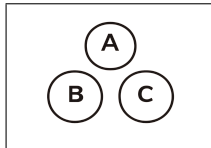
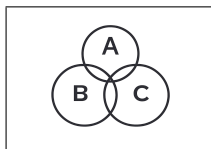


# D Expected Value & Variance Binomial Distribution D

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$$n = 6$$
$$p = \frac{1}{2}$$



$$E[X] = np = 6 \cdot \frac{1}{2} = \boxed{3}$$

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$$\text{Var}(X) = np(1-p) = 3 \cdot \frac{1}{2} = \boxed{\frac{3}{2}}$$

---

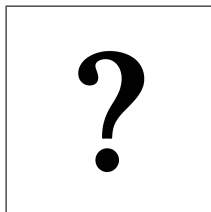
$$E[X^2] = \text{Var}(X) + (E[X])^2$$

$$E[X^2] = \frac{3}{2} + 3^2$$

$$E[X^2] = \frac{3}{2} + 9$$

$$E[X^2] = \boxed{\frac{21}{2}}$$

---



$$P = 1/3$$

$$N = 2$$

$$x = \{0, 1, 2\}$$

**D**

## Expected Value & Variance Binomial Distribution

**D**

$$P = 1/3$$
$$N = 2$$
$$x = \{0, 1, 2\}$$

---

$$P(X = 0) = \binom{2}{0} \frac{1}{3}^0 \frac{2}{3}^2 = \frac{4}{9} = 0.4444$$
$$P(X = 1) = \binom{2}{1} \frac{1}{3}^1 \frac{2}{3}^1 = \frac{4}{9} = 0.4444$$
$$P(X = 2) = \binom{2}{2} \frac{1}{3}^2 \frac{2}{3}^0 = \frac{1}{9} = 0.1111$$

---

$$E[X] = np = 2 \cdot \frac{1}{3} = \frac{2}{3} \approx \boxed{0.6667}$$

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$$\text{Var}(X) = np(1 - p) = 2 \cdot \frac{1}{3} \cdot \frac{2}{3} = \frac{4}{9} \approx \boxed{0.4444}$$

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$$\sigma = \sqrt{\text{Var}(X)} = \sqrt{\frac{4}{9}} = \frac{2}{3} \approx \boxed{0.6667}$$