

1. In terms of transformations, which description describes how the graph of $g(x) = (x + 2)^2$ was produced from the graph of $f(x) = x^2$?
- [1] Function f was translated (shifted) horizontally two units to the left.
 - [2] Function f was translated (shifted) horizontally two units to the right.
 - [3] Function f was translated (shifted) vertically two units up.
 - [4] Function f was translated (shifted) vertically two units down.

2. A survey completed at a large university asked 2,000 students to estimate the average number of hours they spend studying each week. Every tenth student entering the library was surveyed. The data showed that the mean number of hours that students spend studying was 15.7 per week. Which characteristic of the survey could create a bias in the results?
- [1] the size of the sample
 - [2] the size of the population
 - [3] the method of analyzing the data
 - [4] the method of choosing the students who were surveyed

3. The heights of the members of the boy's basketball team are normally distributed. The mean height is 76 inches, and the standard deviation is 2 inches. Randall is 78 inches tall. What percent of the boys on the basketball team are taller than Randall?

4. A combination lock will open when the right choice of three numbers, 1-50 inclusive, is selected. How many different lock combinations are possible?

5. In a recent poll, 88% of Americans said that they shopped online for at least one holiday gift. If a random sample of 10 Americans is selected, what is the probability that 8 of those people shopped online for a gift?

6. A starting line for a hockey team should consist of 3 offensive players, 2 defensive players, and 1 goaltender. A coach has 11 offensive players, 6 defensive players, and 2 goaltenders from which to choose the starting line. How many unique starting lines can the coach create?

- A 132
- B 792
- C 4,950
- D 59,400

7. How many more ways can 10 juniors running for the positions of president, vice president, secretary, and treasurer be selected when compared to 12 sophomores running for 5 identical positions of class representative?
- A 94,830
B 11,628
C 4,320
D 4,248

8. It costs a bakery \$3.50 to make apple pies that sell for \$12 the first day they are baked.
- If a pie is not sold on the first day, the new price is \$8.50.
 - The probability of selling the apple pie the first day is 75%.
 - There is a 12% probability of selling it on the second day.
 - If the apple pie does not sell by the end of the second day, it is donated.

What is the **approximate** expected profit per pie for the bakery on the sale of its apple pies?

- A \$5.67
B \$6.52
C \$9.57
D \$10.02
9. Abby took an 8-question multiple-choice quiz. Suppose that her probability of correctly answering any question is 0.75. What is Abby's probability of incorrectly answering exactly two questions on the quiz?
- A $P = 0.089$
B $P = 0.240$
C $P = 0.311$
D $P = 0.623$

Which function results by shifting the graph of $y = \ln(x + 3) - 6$ to the left 4 units and down 3 units?

10. A $y = \ln(x + 7) - 9$
B $y = \ln(x - 1) - 9$
C $y = \ln(x + 7) - 3$
D $y = \ln(x - 1) - 3$