

8 A zookeeper models the median mass of infant monkeys born at their zoo, up to the age of 2 years, by the formula

$$y = a + b \log_{10} x$$

where y is the median mass in kilograms, x is age in months and a and b are constants.

The zookeeper uses the data shown below to determine the values of a and b .

Age in months (x)	3	24
Median mass (y)	6.4	12

8 (a) The zookeeper uses the data for monkeys aged 3 months to write the correct equation

$$6.4 = a + b \log_{10} 3$$

8 (a) (i) Use the data for monkeys aged 24 months to write a second equation. [1 mark]

8 (a) (ii) Show that

$$b = \frac{5.6}{\log_{10} 8}$$

[3 marks]

8 (a) (iii) Find the value of a .

Give your answer to two decimal places.

[1 mark]

8 (b) Use a suitable value for x to determine whether the model can be used to predict the median mass of monkeys less than one week old.

[2 marks]