In an instant lottery, your chances of winning are 0.2. If you play the lottery five times and outcomes are independent, the probability that you win at most once is

A) 0.7373.  B) 0.4096.  C) 0.0819.  D) 0.2.

\[
\begin{align*}
\Pr(\text{win at most 1}) &= \Pr(\text{win = 0 or win = 1}) \\
&= \Pr(\text{win = 0}) + \Pr(\text{win = 1}) \\
&= \Pr(\text{lose = 5}) + \Pr(\text{win = 1 and lose = 4}) \\
&= 0.8^5 + 5 \times 0.2 \times 0.8^4 \\
&= 0.337768 + 5 \times 0.08192 \\
&= 0.73728
\end{align*}
\]

Choice C, correct answer.

This is more detailed than what we did in class.

Scores on the SAT Mathematics test (SAT-M) are believed to be normally distributed, with mean \( \mu \). The scores of a random sample of three students who recently took the exam are 550, 620, and 480. A 95% confidence interval for \( \mu \) based on these data is

A) 550.00 ± 128.58.  B) 550.00 ± 173.88.  C) 550.00 ± 105.01.  D) 550.00 ± 142.00.

Data: 550, 620, 480

\[ \bar{x} = 550, \ s_x = 70, \ \bar{x} = 57.15, \ n = 3 \]

95% CI \[ df = 2 \quad (\sigma \ unknown) \]

\[ t_c = 4.30 \quad (\text{back of text}) \]

\[ \left[ 550 \pm 4.30 \times \frac{70}{\sqrt{3}} \right] \]

\[ = 550 \pm 173.78 \]