

$$1) \quad y = ax^b$$

$$\log y = \log ax^b$$

$$\log y = \log a + \log x^b$$

$$\log y = \log a + b \log x$$

$$2) \quad y = 1.99 - 0.031x$$

$$\log_{10} w = 1.99 - 0.031t$$

$$w = 10^{1.99 - 0.031t}$$

$$w = 10^{1.99} \cdot 10^{-0.031t}$$

$$w = 97.7 \cdot 0.931^t$$

$$\underline{a = 97.7} \quad \underline{b = 0.931} \quad (3 \text{ s.f.})$$

b/ Immediately after the kettle boiled the temperature was 97.7°C .

c/ The temperature will not continue to decrease once it reaches room temperature it will remain the same.

3a) There is a very strong positive correlation.
The coding is appropriate and there is
This suggests a non linear relationship
between x and y .

b) $s = 2.60 + 0.127r$

$$\log_{10} y = 2.60 + 0.127x$$

$$y = 10^{2.60 + 0.127x}$$

$$y = (10^{2.60}) (10^{0.127})^x$$

$$y = (398) (1.34)^x$$

$$\underline{a = 398} \quad \underline{b = 1.34} \quad (35\%)$$