62. Solution: C

First note that the density function of $X$ is given by

$$f(x)=\begin{cases}\frac{1}{2} & \text{if} \quad x=1\\ x-1 & \text{if} \quad 1<x<2\\ \\ 0 & \text{otherwise}\end{cases}$$

Then

$$E(X)=\frac{1}{2}+\int_1^2 x(x-1)\,dx=\frac{1}{2}+\int_1^2\left(x^2-x\right)dx=\frac{1}{2}+\left(\frac{1}{3}x^3-\frac{1}{2}x^2\right)\Big|_1^2$$

$$=\frac{1}{2}+\frac{8}{3}-\frac{4}{2}-\frac{1}{3}+\frac{1}{2}=\frac{7}{3}-1=\frac{4}{3}$$

$$E\left(X^2\right)=\frac{1}{2}+\int_1^2 x^2(x-1)\,dx=\frac{1}{2}+\int_1^2\left(x^3-x^2\right)dx=\frac{1}{2}+\left(\frac{1}{4}x^4-\frac{1}{3}x^3\right)\Big|_1^2$$

$$=\frac{1}{2}+\frac{16}{4}-\frac{8}{3}-\frac{1}{4}+\frac{1}{3}=\frac{17}{4}-\frac{7}{3}=\frac{23}{12}$$

$$Var(X)=E\left(X^2\right)-\left[E(X)\right]^2=\frac{23}{12}-\left(\frac{4}{3}\right)^2=\frac{23}{12}-\frac{16}{9}=\frac{5}{36}$$