

Project 41

Probable. Cause?

Objective: Child will explore probability with bricks in the real world and compare its theoretical outcome over time.

Essential Question: Does the theoretical probability of an outcome guarantee its outcome in the real world? What factors affect the theoretical outcome matching that in the real world?

Special Materials: Brown lunch bags

Bricks Required: Brick plates, child-selected bricks for tally if they so choose, and a separate quantity of bricks to put in the brown bag

Project Structure:

Engage/Explain:

1. Have child select at least 3 different-colored bricks; they should select differing amounts per color (but no more than 10 each).
2. Have child record the theoretical probability of selecting each color before placing the bricks in the bag.
3. Have child develop a method of recording the brick selection:
 - a. A table with tally marks.
 - b. A brick-based table to keep track of their selections (make sure child does not use the bricks they pull from the bag for their table as this will change the odds in the bag).
 - c. Any other valid option.
4. Have child perform the activity ~10 times.

Explore:

1. Have child reflect on their data:
 - a. Did the results match the theoretical probability? Why or why not?
 - b. Is probability a guarantee of the results?
 - c. How might we get closer to the theoretical probability in the real world?
2. After child reflects on their data and these questions, discuss that theoretical probability does not guarantee an outcome; rather, it states that an event is more likely to occur.
3. By increasing the amount of trials of the selection, the real-world results should move closer to the expected theoretical outcome.

Explain/Elaborate

1. Have child test the validity of the assumption that more trials move the real-world results closer to the theoretical outcome.
2. Child should experiment by doing their bricks selection in 10-selection intervals, and compare the outcomes to the theoretical ones.
3. Have child reflect on the process and perform additional trials.