21 Things 4 Students
REMC ASSOCIATION OF MICHIGAN

13. Dig the Data Teacher Guide for Q6 Spin Out (1 Class Period)

Dig the Data	Q6 Spin Out

Overview of this Thing: In this Thing, students will dig through the Quests to collect, organize and analyze data. This Thing contains ten Quests. Students will learn to create spreadsheets and charts, use formulas, and make decisions based on data

Thing Learning Objectives:

1. Know how to analyze data and create different visual representations [Computational Thinker, Creative Communicator].
2. Understand how spreadsheets, charts, and visual representations can help organize, evaluate, and present data [Knowledge Constructor].
3. Know different ways of organizing and sharing abstract representations of data [Creative Communicator].

Quest Learning Objectives:
I can:

- Analyze data and create different visual representations of it.
- Can use spreadsheets, charts, and visual representations as tools to help organize, evaluate, and present data.

This Quest: The challenge (read the Introduction) is to help the "Slushie" company decide how much of each color additive they should purchase for the five different color slushies (even though all colors taste the same). Students will use an interactive spinner to collect color data into a spreadsheet (Google Sheets or Microsoft Excel in 365 online or with the desktop app). They will use formulas for totals and percentages. Students will chart two different sets of data, the first will be three rounds of spins with the spinner doing 10 spins in a round. The second Experiment will be their choice for the number of spins from 0-1000 for each round. Encourage them to do significantly more than the initial 10. They will create two charts/graphs of the data and write up a recommendation for the "Slushie" company based on the results with an explanation.
An advanced probability challenge is presented in Part 4 which is totally optional.

Link to Vocabulary Quizlet

Vocabulary

- **Sum**: The sum is the function of adding cells in a spreadsheet. (=sum)
- **Probability**: Probability is a number between zero and one that shows how likely a certain event is to occur.

Pre-Planning

1. If students will be using the **Google Sheets** stay on the main Q6 Spin Out page, if they are using **Microsoft Excel** have them go to the sub-page Spin Out With Excel.
2. Test the interactive spinner.

   NOTE: If you do not have a computer that can run the spinner, you could have students make their own with paper. For Experiments 1 & 2, it should be divided into 5 equal sections with the colors: purple, yellow, green, red, and orange.
3. Students in either Google Sheets or Microsoft Excel will be doing similar tasks for Part 1 Spin and collect the data, and Part 2 Formulas.
4. The main difference will be in Part 3 the creation of the Charts & Graphs. Pre-check the actions for the one your students will be doing.
5. Individual, partners, or small group? Partners would work well for this, although we have suggested three possible roles: Spreadsheet Operator, Spinner Operator, Analyst.

Potential **PARTNER/SMALL GROUP ROLES**

The "Spinner Operator" will:

- go to this interactive spinner to simulate the colors at the Superb Slushie Company.

The "Spreadsheet Operator" will:

- open the Spreadsheet Template and save it with their name and spinner in the title ready to use.
- record the data into the spreadsheet on their own or as called out by a partner

The "Analyst"

- Can write down predictions
- Make observations and predictions based on the results

Students will **complete 3 rounds with the spinner for Experiment 1.**
Students will decide how many spins to do for the spins for Experiment 2, the spinner maximum is 1000, and record the results for each round.
Reflection Questions:

- Look at your results from 30 spins in Experiment 1, and the results from your Experiment 2. What differences do you notice?
- What would you recommend if you only looked at your first set of spin data?
- Did more spins change what you would recommend?
- Make a list of things that can be misleading or wrong with data you see in ads on TV, in posters, or other locations. Is it misleading at times

Students will proceed to Part 2 Formulas:

- They will watch the instructional video, pausing it or replaying it as needed to complete the sets of formulas for both Experiments. They will need to divide by the total number of spins for the 3 rounds for each Experiment.
- They will also learn about the "Fill handle" to drag the formula across other cells

Students will proceed to Part 3 Charts & Graphs:

Students will then discuss the following question with their partner:

Since all the color parts of the spinner are equal sizes, do you think that if you spin the spinner even more times, that the results should be closer to an equal number of hits for each color?

Students will then:

- change the number of spins to something less than 1000 per spin and repeat the same process as before, filling in the information into the Experiment 2 section

The "Global Collaborator" will:

- enter their results into the Global Survey.
- Click this link to see the results entered from all the others across the globe
- take a screenshot of the global results and save it in their Spinner report document

Spinner Report observations should:

- answer how close the experimental results were to the theoretical ones for each Experiment, and why they may be different
- Hypothesize what students expect to happen to the totals for each color as more students enter their results into the global survey based on their data and experiments

To finish the Quest, students are instructed to:

- Check with the teacher to determine what type of report or presentation is to be submitted

Determine how students will share and/or submit their work with you.

Videos and resources in this Quest. You must check that students have access to these resources on their devices.

Websites

- Interactive Spinner
- Introduction to Probability - Math is Fun
- Probability Event Types - Math is Fun
- Probability Tree Diagrams - Math is Fun

21t4s Videos (for 13.Q6 Spinout)

- Spin Out Intro Video
- Part 1 steps Demonstration Video
- Part 2 Formulas Demonstration Video
- Part 3 Graphs Demonstration Video

21t4s Videos (for 13.Q6 Spinout with Excel)

- Spin Out Animated Intro Video
- Excel Charts and Graphs Video
- Part 3 Excel Online Charts Video
- Part 3 Excel App Charts Video

21t4s Websites

- 21t4s Spin Out With Excel Q6 Quest

21t4s Documents & Quizzes

- Excel Spinner Template
- Google Spreadsheet Template
- Vocabulary Quizlet

Student Checklist 13.Q6 Student Checklist

Broken Link or Content Update Report

Please select this link or the broken link icon to report any broken links, or content no longer applicable so that we can quickly update it. Thank you for your help.

Assessment Options: *Ideas for assessing student work for this Quest? Link to a rubric you create for this Quest, a quiz, and or a worksheet you create. See Rubric by Liz Kolb.*	
Notes:	