Title: Valentine Shopping Spree **Grade level/content area: 6th Grade Math**

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Source of the lesson:
Teacher modified from the VDOS website

CONCEPT STATEMENT
Circle graphs are used for data showing a relationship of the parts to the whole. Circle graphs can represent percent or frequency and are used for categorical and discrete numerical data. All graphs must include a title, percent or number label for data categories, and a key. A key is essential to explain how to read the graph and a title is essential to explain what the graph represents. Comparisons, predictions, and inferences are made by examining characteristics of a data set displayed in a variety of graphical representations to draw conclusions.

Important Vocabulary:
Circle Graph – A type of graph in which a circle is divided into sectors that each represent a proportion of the whole.
Ratio – A relation between two amounts showing the number of times one number is contained within the other.
Percentage - A part of a whole expressed in hundredths
Percent - One part in every hundred.

LESSON OBJECTIVES
Students will be able to… collect and organize data. They will also be able to represent the data into a circle graph.

VIRGINIA SOL OBJECTIVE(s) ADDRESSED
6.10 The student, given a practical situation, will
a) represent data in a circle graph

MATERIALS NEEDED (Resources, supplies, and handouts)

- **Straight Edge Ruler**
- **Color Pencils (4 colors)**
- **Valentine Circle Graph Worksheet**
- **Circle Graphs Exit Ticket**

SAFETY CONSIDERATIONS
Students will be instructed to use all materials for their intended use.

ENGAGEMENT	Estimated Time: 10 minutes
Teacher and Student Activity	**Probing Questions**
Teacher will leave instructions to grab a worksheet and 4 colored pencils from the table. Teacher will also instruct students to work on any homework that is due or review their notes about circle graphs while students are gathering into the classroom.	
Teacher will write the following holidays in a table on the board: Christmas, Thanksgiving, Halloween, and Valentine's Day. Teacher will tell the students that today we will collect some data on everyone's favorite holiday.	
Teacher will call out each holiday one by one and put a tally mark for each hand that is raised by the corresponding holiday.	
Student: will raise their hands when their favorite holiday is called, but only once.	
Teacher will ask the students how many are in each category, taking volunteers or calling on students if there is a lack of volunteers. Afterward ask students about different types of graphs that we can make with this data. For each answer, the teacher will ask what is that type of graph. At the end, teacher will ask which graph we should use to make show the relationship that parts of data have as a whole.	"What is this table telling us?" "What is the purpose of a graph?" "Tell me what type of graphs we could make with this data?" "Why would we find it helpful to use graphs to represent data?" "What if we want to represent this data as a whole? What can we create to show this table as a whole?"

EXPLORATION	Estimated Time: ~~15~~ 20 minutes
Teacher and Student Activity	**Probing Questions**
Teacher will tell the students that since it is Valentine's Day, we are going to have to do some shopping for our friends and families, but first we need to make a list of what we are going to get everyone.	
Teacher will hand out worksheet, rulers, and 4 different color pencils.	
Teacher will explain the scenario "You have been given $20 to go Happy Valentine's Day shopping for 20 friends and family members. Luckily, a new dollar store has opened and is selling everything for $1. In the store, you find flowers, cards, chocolates, and small teddy bears. You decide to get each person you are shopping for 1 item from the dollar store."	"So, if we have $20 and we are using $1 on each person until we run out of money, what is the total number of people we should be shopping for?"
Teacher will explain that for this trip everyone will have to make a circle graph based on their own lists and that they may use the circle template on the second page to help create their graphs.	
Teacher will tell students that this assignment will need to be turned in before the end of the class and the expectations of the overall class grade (75%). Also, the teacher will inform the students of the time that the assignment should be finished.	
Students will work on the worksheet separately and input their own choices onto the sheet. Using that data, they will construct circle graphs based off their own information and can use the premade circle graph as a guide to make their own. Then they will answer the questions. If a student finish early, then they are given another sheet but this time they only 10 people that	

they are shopping for and $10 dollars to spend. If this sheet is also finished, then the student explains what makes these two graphs different?	
Teacher will walk around the room, checking to see how the students are progressing. At the 10-minute mark, the teacher will ask 2 students that are done with their first work sheet to draw their circle graphs on the board. Once the time is up, the teacher will use an attention grabber to focus everyone back to the board. The teacher will ask the class which is the most bought gift, and which is the least bought gift.	"How can we tell which gift was their most bought gift?" "How can we tell which gift was their least bought gift?" "What do you notice is the difference between your most bought gift and the least bought gift?" "If you did not see a table giving you the data, and you only had a circle graph, how can we tell which gift we have the most of?"
Teacher will ask if the students were able to answer the questions on the back of the sheet. If most students had not answered the questions, teacher would give the students 5 more minutes to try to answer the questions on the back. After 5 minutes, teacher instruct students to raise their hands and answer some questions about their graphs.	"Which gift took up the most amount of space in your graph?" "Which space took up the least amount of space in you graph?"

EXPLANATION	**Estimated Time: 15**
Teacher and Student Activity	**Probing Questions**
Teacher will make a table based off a prepared worksheet and ask how we represent pieces of data in relation to the whole. Afterwards teacher will draw a circle and ask students about what are the key features that every graph must have.	"How should I represent this data if I want to show a relationship of the parts to the whole?" "What must every circle graph have?"
Students will raise their hands and say the parts that every graph must have, a Title, the amount of data that is being displayed and a key. (If not, the teacher will say that every graph needs a title, the amount of data that is being displayed and a key.)	

Teacher will write down a name and key for her circle graph. Teacher will tell the students that each circle should be split into equal pieces. Teacher will inform students that since we are looking at the data as a whole, then total number of data should be the same as the number of pieces of data that our table has.	"If I need to split this circle into equal parts to fit our data, how many parts would I have to split this graph into?" "How can we tell how many parts we will need?"
Teacher will explain that it is very important that when we make our circle graphs that we need to know our total number of pieces. Especially since this can change the results we get from our graph	"What if I one of the items is sold out, how does this change our graph?" "Why is it important to consider the total amount of data gathered?"

ELABORATION	**Estimated Time: 10 minutes**
Teacher and Student Activity	**Probing Questions**
Teacher will use the same data point out that factions are like the pieces of a circle graph, since fractions also are indicators of parts of a whole, circle graphs are the visual representation of this.	"What other type of math uses piece of a whole? "Could we use fractions to also represent the data that is given to us? Why or why not?
Teacher, using the same data as before, will show an example of how each piece can be represented as a fraction. Teacher will explain that both are ratios of the data and then define what ratio is.	"What is a ratio?
Students will help the teacher go through each part of the table and create fractions for each data.	

EVALUATION	**Estimated Time: ~~10~~ 5 minutes**
Teacher and Student Activity	**Probing Questions**

Teacher will hand out an exit ticket and inform students that this will be headed in. The exit ticket will feature some smaller premade circle graphs and data tables, which they will have to fill in the circle graph to reflect the data given. Also, for each they will have to write out the fraction that represents the largest sections and the smallest section.	
Students will work on the exit ticket for 10 minutes and then hand the sheets in.	

Attach any SUPPLEMENTARY MATERIALS (handouts, worksheets, data collection tables, assessments, etc.) as part of your lesson plan.

Both the worksheet and exit ticket are in separate files

- Valentine Shopping Spree is the worksheet that will be used for the exploration
- Circle Graph Exit Ticket is the worksheet used for the evaluation