

# Expectation

*This activity deals with the expected value of an experiment.*

This section deals only with experiments that have *numerical outcomes*.

**Example 1.** *The following experiments have numerical outcomes*

- *The number of minutes a randomly selected customer waits in line at the grocery store*
- *The number of olives in a randomly selected jar*
- *The lifetime in hours of randomly selected light bulb*

**Example 2.** *The following experiments do not have numerical outcomes*

- *The result (heads or tails) of flipping a coin*
- *The color of the shirt a randomly selected student is wearing*

**Remark 1.** *The outcomes of some experiments, while numerical, might fail to have significance as numbers. For example, you could use a die to randomly select one of six roommates to take the trash out. In this case the outcomes 1, 2, 3, 4, 5, 6 correspond with people, so the experiment is not considered to have numerical outcomes. In contrast, in Monopoly the outcome of rolling two dice determines the number of spaces a player advances. In this situation the roll is considered to have a numerical outcome.*

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Learning outcomes: Students will be able to calculate and understand the meaning of the expected value of an experiment.