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## Probability Lesson – Theoretical vs. Experimental

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# Probability Lesson

Name: Stephen Ezell

Grade level(s): 7<sup>th</sup> grade math

Objectives: To get students to understand the concept of probability and its application.

## Lesson Description:

Modeling will be used to gain knowledge of probability and how it can be used to predict outcomes.

Students will use agent sheets and a program that was written together with the teacher and other students to see the affects of probability. Also how probability can be written as a percentage.

## Procedure:

Today the students will be using AgentSheets and the attached simulation or model to help them understand the concept of probability. Students will be asked to open their projects that were completed yesterday. They will then be asked to run their projects at the max speed and try to get the frog across the road safely. They will be asked to do this a couple of times. In this project called froggy the car source will control the number of cars that come down the road. This should take up about the first 10 minutes or so. We will then have a teacher driven conversation about how could we make it easier for the frog to cross the road without changing the speed of the run time? Ultimately someone will come up with having fewer cars that could hit the frog. They will then ask them if they know how to make it so there are less cars. More than likely they will not know at this time. The teacher will then give the students about 5 to 10 minutes to investigate the behaviors of the different agents to see if they can come up with any ideas. At this time some will come up with changing the timer or changing the percent chance which is set at 50 percent. Another teacher driven conversation or discussion will take place about what happens when the percent or probability changes. The students will then be instructed to go into the carsource behaviors and change the probability to 0 percent then to 10 percent then to 50 percent then to 75 percent and lastly to 100 percent. They are to observe what happens and write this down for each of the percents. When they have completed this the students are to write a summary of what they observed and how changing probabilities affects outcomes. The teacher will collect the papers for class credit and use them to open a discussion for the next class.