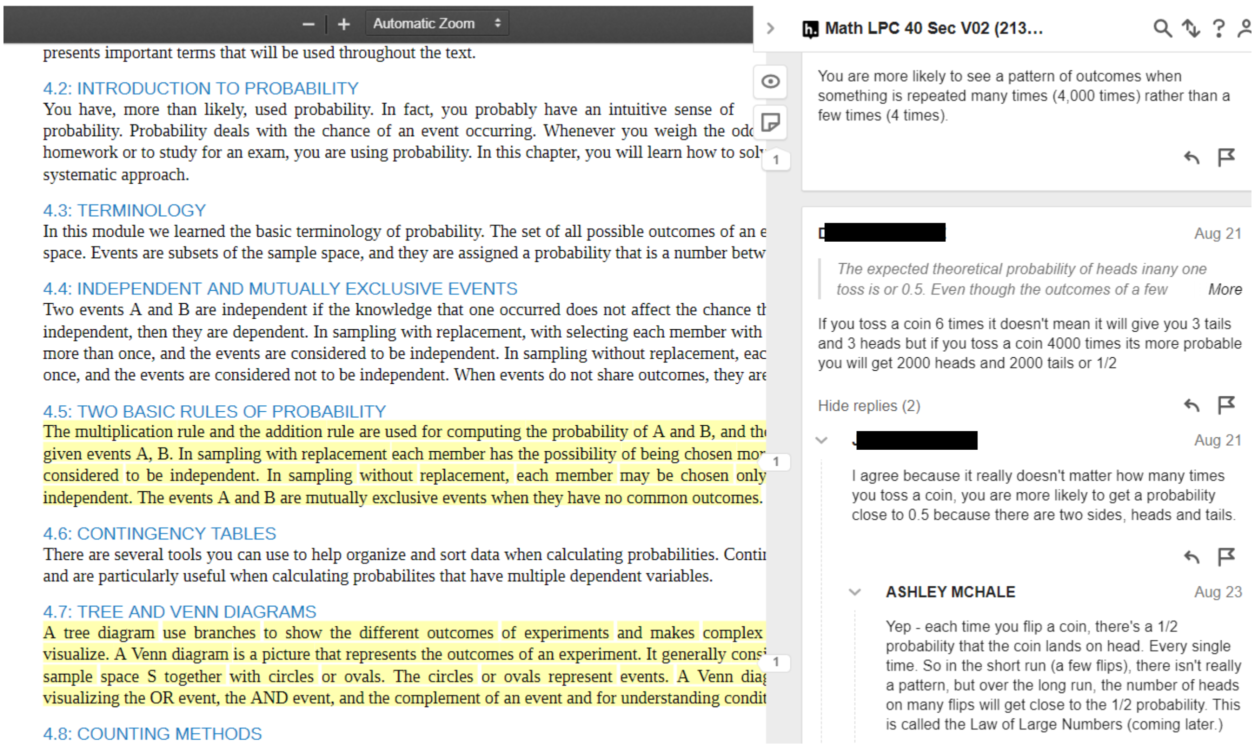
Here are some examples from my Statistics (Math 40) class. The students are interacting and asking questions, answering each other’s questions, and encouraging each other as they read!

Great quote found in the annotations from a student:

“Asynchronous learning is difficult! But annotating the textbook as a class and conversing via discussion posts are good ways to virtually do collaborative exercises and learning!”



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4.1: Definition of Probability

Probability

Probability is a mathematical tool used to study randomness. It deals with the chance (the likelil
For example, if you toss a fair coin four times, the outcomes may not be two heads and two tai
same coin 4,000 times, the outcomes will be close to half heads and half tails. The expected theor
any one toss is $\frac{1}{2}$ or 0.5. Even though the outcomes of a few repetitions are uncertain, there is a
when there are many repetitions. After reading about the English statistician Karl Pearson who tos
a result of 12,012 heads, one of the authors tossed a coin 2,000 times. The results were 996 heads.
0.498 which is very close to 0.5, the expected probability.

The theory of probability began with the study of games of chance such as poker. Predictions take
predict the likelihood of an earthquake, of rain, or whether you will get an A in this course, we u
probability to determine the chance of a vaccination causing the disease the vaccination is suppos
uses probability to determine the rate of return on a client's investments. You might use probabili
ticket or not. In your study of statistics, you will use the power of mathematics through probability
interpret your data.

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[redacted] Aug 23

Topredict the likelihood of an earthquake, of rain, or whether you will get an A in this course, we use More

Probability is used in almost every day common,scenarios.

Hide replies (1)

[redacted] Aug 31

Its used in scenarios we do not even think about, I didn't realize how often i would actually use probability and statistics

[redacted] Aug 24

Probability

A number between zero and one, inclusive, that gives the likelihood that a specific event will occur.

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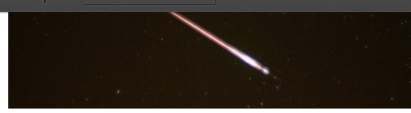

Figure 3.1.1. Meteor showers are rare, but the probability of them occurring can be calculated. (cr

CHAPTER OBJECTIVES

By the end of this chapter, the student should be able to:

- Understand and use the terminology of probability.
- Determine whether two events are mutually exclusive and whether two events are independent.
- Calculate probabilities using the Addition Rules and Multiplication Rules.
- Construct and interpret Contingency Tables.
- Construct and interpret Venn Diagrams.
- Construct and interpret Tree Diagrams.

It is often necessary to "guess" about the outcome of an event in order to make a decision. Politici
likelihood of winning an election. Teachers choose a particular course of study based on wł
comprehend. Doctors choose the treatments needed for various diseases based on their assessmer
have visited a casino where people play games chosen because of the belief that the likelihood o
have chosen your course of study based on the probable availability of jobs.

You have, more than likely, used probability. In fact, you probably have an intuitive sense of proba
the chance of an event occurring. Whenever you weigh the odds of whether or not to do your h
exam, you are using probability. In this chapter, you will learn how to solve probability problems u

COLLABORATIVE EXERCISE

Your instructor will survey your class. Count the number of students in the class today.

- Raise your hand if you have any change in your pocket or purse. Record the number of raised h

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[redacted] Aug 18

Politicians study polls to guess theirlikelihood of winning an election.

Seeing real life examples helps me to deeper understand the material we are learning since I can relate it to something I already know/understand.

Hide replies (6)

[redacted] Aug 20

yes, I am the same way. Real life events makes easier to understand.

[redacted] Aug 22

I agree! After reading about all the different ways people use the theory of probability I knew that being able to relate to something I already understand in real life will make it somewhat easier to learn and understand the material.

[redacted] Aug 23

I can also agree on this real life scenarios make problems easier to understand

– + Automatic Zoom

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4.3: Terminology

Probability is a measure that is associated with how certain we are of outcomes of a particular **experiment** is a planned operation carried out under controlled conditions. If the result is n experiment is said to be a **chance** experiment. Flipping one fair coin twice is an example of an exp

A result of an experiment is called an **outcome**. The **sample space** of an experiment is the set of a ways to represent a sample space are: to list the possible outcomes, to create a tree diagram, or to uppercase letter S is used to denote the sample space. For example, if you flip one fair coin, $S =$ and T = tails are the outcomes.

An **event** is any combination of outcomes. Upper case letters like A and B represent events. For e to flip one fair coin, event A might be getting at most one head. The probability of an event A is w

Definition: probability

The *probability* of any outcome is the long-term relative frequency of that outcome. Probabili one, inclusive (that is, zero and one and all numbers between these values).

- $P(A) = 0$ means the event A can never happen.
- $P(A) = 1$ means the event A always happens.

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. If the result is not predetermined, then theexperiment is said to be a chance experiment. Flipping one fair coin twice is an example of an experiment.

If it is unpredictable in the short run but has a predictable pattern in the long run it is a chance behavior (helps to remember)

Hide replies (2)

[redacted] Aug 18

This helped a lot, thank you!

[redacted] Aug 31

Thank you this helped with my homework

11

[redacted] Aug 24

A result of an experiment is called an outcome

outcome is the answer

Hide replies (1)

[redacted] Aug 26

The outcome is the result not necessary the answer. Sometimes it's the answer.

– + Automatic Zoom

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COLLABORATIVE EXERCISE

Your instructor will survey your class. Count the number of students in the class today.

- Raise your hand if you have any change in your pocket or purse. Record the number of raised h
- Raise your hand if you rode a bus within the past month. Record the number of raised hands.
- Raise your hand if you answered "yes" to BOTH of the first two questions. Record the number

Use the class data as estimates of the following probabilities. $P(\text{change})$ means the probability th in your class has change in his/her pocket or purse. $P(\text{bus})$ means the probability that a randomly rode a bus within the last month and so on. Discuss your answers.

- Find $P(\text{change})$.
- Find $P(\text{bus})$.
- Find $P(\text{change AND bus})$. Find the probability that a randomly chosen student in your class or purse and rode a bus within the last month.
- Find $P(\text{change}|\text{bus})$. Find the probability that a randomly chosen student has change give

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COLLABORATIVE EXERCISE

Since we're online, we can't directly participate in this part of the textbook.

Hide replies (1)

[redacted] Sep 1

Asynchronous learning is difficult! But annotating the textbook as a class and conversing via discussion posts are good ways to virtually do collaborative exercises and learning!

[redacted] Aug 21

Use the class data as estimates of the following probabilities. means the probability that a randomly More

Does the use of the phrase "randomly chosen" imply that if the choice isn't random, the result will be unreliable? In other words; what if the choice isn't random, how does that affect the results?

Hide replies (1)

ASHLEY MCHALE Aug 23

Great question!!!

Not that it is unreliable, but that it could be "biased". We'll talk more about this when we get to Chapter 1.