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Maths Complémentaires Terminale

Espérance & Variance



CORRIGÉ DE L'EXERCICE

LE CHIFFRE OBTENU !

CORRECTION

1. Calculons $P(X=1)$, $P(X=2)$, ..., $P(X=6)$:

$$\bullet P(X=1) = 0 + \frac{1}{6} = \frac{1}{6}$$

$$\bullet P(X=2) = \frac{1}{6} + 0 = \frac{1}{6}$$

$$\bullet P(X=3) = 0 + \frac{1}{6} = \frac{1}{6}$$

$$\bullet P(X=4) = \frac{1}{6} + 0 = \frac{1}{6}$$

$$\bullet P(X=5) = 0 + \frac{1}{6} = \frac{1}{6}$$

$$\bullet P(X=6) = \frac{1}{6} + 0 = \frac{1}{6}$$

2. Calculons $P(Y=3)$ et $P(Y=7)$:

$$\bullet P(Y=3) = 0 + \frac{1}{6} + 0 + \frac{1}{6} + 0 + \frac{1}{6} = \frac{1}{2}$$

$$\bullet P(Y=7) = \frac{1}{6} + 0 + \frac{1}{6} + 0 + \frac{1}{6} + 0 = \frac{1}{2}$$

3. Dédisons-en $E(X)$ et $E(Y)$:

$$\bullet E(X) = \left(\frac{1}{6} \times 1\right) + \left(\frac{1}{6} \times 2\right) + \left(\frac{1}{6} \times 3\right) + \left(\frac{1}{6} \times 4\right) + \left(\frac{1}{6} \times 5\right) + \left(\frac{1}{6} \times 6\right)$$

$$= \frac{1}{6} (1 + 2 + 3 + 4 + 5 + 6)$$

$$= \frac{7}{2}$$

$$\bullet E(Y) = \left(\frac{1}{2} \times 3\right) + \left(\frac{1}{2} \times 7\right)$$

$$= 5$$

$$\bullet V(Y) = \left(\frac{1}{2} \times 3^2\right) + \left(\frac{1}{2} \times 7^2\right) - [5]^2$$

$$= 4$$