1. Out of **340** respondents to the question "What was your main objective in attending Soutwestern?" on the SWOCC **2016-2017** graduate survey, **133** said they intend to transfer to a four-year institution. Of these **340**, suppose we took a random sample of 10 students.

Let X = the number of students who intend to transfer to a 4-year school out of our sample of 10 students.

Let $P(X = x)$ = the probability that x students intend to transfer to a 4-year school of our sample of 10 students.

What is the standard deviation σ of the probability distribution of X? Round your answer to four decimal places.

○ A. $\sigma = 1.5332$.

○ B. $\sigma = 1.5032$.

○ C. $\sigma = 1.5732$.

○ D. $\sigma = 1.5832$.

○ E. $\sigma = 1.5132$.

○ F. $\sigma = 1.5232$.

○ G. $\sigma = 1.5432$.

○ H. $\sigma = 1.5632$.

2. A lightbulb manufacturer knows that about **3** out of every **100** lightbulbs they manufacture are defective. Suppose you are a quality control inspector and you choose a random sample of 9 bulbs to test.

Let X = the number bulbs that are defective out of a total of 9 bulbs.

Let $P(X = x)$ = the probability that x bulbs out of 9 bulbs are defective.

What values can the random variable X possibliy take on?

○ A. $X = 1, 2, 3, 4, 5, 6, 7, 8, 9$

○ B. $X = 0, 1, 2, 3, 4, 5, 6, 7, 8$

○ C. $X = 0, 1, 2, 3, 4, 5, 6, 7, 8, 9$

○ D. X can be any integer greater than or equal to 1.

○ E. X can be any integer greater than or equal to 0.

○ F. $X = 1, 2, 3, 4, 5, 6, 7, 8$

3. Out of 340 respondents to the question "What was your main objective in attending Soutwestern?" on the SWOCC 2016-2017 graduate survey, 133 said they intend to transfer to a four-year institution. Of these 340, suppose we took a random sample of 10 students.

Let X = the number of students who intend to transfer to a 4-year school out of our sample of 10 students.

Let $P(X = x)$ = the probability that x students intend to transfer to a 4-year school of our sample of 10 students.

What is the probability of EXACTLY 5 students out of our sample of 10 students intend to transfer to a 4-year school?

○ A. $P(X = 5) = 0.1911$.

○ B. $P(X = 5) = 0.1951$.

○ C. $P(X = 5) = 0.1941$.

○ D. $P(X = 5) = 0.1891$.

○ E. $P(X = 5) = 0.1921$.

○ F. $P(X = 5) = 0.1881$.

○ G. $P(X = 5) = 0.1981$.

○ H. $P(X = 5) = 0.1931$.

4. Out of 340 respondents to the question "What was your main objective in attending Soutwestern?" on the SWOCC 2016-2017 graduate survey, 133 said they intend to transfer to a four-year institution. Of these 340, suppose we took a random sample of 8 students.

Let X = the number of students who intend to transfer to a 4-year school out of our sample of 8 students.

Let $P(X = x)$ = the probability that x students intend to transfer to a 4-year school of our sample of 8 students.

What is the probability that 2 students OR LESS out of our sample of 8 students intend to transfer to a 4-year school?

○ A. $P(X \leq 2) = 0.3441$.

○ B. $P(X \leq 2) = 0.3141$.

○ C. $P(X \leq 2) = 0.3741$.

○ D. $P(X \leq 2) = 0.3841$.

○ E. $P(X \leq 2) = 0.3241$.

○ F. $P(X \leq 2) = 0.3341$.

○ G. $P(X \leq 2) = 0.3041$.

○ H. $P(X \leq 2) = 0.3541$.

5. A lightbulb manufacturer knows that about 3 out of every 100 lightbulbs they manufacture are defective. Suppose you are a quality control inspector and you choose a random sample of 9 bulbs.

Let X = the number bulbs that are defective out of a total of 9 bulbs.

Let $P(X = x)$ = the probability that x bulbs out of 9 bulbs are defective.

What is the probability that 2 bulbs OR LESS out of 9 will be defective?

○ A. $P(X \leq 2) = 0.948$.

○ B. $P(X \leq 2) = 0.998$.

○ C. $P(X \leq 2) = 1.048$.

○ D. $P(X \leq 2) = 0.988$.

○ E. $P(X \leq 2) = 1.028$.

○ F. $P(X \leq 2) = 1.038$.

○ G. $P(X \leq 2) = 1.008$.

○ H. $P(X \leq 2) = 0.958$.

6. The literacy rate for a nation measures the proportion of people age 15 and over that can read and write. The literacy rate in Afghanistan is 28.1% Suppose you choose 7 people in Afghanistan at random.

Let X = the number people who are literate out of a total of 7 people.

Let $P(X = x)$ = the probability that x people are literate out of 7 people.

What is the probability of observing MORE THAN 4 literate people out of 7 people?

○ A. $P(X > 4) = 0.0716$.

○ B. $P(X > 4) = -0.0284$.

○ C. $P(X > 4) = -0.0184$.

○ D. $P(X > 4) = 0.0416$.

○ E. $P(X > 4) = 0.0616$.

○ F. $P(X > 4) = 0.0516$.

○ G. $P(X > 4) = -0.0084$.

○ H. $P(X > 4) = 0.0216$.

7. A lightbulb manufacturer knows that about 3 out of every 100 lightbulbs they manufacture are defective. Suppose you are a quality control inspector and you choose a random sample of 6 bulbs.

Let X = the number bulbs that are defective out of a total of 6 bulbs.

Let $P(X = x)$ = the probability that x bulbs out of 6 bulbs are defective.

What is the probability that MORE THAN 1 bulbs out of 6 will be defective?

○ A. $P(X > 1) = 0.0225$.

○ B. $P(X > 1) = -0.0175$.

○ C. $P(X > 1) = -0.0375$.

○ D. $P(X > 1) = 0.0025$.

○ E. $P(X > 1) = -0.0275$.

○ F. $P(X > 1) = 0.0125$.

○ G. $P(X > 1) = -0.0075$.

○ H. $P(X > 1) = 0.0325$.

8. A lightbulb manufacturer knows that about 3 out of every 100 lightbulbs they manufacture are defective. Suppose you are a quality control inspector and you choose a random sample of 5 bulbs.

Let X = the number bulbs that are defective out of a total of 5 bulbs.

Let $P(X = x)$ = the probability that x bulbs out of 5 bulbs are defective.

What is the mean μ of the probability distribution of X?

○ A. $\mu = 0.165$.

○ B. $\mu = 0.145$.

○ C. $\mu = 0.155$.

○ D. $\mu = 0.15$.

○ E. $\mu = 0.13$.

○ F. $\mu = 0.16$.

○ G. $\mu = 0.17$.

○ H. $\mu = 0.125$.

1 G

2 C

3 H

4 F

5 B

6 H

7 F

8 D