12 A random variable X has probability distribution defined as follows.

$$\mathrm{P}(X = x) = \begin{cases} kx & x = 1, 2, 3, 4, 5, \\ 0 & \text{otherwise,} \end{cases}$$

where k is a constant.

(a) Show that $\mathrm{P}(X = 3) = 0.2$. **[3]**

(b) Show in a table the values of X and their probabilities. **[2]**

(c) Two independent values of X are chosen, and their total T is found.

(i) Find $\mathrm{P}(T = 7)$. **[3]**

(ii) Given that $T = 7$, determine the probability that one of the values of X is 2. **[4]**