10.3 Experimental and Theoretical Probability

EQ: How can you use relative frequencies to find probabilities?

Relative Frequencies: the fraction or percent of the time that an event occurs.

$$R.F. = \frac{\#\text{ of times the event occurs}}{\text{total \# of times you conduct the experiment}}$$

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$R.F = \frac{3}{5}$

Experimental Probability: probability based on repeated trials of an experiment.

$$P(\text{event}) = \frac{\#\text{ of times the event occurs}}{\#\text{ of trials}}$$

*experiment has happened *results

Theoretical Probability: ratio of favorable and possible outcomes, WHEN ALL POSSIBLE OUTCOMES ARE EQUALLY LIKELY!

*prediction

$$P(\text{event}) = \frac{\#\text{ of favorable outcomes}}{\#\text{ of possible outcomes}}$$

Example 1: Figure 1. What is the experimental probability of rolling an odd number.

$\frac{1}{10} + \frac{3}{8} + \frac{5}{11}$

= 29 odd roles

$P(\text{odd}) = \frac{29}{50}$

Example 2: It rains 2 out of 12 days in March. If this trend continues, how many rainy days would you expect in April?

experimental

$P(\text{rain}) = \frac{2}{12}$ or $\frac{1}{6} \cdot \frac{30}{1} = 5$ days