

Two boxes each contain three cards.

The first box contains cards labelled 1,3 and 5

The second box contains cards labelled 2, 4 and 6.

In a game, a player draws one card at random from each box and his score, X , is the **sum** of the numbers on the two cards.

Complete the following probability distribution

x	3	5			11
$P(X = x)$	$\frac{1}{9}$				$\frac{2}{9}$

Calculate $E(X)$

a) There are 9 possible outcomes

	1	3	5
2	3	5	7
4	5	7	9
6	7	9	11

Here's the probability distribution for X

x	3	5	7	9	11
$P(X = x)$	$\frac{1}{9}$	$\frac{2}{9}$	$\frac{3}{9}$	$\frac{2}{9}$	$\frac{1}{9}$

b)

$$E(X) = \mu = \sum_x x P(X = x)$$

$$E(X) = 3 \times \frac{1}{9} + 5 \times \frac{2}{9} + 7 \times \frac{3}{9} + 9 \times \frac{2}{9} + 11 \times \frac{1}{9}$$

$$E(X) = \frac{3}{9} + \frac{10}{9} + \frac{21}{9} + \frac{18}{9} + \frac{11}{9}$$

$$E(X) = \frac{54}{9}$$

$$E(X) = 6$$