9 The Beaufort scale is used to describe wind intensity. On this scale the average wind speed v increases with the Beaufort scale value B.

The relationship between v and B is given by

$$v = kB^p$$

where k and p are constants.

(a) Explain why a graph of $\log v$ against $\log B$ should give a straight line.

(2)

(b) The table gives some values of v and corresponding values of B.

v / m s^{-1}	B		
2.00	1		
10.0	3		
21.5	5		
36.0	7		
50.5	9		
68.0	11		

(i) Plot a graph of $\log v$ against $\log B$ on the grid opposite.
Use the columns provided to show any processed data.

(5)

(ii) Determine the values of p and k.

(3)

$p =$ .....

$k =$ .....

(Total for Question 9 = 10 marks)