5   In 2019 scientists developed a model for comparing the ages of humans and dogs.
    According to the model,

$Y = A\ln X + B$

where X = dog age in years and Y = human age in years.

For the model, it is known that when $X = 1$, $Y = 31$ and when $X = 12$, $Y = 71$.

(a) Find the value of B.   [1]

(b) Determine the value of A, correct to the nearest whole number.   [2]

Use the model, with the exact value of B and the value of A correct to the nearest whole number, to
answer parts (c) and (d).

(c) Find the human age corresponding to a dog age of 20 years.   [1]

(d) Determine the dog age corresponding to a human age of 120 years.   [3]