Student Information

Full Name : Murat Bolu
Id Number : 2521300

Answer 1

a)

The expected value $E(X)$ for random variables with finitely many outcomes is equal to $\sum_x xP(x)$. Therefore, assuming all dice are fair, i.e. all sides have the same probability of occurring,

$$E(\text{Blue die}) = 1 \cdot \tfrac{1}{6} + 2 \cdot \tfrac{1}{6} + 3 \cdot \tfrac{1}{6} + 4 \cdot \tfrac{1}{6} + 5 \cdot \tfrac{1}{6} + 6 \cdot \tfrac{1}{6} = 3.5$$

$$E(\text{Yellow die}) = 1 \cdot \tfrac{1}{8} + 1 \cdot \tfrac{1}{8} + 1 \cdot \tfrac{1}{8} + 3 \cdot \tfrac{1}{8} + 3 \cdot \tfrac{1}{8} + 3 \cdot \tfrac{1}{8} + 4 \cdot \tfrac{1}{8} + 8 \cdot \tfrac{1}{8} = 3$$

$$E(\text{Red die}) = 2 \cdot \tfrac{1}{10} + 2 \cdot \tfrac{1}{10} + 2 \cdot \tfrac{1}{10} + 2 \cdot \tfrac{1}{10} + 2 \cdot \tfrac{1}{10} + 3 \cdot \tfrac{1}{10} + 3 \cdot \tfrac{1}{10} + 4 \cdot \tfrac{1}{10} + 4 \cdot \tfrac{1}{10} + 6 \cdot \tfrac{1}{10} = 3$$

b)

c)

d)

e)

Answer 2

a)

b)

Answer 3