Name_____

Probability with Combinatorics

Date_____ Period_____

Find the probability of each event.

1) Cody is carrying seven pages of math homework and three pages of English homework. A gust of wind blows the pages out of his hands and he is only able to recover seven random pages. What is the probability that he recovers all of his math homework?

2) There are eight songs on your playlist. With random shuffle and no repetition, you listen to two songs. What is the probability that you listened to your favorite song first and your least favorite song second?

3) A test consists of ten true/false questions. A student who forgot to study guesses randomly on every question. What is the probability that the student answers exactly five questions correctly?

4) One day, eight babies are born at a hospital. Assuming each baby has an equal chance of being a boy or girl, what is the probability that exactly six of the eight babies are girls?

5) A fair coin is flipped seven times. What is the probability of the coin landing tails up at most five times?

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

7) A small pond contains five catfish and six bluegill. If seven fish are caught at random, what is the probability that exactly three catfish have been caught?

8) A class has six girls and five boys. If the teacher randomly picks six students, what is the probability that she will pick exactly three boys?

9) A jar contains seven black buttons and five brown buttons. If eight buttons are picked at random, what is the probability that at most five of them are black?

10) A gardener has fourteen identical-looking tulip bulbs, of which six will produce yellow tulips and eight will become pink. She randomly selects and plants eight of them and then gives the rest away. When the flowers start to bloom, what is the probability that at most four of them are yellow?

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Probability with Combinatorics

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Find the probability of each event.

1) Cody is carrying seven pages of math homework and three pages of English homework. A gust of wind blows the pages out of his hands and he is only able to recover seven random pages. What is the probability that he recovers all of his math homework?

$$\frac{1}{120} \approx 0.833\%$$

2) There are eight songs on your playlist. With random shuffle and no repetition, you listen to two songs. What is the probability that you listened to your favorite song first and your least favorite song second?

$$\frac{1}{56} \approx 1.786\%$$

3) A test consists of ten true/false questions. A student who forgot to study guesses randomly on every question. What is the probability that the student answers exactly five questions correctly?

$$\frac{63}{256} \approx 24.609\%$$

4) One day, eight babies are born at a hospital. Assuming each baby has an equal chance of being a boy or girl, what is the probability that exactly six of the eight babies are girls?

$$\frac{7}{64} \approx 10.938\%$$

5) A fair coin is flipped seven times. What is the probability of the coin landing tails up at most five times?

$$\frac{15}{16} = 93.75\%$$

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

$$\frac{509}{512} \approx 99.414\%$$

7) A small pond contains five catfish and six bluegill. If seven fish are caught at random, what is the probability that exactly three catfish have been caught?

$$\frac{5}{11} \approx 45.455\%$$

8) A class has six girls and five boys. If the teacher randomly picks six students, what is the probability that she will pick exactly three boys?

$$\frac{100}{231} \approx 43.29\%$$

9) A jar contains seven black buttons and five brown buttons. If eight buttons are picked at random, what is the probability that at most five of them are black?

$$\frac{28}{33} \approx 84.848\%$$

10) A gardener has fourteen identical-looking tulip bulbs, of which six will produce yellow tulips and eight will become pink. She randomly selects and plants eight of them and then gives the rest away. When the flowers start to bloom, what is the probability that at most four of them are yellow?

$$\frac{29}{33} \approx 87.879\%$$