IM3 Name_____

Extra probability problems

Find the probability of each event.

1) A class has five boys and five girls. If the teacher randomly picks seven students, what is the probability that she will pick at least four girls?

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

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

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

5) A fair coin is flipped nine times. What is the probability of the coin landing heads up exactly 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 eight out of ten free throws?

7) A car dealership has six cars in the lot. Unfortunately, the keys to the cars have been mixed up. The manager randomly grabs a key and tries to start a car. A salesman also randomly picks a different key and tries to start another car. What is the probability that both cars start?

8) 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 four of the eight babies are girls?

9) A basketball player has a 50% chance of making each free throw. What is the probability that the player makes exactly eight out of ten free throws?

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

11) A six-sided die is rolled fifteen times. What is the probability that the die will show an even number at most thirteen times?

12) A fair coin is flipped eleven times. What is the probability of the coin landing heads up exactly four times?

13) You've purchased a lottery ticket and your numbers are: 2-4-3. A lottery official randomly selects three balls from a set of eight balls that are numbered from #1 to #8. To win, your numbers must match the selected numbers in order. What is the probability of winning the lottery?

14) A fair coin is flipped seven times. What is the probability of the coin landing heads up at least six times?

15) A shipment of eleven smartphones contains seven with cracked screens. If sold in a random order, what is the probability that at most five of the first seven sold have cracked screens?

16) A basketball player has a 50% chance of making each free throw. What is the probability that the player makes exactly two out of six free throws?

17) A nature preserve has a population of fourteen black bears. They have been tagged #1 through #14, so they can be observed over time. Two of them are randomly selected and captured for evaluation. One is tested for worms and one is tested for ticks. What is the probability that bear #3 is tested for worms and bear #5 is tested for ticks?

18) A nature preserve has a population of seven black bears. They have been tagged #1 through #7, so they can be observed over time. Two of them are randomly selected and captured for evaluation. One is tested for worms and one is tested for ticks. What is the probability that bear #3 is tested for worms and bear #5 is tested for ticks?

19) A jar contains eight black buttons and six brown buttons. If eight buttons are picked at random, what is the probability that exactly four of them are black?

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

Answers to Extra probability problems

1) $\frac{1}{2} = 50\%$

2) $\frac{5}{256} \approx 1.953\%$

3) $\frac{21}{128} \approx 16.406\%$

4) $\frac{175}{429} \approx 40.793\%$

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

6) $\frac{1013}{1024} \approx 98.926\%$

7) $\frac{1}{30} \approx 3.333\%$

8) $\frac{35}{128} \approx 27.344\%$

9) $\frac{45}{1024} \approx 4.395\%$

10) $\frac{231}{1024} \approx 22.559\%$

11) $\frac{2047}{2048} \approx 99.951\%$

12) $\frac{165}{1024} \approx 16.113\%$

13) $\frac{1}{336} \approx 0.298\%$

14) $\frac{1}{16} = 6.25\%$

15) $\frac{301}{330} \approx 91.212\%$

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

17) $\frac{1}{182} \approx 0.549\%$

18) $\frac{1}{42} \approx 2.381\%$

19) $\frac{50}{143} \approx 34.965\%$

20) $\frac{140}{429} \approx 32.634\%$