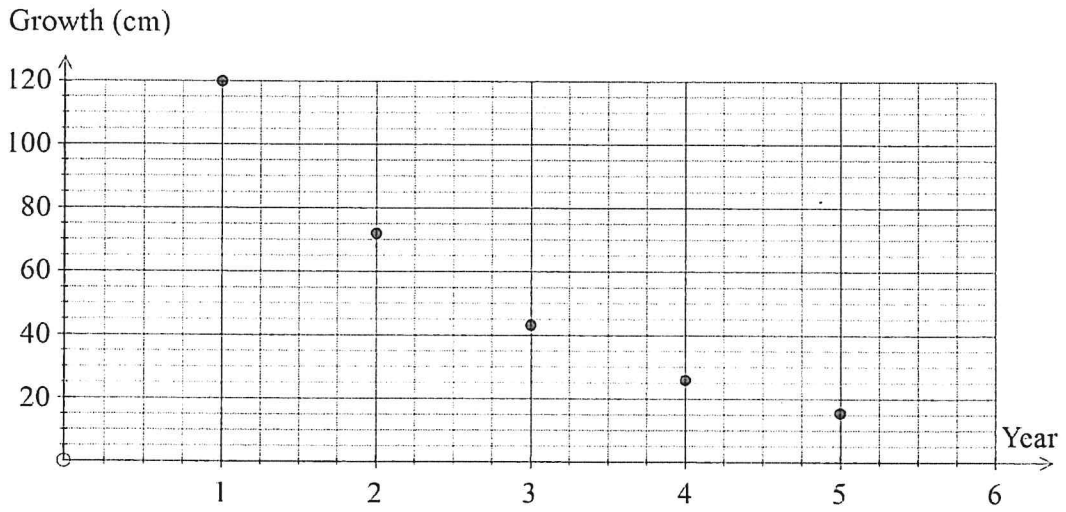
$120 + 72 = 192$ cm

The growth of the plant during the n^{th} year can be given by $T_{n+1} = 0.6T_n, \quad T_1 = 120$.

(b) Complete the growth table below. (2 marks)

Year	1	2	3	4	5
Growth (cm)	120	72	43.2	25.9	15.6

(c) Plot the annual growth of the plant on the axes below for the first five years. (2 marks)



(d) In which year is the growth of the tree first less than 1 cm? (1 mark)

Year 11 (0.7 cm)

(e) Describe height of the tree in the long-term. (1 mark)

The growth of the tree each year is rapidly decreasing as time goes on, and so the height will eventually reach a maximum. (300 cm).

See next page