

Name: _____

Date: _____



PROBABILITY TERMINOLOGY N-GEN MATH[®] 7



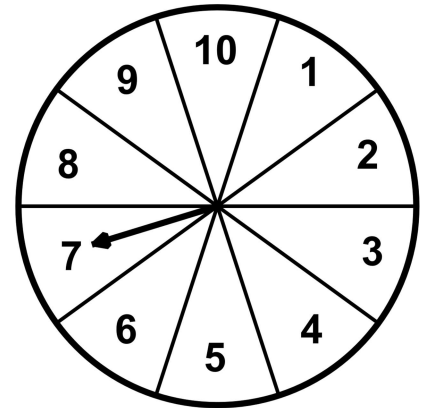
Probability is a branch of math where we **quantify** the **chance** that something will happen. An entire field of terminology has been created to help us think about these problems. Let's first review how probability is measured before we start learning the terminology.

Exercise #1: A board game contains a spinner that is divided into 10 **equally sized sections** as shown below. If the needle is spun just once find the following probabilities as fractions.

(a) It lands on a number less than 5.

(b) It lands on a multiple of 3.

(c) It lands on a number greater than 10.



This simple example illustrates many of the pieces of terminology that arise in probability. Let's introduce this terminology in the next exercise.

Exercise #2: Consider the spinner above and the probability the needle lands on a **prime number**.

(a) Each number the needle could land on represents an **equally likely outcome**. Why?

(b) All of the **equally likely outcomes** that can occur is called the **sample space**. List the sample space below.

(c) Something like the needle falling on a prime number is called an **event**. List all the outcomes in the **sample space** that fall into the **event** of landing on a prime.

(d) What is the probability the needle lands on a prime number? Express as a fraction, a decimal, and a percent.



PROBABILITY DEFINITION

Let E be an **event** (something that happens). Let S be a sample **space** of **equally likely outcomes**. The probability of E happening in S is given by: $P(E) = \frac{\text{outcomes from S in E}}{\text{total outcomes in S}}$.

Exercise #3: A local pet shelter has cats and dogs in it, some of which have gotten vaccinated and some have not. The table below shows the numbers of each. A single animal is picked from the shelter **at random** (meaning all pets are **equally likely** to be chosen).

Find each of the following probabilities. Express as a **fraction**, a **decimal**, and a **percent**.

	Vaccinated	Not Vaccinated	Total
Cats	18	6	24
Dogs	12	4	16
Total	30	10	40

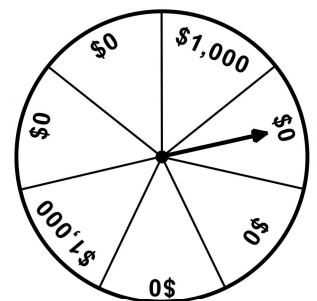
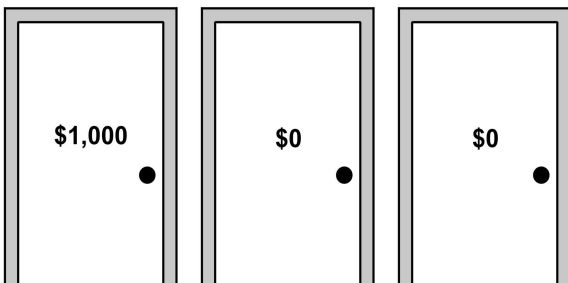
(a) the probability the animal is vaccinated

(b) the probability the animal is a cat

(c) the probability the animal is a cat that has not been vaccinated

Probability is used to make decisions based on **how likely** something is to happen. When we see that the **chance** of rain is 20%, that lets us make decisions about whether we want to be outside.

Exercise #4: The final round on a game show allows a contestant to choose two options. Pick one of three doors, one of which has \$1,000 behind it or spin a needle to see if it will land on one of two \$1,000 sections. Which should the contestant choose and why?



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PROBABILITY TERMINOLOGY N-GEN MATH[®] 7 HOMEWORK

FLUENCY

- Things that have an equal chance of happening are known as
 - somewhat likely events
 - equal chance happenings
 - equally likely outcomes
 - random events_____
- The collection of all equally likely outcomes is known as the
 - total area
 - sample space
 - full set
 - complete accounting_____
- If each of the following fractions represents a probability, which indicates the event that is most likely to happen?
 - $\frac{42}{51}$
 - $\frac{48}{65}$
 - $\frac{29}{37}$
 - $\frac{47}{74}$_____

USING YOUR MATH

- A standard die is rolled a single time and the number of dots on the upward facing side is noted.
 - List the **outcomes** in the **sample space** for throwing the die just once.
 - Given the **event** of rolling a number less than 5, list all the outcomes from (a) that fall into this **event**.
 - What is the probability of rolling a number less than 5?



5. If one letter was chosen at random from the word **Mississippi**, which of the following is closest to the probability that it would be the letter **s**?

- (1) 27%
- (2) 36%
- (3) 39%
- (4) 42%

6. Mandy goes to a local orchard where she picks 50 pieces of fruit consisting of apples and pears. Some of the apples and some of the pears have bruises on them. On her way home, Mandy **randomly** selects one piece of fruit to eat.

Find each of the following probabilities.
Express your answers as fractions, decimals, and percentages.

	Not Bruised	Bruised	Total
Apples	24	5	29
Pears	14	7	21
Total	38	12	50

- (a) the probability it is a pear
- (b) the probability it is bruised
- (c) the probability it is a bruised apple
- (d) the probability it is an unbruised pear
- (e) the probability it is a banana

7. In Ms. Martinez’s math class, 3 out of the 17 students are left-handed. In Mr. Burkheart’s math class, 4 out of 24 students have red hair.

If one student is chosen at random in both classes, which is more likely: the student from Ms. Martinez’s class is left-handed or the student from Mr. Burkheart’s class has red hair?

