



## Pop-Up!

A *sample space*  $S$  is a set of all possible outcomes of an experiment. An element of the sample space is called a *sample point*. A subset of the sample space is called an *event*.

### Example 1

Consider an experiment of tossing a fair coin.

- a. Define the sample space.

[Redacted]

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[Redacted]

[Redacted]

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## Pop-Up!

The sample space  $S$ , which is the set of all outcomes, is analogous to the *universal set*  $U$ , which is the set of all elements under consideration. An event is analogous to a subset of the universal set.

The sample space can be illustrated by drawing either a Venn diagram or a tree diagram. A *Venn diagram* uses closed geometric figures, such as rectangles, circles, or squares that show outcomes of an experiment. A *tree diagram* uses branches to represent all possible outcomes of an experiment.

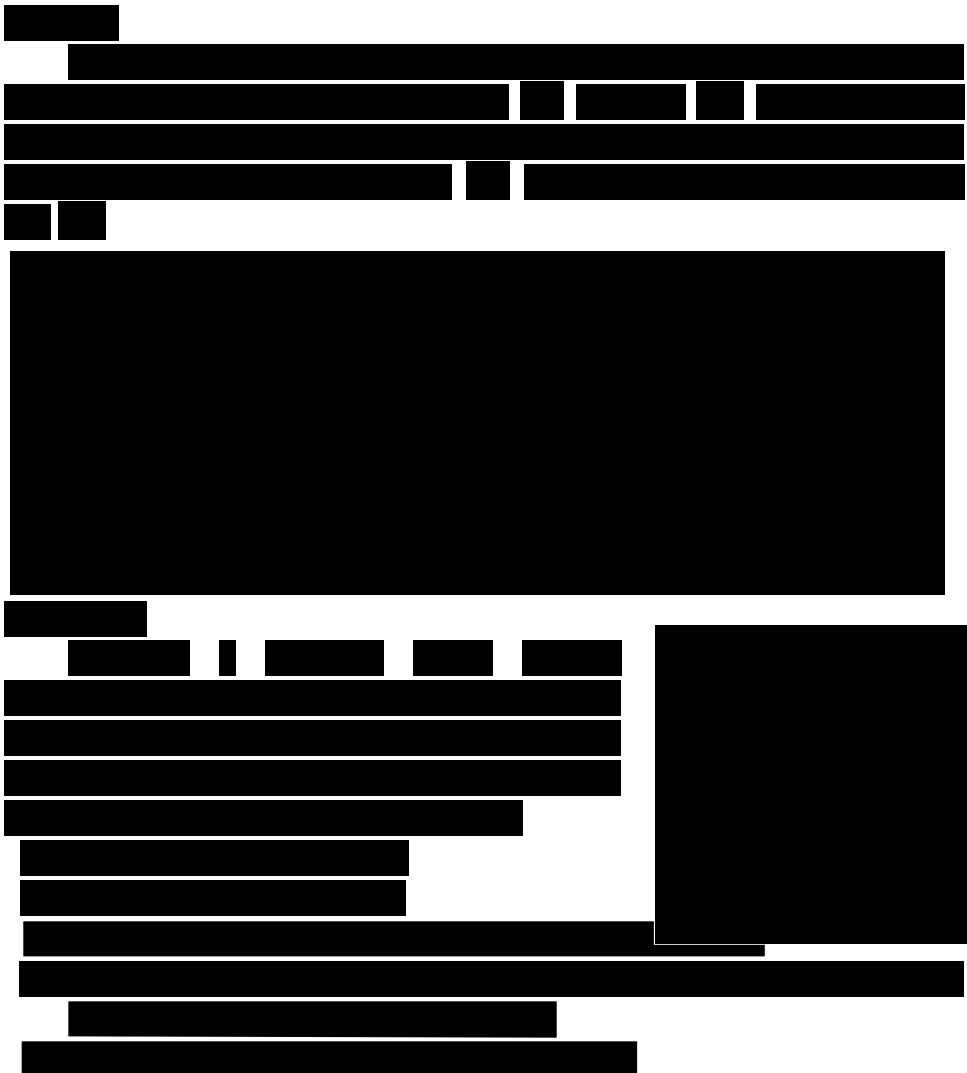


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A *tree diagram* is a systematic way of enumerating all sample points of the sample space in such a way that each outcome is represented by a branch.

### Example 2

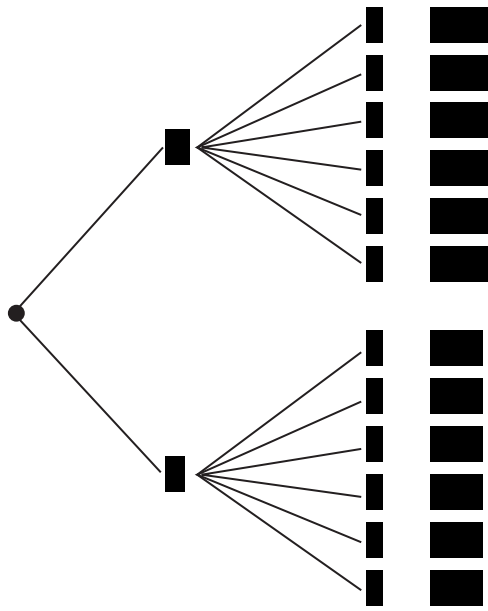
Draw a Venn diagram and a tree diagram for the experiment of tossing a coin once.



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[REDACTED]

[REDACTED]

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