

- 11 The discrete random variable X takes the values 0, 1, 2, 3, 4 and 5 with probabilities given by the formula

$$P(X = x) = k(x + 1)(6 - x) .$$

- (i) Find the value of k . [2]

In one half-term Ben attends school on 40 days. The probability distribution above is used to model X , the number of lessons per day in which Ben receives a gold star for excellent work.

- (ii) Find the probability that Ben receives no gold stars on each of the first 3 days of the half-term and two gold stars on each of the next 2 days. [2]
- (iii) Find the expected number of days in the half-term on which Ben receives no gold stars. [2]