Lesson 5.1 - March 4, 2021

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Review

- $P(E)$ represents the probability of the event E
- General rule for $P(E)$:

$$P(E) \in [0, 1]$$

- $P(E)$ measures how likely an event is to occur with 0 meaning it is impossible and 1 meaning it is absolutely guaranteed
- $P(E)$ also gives the structure of area to various events. Probabilities of sets combine and interact in the same ways that the areas of shapes do

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Rules of Probabilities

- **Special case**: if every outcome in the sample space is equally likely, then we can find probability by counting and taking the ratio. Mathematically:

$$\frac{\text{Number of Outcomes that Satisfy Condition}}{\text{Total Number of Outcomes}} = P(E)$$

- $$P(E) = \frac{\text{Size of } E}{\text{Size of } S}$$

- Visualization of probability as an area:

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- If you know $P(E)$, you also know $P(E^*)$ as $P(E^*) = 1 - P(E)$