Exercise 15B

1 When throwing a standard six-sided dice, let X be the random variable defined by X = the square of the score shown on the dice. What is the expectation of X?

EXAM-STYLE QUESTION

2 The random variable Z has probability distribution

z	2	3	5	7	11
$P(Z = z)$	$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$	x	y

and $E(Z) = 5\frac{2}{3}$

Find x and y.

3 A 'Fibonacci dice' is unbiased, six-sided and labeled with these numbers: 1, 2, 3, 5, 8, 13.
What is the expected score when the dice is rolled?

4 The discrete random variable X has probability distribution

$p(x) = \frac{x}{36}$ for x = 1, 2, 3, …, 8

Find $E(X)$.

EXAM-STYLE QUESTIONS

5 For the discrete random variable P, the probability distribution is given by

$$P(X = x) = \begin{cases} kx & x = 1, 2, 3, 4, 5 \\ k(10 - x) & x = 6, 7, 8, 9 \end{cases}$$

Find

a the value of the constant k **b** $E(X)$

6 **a** Copy and complete, in terms of k, this probability distribution for a discrete random variable, X:

x	1	2	3
$P(X = x)$	0.2	$1-k$	

b What range of values can k take? Give your answer in the form $a \leq k \leq b$, $a, b \in Q$

c Find in terms of k the mean of the distribution.