

126. Solution: C

Using the notation of the problem, we know that $p_0 + p_1 = \frac{2}{5}$ and

$$p_0 + p_1 + p_2 + p_3 + p_4 + p_5 = 1.$$

Let $p_n - p_{n+1} = c$ for all $n \leq 4$. Then $p_n = p_0 - nc$ for $1 \leq n \leq 5$.

Thus $p_0 + (p_0 - c) + (p_0 - 2c) + \dots + (p_0 - 5c) = 6p_0 - 15c = 1$.

Also $p_0 + p_1 = p_0 + (p_0 - c) = 2p_0 - c = \frac{2}{5}$. Solving simultaneously
$$\begin{cases} 6p_0 - 15c = 1 \\ 2p_0 - c = \frac{2}{5} \end{cases}$$

$$\begin{aligned} 6p_0 - 3c &= \frac{6}{5} \\ \Rightarrow \frac{-6p_0 + 15c}{12c} &= \frac{-1}{\frac{1}{5}}. \text{ So } c = \frac{1}{60} \text{ and } 2p_0 = \frac{2}{5} + \frac{1}{60} = \frac{25}{60}. \text{ Thus } p_0 = \frac{25}{120}. \end{aligned}$$

We want $p_4 + p_5 = (p_0 - 4c) + (p_0 - 5c) = \frac{17}{120} + \frac{15}{120} = \frac{32}{120} = 0.267$.