These data are taken from an A-level Physics experiment on damped oscillations. The variable x represents time in seconds, y displacement in mm.

Each point marked is an observed maximum, selected from the graph above.

The variables have been altered as shown above. Using your knowledge of straight line graphs, determine the equation of the line of best fit, and hence the values of a and b. Use this to write an equation for the original relationship between x and y.
Note: in answer to the question 'is there an exponential relationship?', the straight line graph has an R-squared value of 0.9893, indicating strong positive correlation.

The equation of the straight line (using linear regression techniques) is given by $y = 4.8891 - 0.0142x$.
Students should use data from two specific points to determine their best fit line equation, so it may vary.
Using $a = \ln(k)$ and $b = c$ gives values for $k$ and $c$ of 132.83 and -0.0142 respectively.

This will give a relationship between $x$ and $y$ as: $y = 132.83e^{-0.0142x}$