

188. The actuarial department for the SharpPoint Corporation models the lifetime of pencil sharpeners from purchase using $S_0(t) = \left(1 - \frac{t}{\omega}\right)^\alpha$, for $\alpha > 0$ and $0 \leq t \leq \omega$.

A senior actuary examining mortality tables for pencil sharpeners has determined that the original value of α must change. You are given:

- (i) The new complete expectation of life at purchase is half what it was previously.
- (ii) The new force of mortality for pencil sharpeners is 2.25 times the previous force of mortality for all durations.
- (iii) ω remains the same.

Calculate the original value of α .

- (A) 1
- (B) 2
- (C) 3
- (D) 4
- (E) 5