

MAT 135, Discussion Questions 3.02

1. If you roll a single six-sided die, what is the sample space?

$$\{1, 2, 3, 4, 5, 6\}$$

2. Suppose that you flip a coin three times (or flip three separate coins once). What is the sample space for this event?

$$\{HHH, HHT, HTH, THH, HTT, THT, TTH, TTT\}$$

3. What is/are the simple event(s) in the three-coin experiment where the outcome(s) has/have two heads? *exactly two heads*

$$\{HHT, HTH, THH\}$$

4. If every event in the sample space is equally likely, what is the probability of the event described above?

$$\frac{3}{8}$$

5. What is the difference between the three types of probability: 1) classical/theoretical probability, 2) subjective probability, 3) experimental probability?

1) classical calculated from equally likely outcomes and sample spaces

2) personal guess

3) based on experimental trials

6. What is the Law of Large Numbers?

As the number of trials/sample size increases
the experimental probability gets closer & closer to
the classical/theoretical probability

7. How can we use simulation to help us understand statistics? Read the article at <http://stattrek.com/experiments/simulation.aspx> and bring some examples of when it might be useful. [Hint: you've already done some in the dice project!]

Answers will vary