

Study the following.

event (ee-vent) - something that may or may not happen. (One of the possible events of tossing a coin is it will land head's up.)

probability (prob-uh-bil-uh-tee) - how likely it is that an event will occur. Probabilities are shown as numbers between 0 and 1. (I figured out the probability that I would select a red pencil from the bag.)

certain (sur-tuhn) - if you are positive an event will happen, you are certain, and the probability is 1. (If I reach into a box of white golf balls and pick one out, it is certain I will get a white golf ball. The probability of selecting a white golf ball is 1.)

impossible (im-poss-uh-buhl) – if it is impossible for the event to happen, then it will not happen, and the probability is 0. (If I reach into a bag of red and blue marbles, it is impossible to pick an orange one. The probability of selecting an orange marble is 0.)

equally likely (ee-kwuhl-ee like-lee) – if you have an equal chance of one or the other thing happening, the probability of each thing happening is $\frac{1}{2}$. (If you toss a coin it is equally likely you will get a head or a tail. The probability of getting a head is $\frac{1}{2}$ and the probability of getting a tail is $\frac{1}{2}$.)

Say each word out loud and write it in the blank.

event _____
probability _____
certain _____
impossible _____
equally likely _____

Write each definition in your own words.

event

probability

certain

impossible

equally likely

Write two sentences using each word.

event

1.

2.

probability

1.

2.

certain

1.

2.

impossible

1.

2.

equally likely

1.

2.

Matching.

event

an event will not happen

probability

an event will definitely happen

certain

how likely it is that an event will happen

impossible

an equal chance of two events happening

equally likely

something that may or may not happen

Fill in the blanks.

1. The probability of selecting a pencil from a box of pencils is _____.
2. The probability of selecting a pen from a box of pencils is _____.
3. If it is impossible for something to happen the probability is _____.
4. If it is certain something will happen the probability is _____.
5. If it equally likely you will pick a red pen or a black pen, the the probability of picking a red pen is _____ and the probability of picking a black pen is _____.

Study the following.

outcome (**out**-kuhm) - the result of doing something like tossing a coin, or picking a marble from a bag of marbles. (The outcome of picking from the bag, was a blue marble.)

successes (suhk-**sess**-iz) - number of possible successful outcomes. (If I wanted to pick a blue marble, and the bag held three blue marbles, there were 3 possible successful outcomes or three successes.)

failures (**fayl**-yurz)– number of possible outcomes that were not successes. (If I wanted to pick a blue marble and there were 10 black marbles and 10 green marbles along with the blue marbles, there are 20 possible failures.)

total outcomes (**toh**-tuhl **out**-kuhmz) – number of all possible outcomes. (If the bag of marbles I was picking from held 23 marbles, 23 would be the total outcomes.)

Say each word out loud and write it in the blank.

outcome _____
successes _____
failures _____
total _____

Write each definition in your own words.

outcome

successes

failures

total outcomes

Write two sentences using each word.

outcome

1.

2.

successes

1.

2.

failures

1.

2.

total outcomes

1.

2.

Matching.

outcome

number of possible successful outcomes

successes

number of all possible outcomes

failures

the result of doing something like tossing a coin, or picking a marble from a bag of marbles

total outcomes

number of possible outcomes that were not successes

Fill in the blanks.

You have a bag that contains 5 chocolates and 4 caramels.

1. One outcome would be to pick a _____.
2. The other outcome would be to pick a _____.
3. If you want to pick a chocolate, there are _____ successes and _____ failures.
4. There are a total of _____ total outcomes.
5. If you want to pick a caramel, there are _____ successes and _____ failures.

Study the following.

Probability is often written as a fraction, and is calculated as follows.

$$\text{Probability} = \frac{\text{successes}}{\text{total outcomes}}$$

example 1: What is the probability of selecting a chocolate from a bag of 5 chocolates and 4 caramels?

$$\text{Probability} = \frac{\text{successes}}{\text{total outcomes}} = \frac{5}{9}$$

What is the probability of selecting a caramel from the bag?

$$\text{Probability} = \frac{\text{successes}}{\text{total outcomes}} = \frac{4}{9}$$

example 2: What is the probability of selecting a red jelly bean from a bag of 6 red jelly beans, 3 green jelly beans, and 2 yellow jelly beans?

$$\text{Probability} = \frac{\text{successes}}{\text{total outcomes}} = \frac{6}{11}$$

Show the following probabilities.

There is a bag of marbles. 3 are white, 7 are green, 6 are purple.

1. What is the probability of selecting a white marble? _____
2. What is the probability of selecting a green marble? _____
3. What is the probability of selecting a purple marble? _____

There is a box of beads. 10 are brown, 8 are gold, and 4 are silver.

4. What is the probability of selecting a brown bead? _____
5. What is the probability of selecting a gold bead? _____
6. What is the probability of selecting a silver bead? _____
7. What is the probability of selecting a pink bead? _____
8. What is the probability of selecting a blue bead? _____

Study the following.

heads (**hedz**) – on a coin, it is the side that shows a person’s head. (I flipped the coin and it landed heads up.)

tails (**taylz**) – on a coin, it is the side that is not heads. (I flipped the coin again and it landed tails up.)

die (**dye**) – a small six sided cube with dots on it, used for playing games. The number of dots go from 1 to 6. (I rolled the die and it landed with 4 dots showing on top.)

dice (**disse**) – more than one die. (That board game came with 4 dice.)

Say each word out loud and write it in the blank.

heads _____

tails _____

die _____

dice _____

Write each definition in your own words.

heads

tails

die

dice

Write two sentences using each word.

heads

1.

2.

tails

1.

2.

die

1.

2.

dice

1.

2.

Matching.

heads

one game cube with dots

tails

more than one game cube with dots

die

the side of a coin showing a person's head

dice

the side of a coin not showing a head

Answer the following questions.

1. What is the probability of heads landing up when you toss a coin? _____

2. What is the probability of tails landing up when you toss a coin? _____

Study the following.

The total outcomes when you roll a die are 6. The possible outcomes are 1, 2, 3, 4, 5, or 6.

Example:

What is the probability of rolling a 4?

There is only 1 four, so successes equals 1.

There are 6 possible sides, so total outcomes equals 6.

$$\text{Probability} = \frac{\text{successes}}{\text{total outcomes}} = \frac{1}{6}$$

Answer the following questions.

1. What is the probability of rolling a die and getting a 2? _____
2. What is the probability of rolling a die and getting a 1? _____
3. What is the probability of rolling a die and getting a 6? _____
4. What is the probability of rolling a die and getting a 7? _____
5. What is the probability of rolling a die and getting a 3? _____
6. What is the probability of rolling a die and getting a 5? _____
7. What is the probability of rolling a die and getting a 8? _____
8. What is the probability of rolling a die and getting a 2 or a 3? _____
Note: successes are 2
9. What is the probability of rolling a die and getting a 4 or a 6?

10. What is the probability of rolling a die and getting a 1 or a 2?

11. What is the probability of rolling a die and getting a 1, 2 or 3?

12. What is the probability of rolling a die and getting a 4, 5, or 6?

13. What is the probability of rolling a die and getting a 2, 3, 4, 5 or 6?

14. What is the probability of rolling a die and getting a 1, 2, 3, 4, 5, or 6?

Study the following.

Find or buy a deck of regular playing cards.

Look through it carefully.

You will notice the following.

- There are 52 cards.
- There are 26 red and 26 black cards.
- There are 13 hearts, 13 diamonds, 13 spades, and 13 clubs. These are called suits.
- Within each suit there are cards ranging from 2 to 10, and a jack, a queen, a king, and an ace. Therefore there are four 2's, four 3's, four 4's, four queens, etc.

Note: the jacks, queens, and kings are called face cards.

examples: What is the probability of selecting a red card?

$$\text{Probability} = \frac{\text{successes}}{\text{total outcomes}} = \frac{26}{52} = \frac{1}{2}$$

What is the probability of selecting a 6?

$$\text{Probability} = \frac{\text{successes}}{\text{total outcomes}} = \frac{4}{52} = \frac{1}{13}$$

What is the probability of selecting an 8 of hearts?

$$\text{Probability} = \frac{\text{successes}}{\text{total outcomes}} = \frac{1}{52}$$

What is the probability of selecting a face card?

$$\text{Probability} = \frac{\text{successes}}{\text{total outcomes}} = \frac{12}{52} = \frac{3}{13}$$

Answer the following questions.

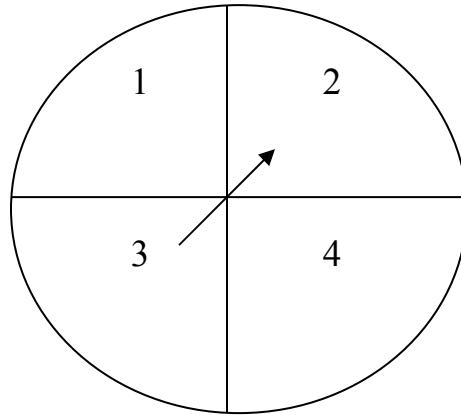
You pick one card from a deck of cards.

1. What is the probability of picking a club? _____
2. What is the probability of picking a diamond? _____
3. What is the probability of picking a black card? _____
4. What is the probability of picking a jack? _____
5. What is the probability of picking a 3? _____
6. What is the probability of picking a 10? _____
7. What is the probability of picking a 25? _____
8. What is the probability of picking a heart? _____
9. What is the probability of picking a heart or diamond? _____
10. What is the probability of picking a 6 or 7 or 8? _____
11. What is the probability of picking a red or black? _____
12. What is the probability of picking a 4, 6, or jack? _____
13. What is the probability of picking a a 7 of hearts? _____
14. What is the probability of picking a a king of clubs? _____
15. What is the probability of picking a king or queen of hearts? _____
16. What is the probability of picking a face card? _____
17. What is the probability of picking a 32 of clubs? _____

Study the following.

Spinners are sometimes used to show probabilities.

Example:



What is the probability of the pointer landing on the 2?

$$\text{Probability} = \frac{\text{successes}}{\text{total outcomes}} = \frac{1}{4}$$

Answer the following questions.

1. What is the probability of the pointer landing on the 1? _____
2. What is the probability of the pointer landing on a 4? _____
3. What is the probability of the pointer landing on a 6? _____
4. What is the probability of the pointer landing on the 3 or 4? _____
5. What is the probability of the pointer landing on a 1, 2, 3, or 4? _____
6. What is the probability of the pointer landing on the 1, 2, or 3? _____