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| **Representative TN State Curriculum Standards- 3 minutes**  **4th Grade**  *GLE*  GLE 0406.5.2 Use probability to describe chance events.  *Checks for Understanding*  SPI 0406.5.4 List all possible outcomes of a given situation or event.  **2nd Grade**  *GLE*  GLE 0206.5.2 Determine whether an event is likely or unlikely.  *Checks for Understanding*  0206.5.3 Explain whether a real world event is likely or unlikely.  0206.5.4 Predict outcomes of events based on data gathered and displayed. | |
| 51cBgmb6bWL__BO2,204,203,200_PIsitb-sticker-arrow-click,TopRight,35,-76_AA300_SH20_OU01_.jpg  Time: 15 minutes | *It’s Probably Penny* will be used to help students understand what probability is and how to apply it to real life.   * Before the book is read students will complete handout about different events including: an event that will happen, might happen, and can’t happen on their weekend. * During reading students will fill out handout with Lisa’s different events that she comes up with. * After reading the book, discuss a few of the student’s ideas and how they decided different events were certain, possible, and impossible. |

**Virtual Manipulatives- 6 minutes**

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| **Stick or Switch-**  [**http://nlvm.usu.edu/en/nav/frames\_asid\_117\_g\_3\_t\_5.html?from=category\_g\_3\_t\_5.html**](http://nlvm.usu.edu/en/nav/frames_asid_117_g_3_t_5.html?from=category_g_3_t_5.html)  This virtual manipulative is a play on the Monty Hall game show, “Let’s Make a Deal.” There are three doors that can be chosen from. Then one of the prizes behind one of the other two doors is shown. You must then decide if you want to stick with your original door or switch to the other door. It provides questions to develop a strategy, and gives the opportunity to enter a certain amount of rounds played, and to see a possible outcome. |
| **Hamlet Happens-**  [**http://nlvm.usu.edu/en/nav/frames\_asid\_310\_g\_3\_t\_5.html?from=category\_g\_3\_t\_5.html**](http://nlvm.usu.edu/en/nav/frames_asid_310_g_3_t_5.html?from=category_g_3_t_5.html)  Hamlet Happens is based off of an idea that if an army of monkeys were to enter keys of a word processor, they would eventually be able to type Shakespeare’s play “Hamlet.” In this virtual manipulative, students can type a word using combinations of the letters in the box to be drawn. The longer the word, the more draws it will take for the letters to be drawn in the same order as the word chosen. The purpose is to teach students that unusual/unlikely events can happen; it just may take a long time for them to occur. |

Part I.

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| ***Activity Name*** | ***Objective*** | ***Time Estimate*** | ***Materials Needed*** |
| p. 457 Activity 22.2  *“Is It Likely?”* | A good place to introduce probability. This activity will introduce and reinforce the ideas of certain, impossible, and possible. | 7 minutes | Poster-board, stickers or magnets or die-cuts, magnets |
| p. 461 Activity 22.7  *“Fair or Unfair?”* | This activity will help students understand theoretical probability. Students have to analyze game logically. (Note: there are 4 possibilities instead of 3.) Also demonstrates independent events. | 8 minutes | 10 pennies, score sheets with 20 slots for scores |
| p. 462 Activity 22.8  *“Cup Toss”* | This activity helps students understand experimental probability and how some events rely on experimentation to determine the probability. | 10 minutes | 5 cups, recording sheet handout, poster-board for class data |
| p. 463 Activity 22.9  *“Get All 6!”* | This activity emphasizes the large variability of data in a small number of trials, and why it is important to have “The Law of Large Numbers.” | 10 minutes | 4 dice, frequency table handout, poster-board |

**Part II.** ***The Game of SKUNK*-2 minutes**

The game of SKUNK is designed to help students discover a better understanding of choice versus chance. It helps students develop essential decision making ideas, while subtly and informally calculating chances. The activity can be played as whole class or small group. To play the game, each letter of SKUNK represents an individual round. All students begin standing and the teacher or a student will roll the dice (2). Whatever the total of the two dice is what the students will record on their score sheet. The catch is that if a one is rolled then they lose all the points from that round, if double ones are rolled they lose all of their points from the entire game. Students must figure out the probability of one of these events occurring informally and then make a choice of whether they want to stay in the game, or sit down and keep the points they have. The player with the most points wins. This lesson is directed towards 6-8 grades but could be modified for younger children. The included handout must be completed for the full understanding of choice and chance to be realized (it can be done in small groups or as a whole class).

Resource: <http://illuminations.nctm.org/LessonDetail.aspx?id=L248>

Materials Needed:

1. Halloween Bucket with names on strips of paper in them
2. *Is It Likely?* Chart on Poster-board
3. *Cup Toss* Chart on Poster-board
4. *Standards* Poster-board
5. Stickers/Die-cuts/Magnets for *Is It Likely?* Activity
6. Magnets
7. 10 pennies
8. 5 cups
9. 4 dice
10. *It’s Probably Penny* book
11. *It’s Probably Penny* Handout
12. Score Sheet Handout
13. Recording Sheet Handout
14. Frequency Table Handout