Data Management and Analysis
Activity 1: Graphing with Skittles

Learning Objectives related to Curriculum: Display and interpret statistics through sorting data and making graphs D-6, D-7,D-8	Number of Students: 1 to as many bags of skittles available
Resources/Materials: Paper, pencil Graph paper Skittles Source Acknowledgment: Reprinted with permission from The Arithemic Teacher, Volume 40, Number 8, copyright 1993 by the National Council of Teachers of Mathematics. All rights reserved.	Activity Description: 1. Guess how many colors of each skittle there will be in your bag. 2. Open the bag and complete the histogram (bar graph) according to skittle colors. Use a ruler. 3. Draw a circle and make a pie chart to show color frequency. 4. Which graph is easier to make? Which is easier to read? 5. If all the candies were put back in the bag and one was taken out, which color would it most likely be? 6. Compare your graph with a friend's graph. If you combined your Skittles with your friend's Skittles, would the shape of your graph change? Try it out on a piece of graph paper. EAT YOUR SKITTLES!
CELS: Numeracy, Critical and Creative Thinking	Adaptation/Variation/Extension: - have students come up with other types of materials to graph (perhaps items in their desks or in the classroom)
Evaluation: self assessment anecdotal records performance assessment - notebook learning contract observation checklist	Reflection/Additional Comments If I had this activity out in a classroom, I would not have all the Skittles in the bag, but rather hand them out to individuals as the activity was done (either small group at a time or whole class)

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Activity 2: Prediction and Probability

Learning Objectives related to Curriculum: Understand the concepts of probability and practice predicting D-10	Number of Students: 1 or small group
Resources/Materials: Paper, pencil Dice Chart to keep track of throws Graph	Activity Description: 1. Predict how many times each number will come up if you throw the die 60 times. Record your prediction. 2. Throw the die 60 times. Keep track of your throws by using the paper provided to cross out a number each time you throw. Also keep track of which number it lands on by marking in the chart provided. 3. Can you make a graph of your findings? Use the graph paper provided. If possible compare your graph to someone else's graph. 4. What do your findings say about the probability of throwing a six? A one? According to your graph, which number is most likely to be thrown?
CELS: Numeracy, Critical and Creative Thinking	Adaptation/Variation/Extension: -an easier version of a prediction problem could include tossing a coin and predicting the outcome of numbers of heads and tails
Evaluation: self assessment anecdotal records performance assessment - notebook learning contract	Reflection/Additional Comments If students brought dice from home or if there were enough dice in the classroom, this activity could be done with more students at once. This might make it more interesting for comparing the graphs.

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Activity 3: The Upside Down Hair Graph

Learning Objectives related to Curriculum: Construct a graph using "real" materials and use it to make comparisons and answer questions D-6, D-8	Number of Students: 1 or 2
Resources/Materials: Yarn, scissors Pencil and paper Hair Source Acknowledgment: Reprinted with permission from The Arithemic Teacher, Volume 25, Number 3, copyright 1977 by the National Council of Teachers of Mathematics. All rights reserved.	Activity Description: 1. Collect one hair from the head of a friend. Cut a piece of yarn equal to the length of the hair. Tape it to a line (as shown) and label it with the name of the individual. 2. Repeat this process until you have about 10 pieces of labeled yarn. 3. What do you notice about the chart? How does it compare to an upside down bar graph? Can you think of a way to find the average length of hair? Can you make any generalizations about the length of boys' hair as compared to the length of girls' hair from your graph?
CELS: Numeracy, Critical and Creative Thinking	Adaptation/Variation/Extension: If collecting strands of hair is a problem, use yarn to represent lengths of hair without actually collecting the hair. Another alternate idea would be to have students collect hair from various spots on their own head and graph and compare those lengths.
Evaluation: self assessment anecdotal records performance assessment - notebook learning contract observation checklist	Reflection/Additional Comments If the original activity is used, it would be wise to have very clear guidelines concerning behaviour in the classroom during this activity. Direction and order can make this a successful task.

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Activity 4: Magazine Data

Learning Objectives related to Curriculum: Analyze and classify data from a magazine. Display data on a graph. D-5, D-6	Number of Students: 1 or 2, or more if more magazines are available
Resources/Materials: Pencil and paper Graph paper Magazine (s)	Activity Description: 1. Count the number of advertisements in the first twenty five pages. 2. Think of ways to classify the ads. - according to product type - number of people in the ad - size of ad - another choice! 3. Record your findings in a graph format and get a friend to interpret the findings by looking at your graph. 4. If possible, compare your classification and graph with another friend who has also done this activity.
CELS: Numeracy, Critical and Creative Thinking	Adaptation/Variation/Extension: Have students determine other situations from the magazine that could be graphed. Design their own questions, record them, and exchange them with a friend.
Evaluation: self assessment anecdotal records performance assessment - notebook learning contract observation checklist	Reflection/Additional Comments Magazines provide a connection to "real life" and are readily available for students to use. If this activity is planned for the whole class, simply gather enough magazines for the whole class and use the same questions, or additional questions that would involve data analysis.

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Activity 5: Organizing Baseball Cards

Learning Objectives related to Curriculum: To design classifications for the baseball cards (according to information on the cards or the cards themselves) D-5	Number of Students: 1 or 2
Resources/Materials: Cards Pencil and paper for recording groupings	Activity Description: 1. Examine all the baseball cards 2. Look for similarities and differences 3. Put cards in piles according to how you want to sort them. (by type, by player position, by team, etc.) 4. Record what you have done 5. Sort another way. 6. Which would be the best way to sort cards if you wanted the groups to be as equal as possible?
CELS: Numeracy, Critical and Creative Thinking	Adaptation/Variation/Extension: If baseball cards are not a high interest item, other types of "collections" could be used to sort (stickers, buttons, stamps)
Evaluation: self assessment anecdotal records performance assessment - notebook	Reflection/Additional Comments This activity is a way of showing students that classification is a necessary skill and part of their everyday lives. The "real" objects should make it interesting and relevant.

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Activity 6: Lego Graphs

Learning Objectives related to Curriculum: To design a survey to gather information, build a graph to represent the results, interpret the results D-6, D-9	Number of Students: 1 or 2
Resources/Materials: Pencil and paper for recording Lego pieces	Activity Description: 1. Decide on information you would like to gather form your classmates. Possibilities include: - favorite ice cream flavor - favorite type of pet - favorite cartoon - favorite fruit -favorite subject in school 2. Narrow the possibilities for answers down to FOUR or FIVE, depending on how many colors of Lego pieces you use. (For example, ask for strawberry, chocolate, vanilla, or other ice cream) 3. Use the Lego blocks to "build a graph" according the statistics you gather. 4. Record how the blocks represent the answers so that you can explain your graph to another person.
CELS: Numeracy, Critical and Creative Thinking, Personal and Social Values and Skills, Communication	Adaptation/Variation/Extension: To make it easier, the survey questions given could be more specific. To make it more difficult, give no suggestions, and let students discover what good survey questions are through trial and error.

Evaluation:	Reflection/Additional Comments:
self assessment anecdotal records performance assessment - notebook learning contract observation checklist	The whole class could be involved in an activity like this, each small group asking different questions and graphing the results. (In this case graphs would be constructed on paper as there would not be enough Lego!