Unit 2d-Theoretical Probability

Content Area: **Math**
Course(s): **Math 7 Pre-Algebra Honors**
Time Period: **Marking Period 2**
Length: **WK 4-6 Go Math! Advanced 2 Module 8**
Status: **Published**

Essential Questions

- How do you find the theoretical probability of a simple or compound event?
- How do you make predictions using theoretical probability?
- How can you use technology simulations to estimate probabilities?

Big Ideas

- Theoretical probability is the probability that an event occurs when all of the outcomes of the event are equally likely.
- The sample space for a compound event can be displayed as a table, a tree diagram or an organized list.
- You can use theoretical probability to make qualitative predictions or compare how likely events are.

CSDT Technology Connection

8.1.8.DA.5 Test, analyze, and refine computational models

Enduring Understandings

Statistics and Probability

7.SP.6 Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability. For example, when rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times.

7.SP.7 Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.

7.SP.7a Develop a uniform probability model by assigning equal probability to all outcomes, and use the

model to determine probabilities of events. For example, if a student is selected at random from a class, find the probability that Jane will be selected and the probability that a girl will be selected.

7.SP.7b Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. For example, find the approximate probability that a spinning penny will land heads up or that a tossed paper cup will land open-end down. Do the outcomes for the spinning penny appear to be equally likely based on the observed frequencies?

7.SP.8 Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.

7.SP.8a Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.

7.SP.8b Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., “rolling double sixes”), identify the outcomes in the sample space which compose the event.

7.SP.8c Design and use a simulation to generate frequencies for compound events. For example, use random digits as a simulation tool to approximate the answer to the question: If 40% of donors have type A blood, what is the probability that it will take at least 4 donors to find one with type A blood?

Mathematical Practices Focus

2. Reason abstractly and quantitatively. Lesson 8.2,8.3,8.4
3. Construct viable arguments and critique the reasoning of others. Lesson 8.1,8.2,8.3,8.4
4. Model with mathematics. Lesson 8.1,8.2,8.4
5. Use appropriate tools strategically. Lesson 8.4
7. Look for and make use of structure. Lesson 8.1,8.4
8. Look for and express regularity in repeated reasoning. Lesson 8.1,8.3