

40. Solution: B

Denote the insurance payment by the random variable Y . Then

$$Y = \begin{cases} 0 & \text{if } 0 < X \leq C \\ X - C & \text{if } C < X < 1 \end{cases}$$

Now we are given that

$$0.64 = \Pr(Y < 0.5) = \Pr(0 < X < 0.5 + C) = \int_0^{0.5+C} 2x \, dx = x^2 \Big|_0^{0.5+C} = (0.5 + C)^2$$

Therefore, solving for C , we find $C = \pm 0.8 - 0.5$

Finally, since $0 < C < 1$, we conclude that $C = 0.3$