

Question #167

Key: B

The variance calculation assumes independence, which should have been explicitly stated.

$$E(S) = E(N)E(X)$$

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

	$E(N)$	$\text{Var}(N)$	$E(X)$	$\text{Var}(X)$	$E(S)$	$\text{Var}(S)$
P.B	30	21	300	10,000	9,000	2.19×10^6
S.B	30	27	1000	400,000	30,000	39×10^6
L.Y	30	12	5000	2,000,000	150,000	360×10^6
					189,000	400×10^6
						(rounded)

$$\text{Standard deviation} = \sqrt{400 \times 10^6} = 20,000$$

$$189,000 + 20,000 = 209,000$$