Super

Spinners

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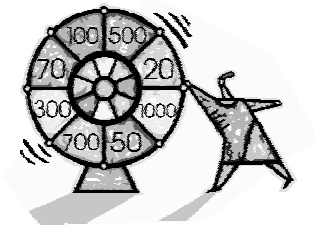
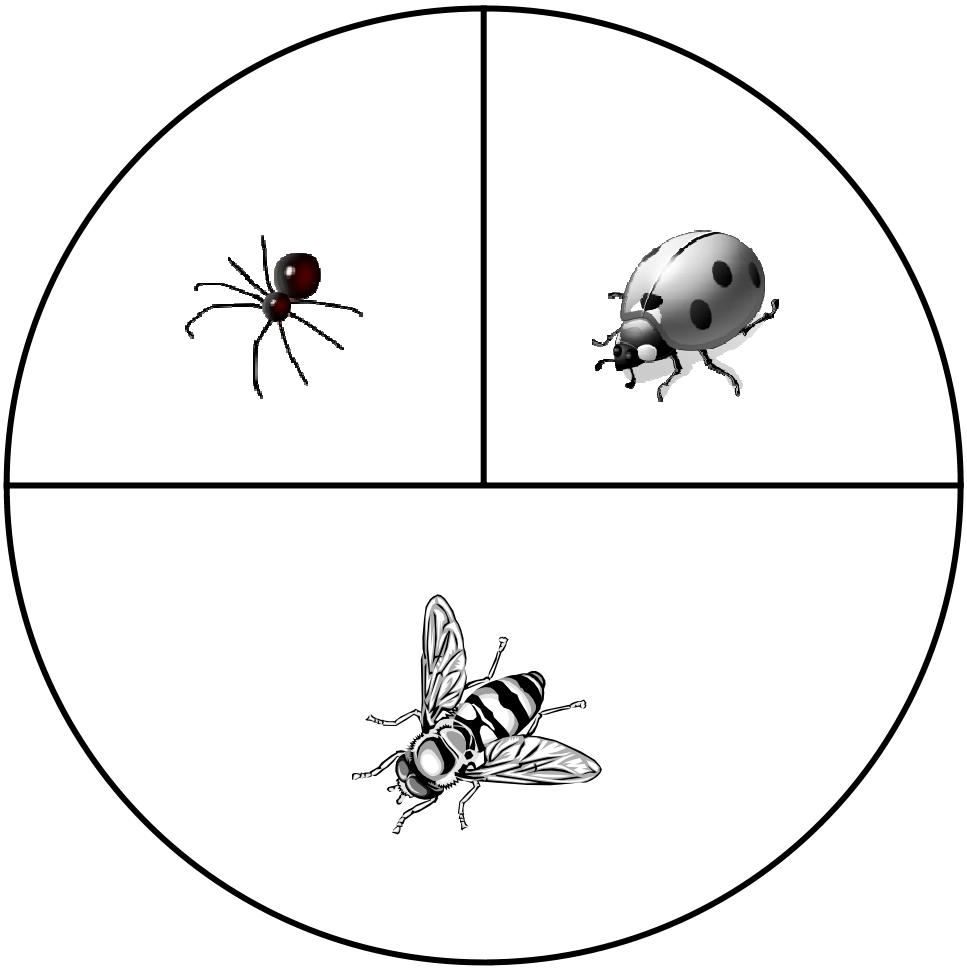


Super Spinners

Bugs Spinner



	Theoretical Probability		Experimental Probability			Difference
Outcome	Fraction	Percent	Tally	Fraction	Percent	Percent

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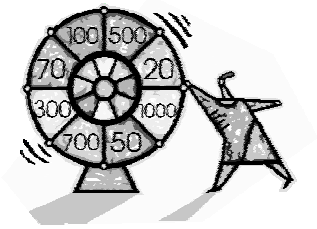

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Experimental Probability Data

	Individual Data		Class Data		Complete Data	
Outcome	Fraction	Percent	Fraction	Percent	Fraction	Percent

	Individual Data		Class Data		Complete Data	
Outcome	Fraction	Percent	Fraction	Percent	Fraction	Percent

	Individual Data		Class Data		Complete Data	
Outcome	Fraction	Percent	Fraction	Percent	Fraction	Percent

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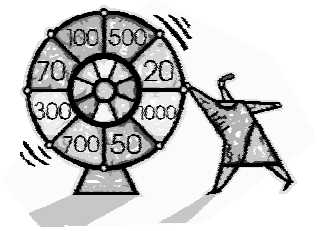

Super Spinners

Teacher Tips

(1 of 2)

Lesson Description: Super Spinners is a hands-on activity that requires students to analyze three themed spinners in order to compare the theoretical probability of each spinner outcome with the experimental probability from their trials. Students then collect and analyze data from their entire class (and possibly multiple classes) to draw conclusions about the accuracy of experimental probability data in relation to the number of trials completed.

Math Content: Theoretical (or Mathematical) Probability, Experimental Probability, Collecting Data, Analyzing Data, Fractions, Percents, Frequency Tables, Using Mathematical Charts, and Drawing Conclusions Based Upon Collected Data

Time Required: 1-2 Class Periods

Super Spinners Probability Activity includes:

* 3 Super Spinners student worksheets
* 3 Super Spinners student worksheet Answer Keys
* 1 Super Spinners Experimental Probability Data worksheet
* 2 Super Spinners Teacher Tips pages
* 1 Super Spinners Cover Sheet **10 pages in all!**

Materials Needed: Paper Clips

Suggested Grade Level: 5th - 8th

Teacher Testimonial: Super Spinners is an enjoyable, active way for students to internalize the concepts of Theoretical and Experimental Probability. The themed spinners allow students to spin for spiders, sports figures, and cell phones instead of less exciting outcomes like numbers or colors. As students collect the whole class data and the complete data from multiple classrooms they should clearly see that the Experimental Probability tends to move closer and closer to the Theoretical Probability as the number of trials increases.

Teacher Tips:

* Since the Super Spinners activity focuses on Theoretical Probability and Experimental Probability, it is important that students understand the difference at the start of the lesson.
* Theoretical Probability is the mathematical chance that something should happen. Experimental Probability is the result obtained by actually completing a number of trials of an event. For example, if a spinner section takes up one half of a circle, then the Theoretical Probability would be 1/2 or 50%. However, upon completing a certain number of spins, a student may come up with an Experimental Probability that differs (but is usually close to) the Theoretical Probability.
* To have students use the spinners, provide them with a paper clip and show them how to hold their pencils straight up in the center of the circle and then spin the paper clip with their finger.

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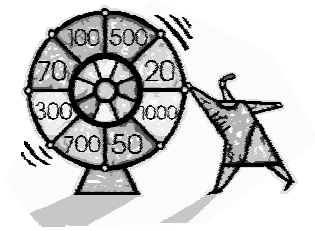

Super Spinners

Teacher Tips

(2 of 2)

Teacher Tips (continued):

* If a paper clip ends up in two sections it should be counted in the section with more than half of the paper clip. If the paper clip is exactly in the center of two sections the students should spin again. You might also require that the paper clip travels around the circle at least one time on each spin.
* For the Experimental Probability data collection, I recommend having each student spin 50 times for each spinner that you use. This number gives enough trials to allow for meaningful conclusions and it is easily translated into a percent.
* There are three themed spinners provided for this activity. You might do the first "Bugs Spinner" as a whole class activity and then assign the other two as classwork/ homework.
* (Optional) Once individual students have collected their data you may want to compile all of the data for each spinner on the board and have students use calculators to add up the class data. Then, if you have completed this activity with other classes, you can gather all of the data together. Use the Experimental Probability Data student worksheet to track this data. Usually, the more data that is collected the closer that the Experimental Probability will be to the Theoretical or Mathematical Probability.
* Answer keys are provided for each themed spinner worksheet. The Theoretical Probability answers are correct. However, remember that the Experimental Probability answers provided are just a sample of the data that students might collect. Finally, the Difference (Percent) column measures the variation from the Theoretical Probability.
* Notice that the total of the positive and negative percent differences should always equal zero. If you flip a coin 100 times and get 54% heads (+4% from the Theoretical Probability) then you will get 46% tails (-4% from the Theoretical Probability).
* As a final activity you might have students write a paragraph or two explaining the difference between Theoretical and Experimental Probability and having them analyze their data to see if the Experimental Probability got closer to the Theoretical Probability as the Class Data and the Complete Data (multiple classes) were compiled.

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