Candle Center - Infinite Algebra 2

Name_____

Probability with Combinatorics

Date_____ Period_____

Find the probability of each event.

1) Beth and Shayna each purchase one raffle ticket. If a total of eleven raffle tickets are sold and two winners will be selected, what is the probability that both Beth and Shayna win?

2) A meeting takes place between a diplomat and fourteen government officials. However, four of the officials are actually spies. If the diplomat gives secret information to ten of the attendees at random, what is the probability that no secret information was given to the spies?

3) A fair coin is flipped ten times. What is the probability of the coin landing heads up exactly six times?

4) A six-sided die is rolled six times. What is the probability that the die will show an even number exactly two times?

5) A test consists of nine true/false questions. A student who forgot to study guesses randomly on every question. What is the probability that the student answers at least two questions correctly?

6) A basketball player has a 50% chance of making each free throw. What is the probability that the player makes at least eleven out of twelve free throws?

7) A technician is launching fireworks near the end of a show. Of the remaining fourteen fireworks, nine are blue and five are red. If she launches six of them in a random order, what is the probability that exactly four of them are blue ones?

8) A jar contains ten black buttons and six brown buttons. If nine buttons are picked at random, what is the probability that exactly five of them are black?

9) You are dealt five cards from a standard and shuffled deck of playing cards. Note that a standard deck has 52 cards and four of those are kings. What is the probability that you'll have at most three kings in your hand?

10) A bag contains six real diamonds and five fake diamonds. If six diamonds are picked from the bag at random, what is the probability that at most four of them are real?

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Find the probability of each event.

1) Beth and Shayna each purchase one raffle ticket. If a total of eleven raffle tickets are sold and two winners will be selected, what is the probability that both Beth and Shayna win?

$$\frac{1}{55} \approx 1.818\%$$

2) A meeting takes place between a diplomat and fourteen government officials. However, four of the officials are actually spies. If the diplomat gives secret information to ten of the attendees at random, what is the probability that no secret information was given to the spies?

$$\frac{1}{1001} \approx 0.1\%$$

3) A fair coin is flipped ten times. What is the probability of the coin landing heads up exactly six times?

$$\frac{105}{512} \approx 20.508\%$$

4) A six-sided die is rolled six times. What is the probability that the die will show an even number exactly two times?

$$\frac{15}{64} \approx 23.438\%$$

5) A test consists of nine true/false questions. A student who forgot to study guesses randomly on every question. What is the probability that the student answers at least two questions correctly?

$$\frac{251}{256} \approx 98.047\%$$

6) A basketball player has a 50% chance of making each free throw. What is the probability that the player makes at least eleven out of twelve free throws?

$$\frac{13}{4096} \approx 0.317\%$$

7) A technician is launching fireworks near the end of a show. Of the remaining fourteen fireworks, nine are blue and five are red. If she launches six of them in a random order, what is the probability that exactly four of them are blue ones?

$$\frac{60}{143} \approx 41.958\%$$

8) A jar contains ten black buttons and six brown buttons. If nine buttons are picked at random, what is the probability that exactly five of them are black?

$$\frac{189}{572} \approx 33.042\%$$

9) You are dealt five cards from a standard and shuffled deck of playing cards. Note that a standard deck has 52 cards and four of those are kings. What is the probability that you'll have at most three kings in your hand?

$$\frac{54144}{54145} \approx 99.998\%$$

10) A bag contains six real diamonds and five fake diamonds. If six diamonds are picked from the bag at random, what is the probability that at most four of them are real?

$$\frac{431}{462} \approx 93.29\%$$