

Question #285

Key: A

Let N be the number of clubs accepted

X be the number of members of a selected club

S be the total persons appearing

N is binomial with $m = 1000$ $q = 0.20$

$$E(N) = (1000)(0.20) = 200$$

$$\text{Var}(N) = (1000)(0.20)(0.80) = 160$$

$$E(S) = E(N)E(X) = (200)(20) = 4000$$

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

$$= (200)(20) + (160)(20)^2$$

$$= 68,000$$

$$\text{Budget} = 10 \times E(S) + 10 \times \sqrt{\text{Var}(S)}$$

$$= 10 \times 4000 + 10 \times \sqrt{68,000}$$

$$= 42,610$$