## Probability

Summary
Students will begin to understand the concept of probability through hands on activities.

## Materials

Invitation to Learn
Paper
Container
Flip the Coin Activity:
Coins
Paper

- Theoretical Probability word card
- Experimental Probability word card

Bag of Colors

- Bag of Colors

Tiles
4 red
3 yellow
2 blue
1 green
Probability Posters
Colored chips
Dice
Colored marbles
Colored centimeter cubes
Small circles or tiles (numbered 1-20)
Spinners

- Probability Recording Sheet

Poster board / chart paper
Additional Resources
Books
Probability, by Sarah Jane Brian; ISBN 0590373676

## Background for Teachers

Students need to understand the correct terms and vocabulary while discussing probability. It is important for students to learn to distinguish between theoretical and experimental probability. Students can also be introduced to the mathematical formulas.
Theoretical probability:
The numerical measure of the likelihood that an event will happen or the ratio of the number of ways the event can occur to the total number of possibilities.
It is the fraction of times we expect an event to occur if the same experiment is repeated over and over.
It is the represented by the fraction:
Number of ways the event can occur
Total number of possible outcomes
Theoretical probability does not change.
Example:

What is the probability of getting a number less than 3 when tossing an ordinary dice? There are six possible outcomes: $1,2,3,4,5$, or 6 ; all of which are equally likely to occur. Two of these, 1 and 2 , are less than 3 ; so the theoretical probability of getting a number less than 3 is: $2 / 6=1 / 3$.
Experimental probability:
The numerical measure of what actually happens in an experiment.
It is the fraction of times an event actually occurs when the same experiment is repeated over and over.
It is represented by the fraction:
Number of actual outcomes
Total number of possible outcomes
The experimental probability may vary from the theoretical probability, but the more times the experiment is repeated, the closer the experimental probability approaches the theoretical probability.

Instructional Procedures

## Extensions

Put manipulatives from Probability Station in a center and have students continue conducting probability experiments with materials that they didn't use before. Use Probability Recording Sheet.
In a center, provide manipulatives for students to create new probability experiments and share with the class.
Family Connections
Share experiments with family.
Look for ways at home where probability can be used.

## Assessment Plan

Completion of Bag of Colors and Probability Recording Sheet.
Group presentation of poster or chart displaying results and findings using probability journal.
Write a journal entry about what they have learned about theoretical and experimental probability.

## Bibliography

Rivero, V. (2006) let technology be your guide. American school board journal, November, p52-53. The author gives seven tips for integrating tools of technology to help bolster students' knowledge in math and science education in the classrooms and schools.
Blessman, J., Myszczak, B. (2001). Mathematics vocabulary and its effect on student comprehension. ERIC Source (ED455112). Retrieved January 12, 2007, from http:// www.eric.ed.gov.
In this action research project, interventions were used for improving fifth grade students' comprehension of mathematical vocabulary. The following were used: math journals, student-created math dictionaries, children's literature to introduce and reinforce mathematical concepts, graphic organizers, visual aids, and written explanations of open-ended word problems. These interventions resulted in an increase in comprehension and use of mathematical vocabulary in math performance and in communication of mathematical ideas.

## Authors

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[^0]:    Utah LessonPlans

