Unit 3c-Probability

Content Area: **Math**
Course(s): **Math 7 PRE-ALGEBRA**
Time Period: **Marking Period 3**
Length: **Week 5-8 Envision Mathematics Topic 9**
Status: **Published**

Essential Questions

- How can you investigate chance processes and develop, use, and evaluate probability models?

Big Ideas

- Use random sampling to draw inferences about a population.
- Draw informal comparative inferences about two populations.
- Investigate chance processes and develop, use, and evaluate probability models.

CSDT Technology Integration

8.1.2.AP.1: Model daily processes by creating and following algorithms to complete tasks.

8.1.2.AP.2: Model the way programs store and manipulate data by using numbers or other symbols to represent information.

8.1.2.AP.3: Create programs with sequences and simple loops to accomplish tasks.

Activity: Students will develop an idea for a probability game. They will use the program Scratch to code and create a simple program. Once created, students will play each other's games.

Enduring Understandings

Statistics and Probability

7.SP.5 Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.

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

1. Make sense of problems and persevere in solving them. Lesson 1, 2, 5, 6, 7

2. Reason abstractly and quantitatively. Lesson 1, 2, 3, 4, 5

3. Construct viable arguments and critique the reasoning of others. Lesson 1, 2, 3, 4, 7

4. Model with mathematics. Lesson 1,2,4,6,7, page 395

5. Use appropriate tools strategically. Lesson 7

6. Attend to precision. Lesson 4

7. Look for and make use of structure. Lesson 2, 3, 4, 5, 6, 7

8. Look for and express regularity in repeated reasoning. Lesson 5, 6