INVESTIGATIONS 3
TRANSFORMING MATHEMATICS
TEACHING & LEARNING

Math at Home
Working with Data Grades K - 5

Below are math activities to do at home related to data. They provide an opportunity for you to engage in problem-solving with your child, using familiar contexts and materials found at home. Suggested grade levels are indicated for each activity, but students vary widely in what they find engaging and challenging. Many of these activities can be modified to be appropriate for both younger and older children.

While you work with your child, show curiosity about their ideas. Let them take the lead. Ask questions like *"What do you notice?"*, *"Why do you think that?"*, *"How did you figure that out?"*, and *"What do you think we should do next?"* Encourage your child to come up with new questions to ask in order to extend the activity.

Kindergarten -Grade 3 Activities

Sorting Your child can sort collections of objects you have at home: coins, stamps, toys, containers, even laundry. They can sort just for fun or to organize some things around the house. As your child sorts a collection, ask them questions, such as: *"How are some of the buttons the same? How could you sort them into groups? What is the same about all of these? Is there a different way you could sort them?"* Your child can also count the number of items in each group and compare the totals. (Grades K-2)

Round   Not Round
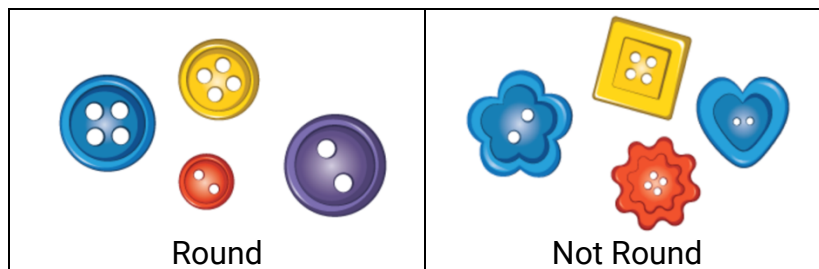
Counting to Collect Data You can encourage your child to collect data about the number of certain items in your home. For example: How many forks are there? How many windows? How many chairs? How many doors? (Grades K -2)

Will We See More [Trucks or Buses]? Your child will need a pencil/marker, a clipboard and paper, or notebook for this activity. On a walk or drive with your

child ask: *"Which do you think we will see more of in the next five minutes: __ or __?"* Depending on your surroundings, you might choose pairs such as stop signs or stop lights, trucks or buses, cows or horses. Your child will have ideas, too! Help your child choose things that give enough to count—about 10 or 15 of each object. If the count is too low to be of interest, you might extend the time limit. The important thing is that your child keeps track of each item (using check marks, numbers, pictures, words, and so on), accurately counts, and then compares the results. After collecting the data and deciding what they saw more of, challenge your child to determine how many more [stop signs, trucks, or cows] they saw. (Grades K-2)

Finding Categories Help your child look for real-world situations in which items are sorted into categories. For example, dirty laundry is often sorted into light and dark clothes and then resorted into a variety of piles when it is clean. Kitchen items are often sorted into canned goods, types of pasta, snack food etc. Have a conversation with your child about other things they notice around the house that are sorted and how they are sorted. (Grades K-2)

Guess My Rule Play a guessing game about attributes and categories. One player lists things that belong to a category, and other players try to guess the category. For example, if the secret category is "things that are green," the person may say *"grass, inchworms, dollar bills…"* You can also play Guess My Rule by gradually sorting a collection of 15 to 20 items (such as objects from the kitchen) into two groups. In one group, have objects that fit the rule, and in the other, have objects that do not fit the rule. A rule might be "is made of metal" or "is red." Start with just a few objects. As you continue to put objects into each group, your child tries to guess your rule. (Grades 2-3)

Animals Near My Home Ask your child to look near your home for different kinds of animals, from the smallest bug to the largest furry creature. Record each type

of animal on an index card or small piece of paper. See what possible categories these animals might fit into. You can also play "Guess My Rule" with animals. (Grades 2-3)

Guess My Rule with Yekttis You and your child can play [Guess My Rule with Yekttis](#) online. This game focuses on looking at the attributes of a special set of cards and making categories based on those attributes. (Grades 2-3)

Graph Hunt Look for and collect examples of graphs and representations of data. Check newspapers, magazines and websites. Talk about what is represented by the graph. Is it clear? What data, or information, does the graph contain? Encourage your child to make graphs about things that are important to them. (Grades 2-3)

Investigate a Topic Think of a question you want to answer about something in your house or your neighborhood. Collect data that will give you some information about your question. One investigation might be *"How many times a day does our family use water?"* Together with your child, plan your data collection method and how you will record the information. Make predictions about what you will find out. After you have collected your data, take some time to look closely at it. Does anything surprise you about the data you have collected? Do the data communicate any useful or interesting information? Your child may want to create some sort of representation of the data. Other questions you might investigate include *"How much do we watch television?"* or *"How many pages do you read each day?"* (Grades 2-3)

Grade 4 - Grade 5 Activities

Data in the Media We live in an information-rich society, and it is important for students to begin to experience the variety of ways that information is communicated and represented in the world. As you are reading the newspaper or a magazine, point out various graphs and charts to your child. Talk about how you make sense of the data, what they mean, and why you are interested in them. This is an opportunity for you to show your child how graphs communicate important information to you and your family. (Grades 4-5)

Investigate a Topic You and your child may also be interested in investigating a problem that you have noticed in your community. You might start by defining

the problem and devising a plan to collect data about it. As a next step, you could collect the data and then organize and represent the results. As you work, you might think about who is an appropriate audience for your findings. For example, one household collected data about the number of cars that passed by their house at rush hour compared with other times in the day. They made a series of recommendations to improve traffic safety in their neighborhood and circulated the recommendations to their neighbors and to the police department. (Grades 4-5)

Marble Jar Start with 4 objects in a jar (marbles, pennies, paper clips, or some other small objects). Each day add 6 more of the same object. Help your child record how many objects are in the jar at the end of each day.

Number of days	Number of marbles
Start with	4
Day 1	10
Day 2	16
Day 3	22
etc.	

Have your child predict how the number of objects in the jar will change over the next few days. For example, *"How many marbles will be in the jar after 5 days? After 10 days?"* Repeat the Marble Jar activity with other numbers (e.g., start with 5 objects and add 9 each day; start with 100 objects and subtract 6 each day). (Grades 4-5)

Change Situations Together with your child, look for things that change in different ways and at different speeds. Can you find some things that change more and more quickly? Can you find things that change steadily? Can you find anything that changes by gradually slowing down, or by gradually shrinking? Here are some ideas to start with:

- The growth of a plant over time
- The speed of a bicyclist over the course of a race
- The growth of your child (and siblings) over time

Consider making graphs of any of these situations. (Grades 4-5)

What Is in the News? Look online or in newspapers and other print material for graphs and tables that show something changing over time. Work with your child to make sense of these:

- What does a steep rise in a graph represent?
- What does a less steep rise in the graph represent?
- How does a graph represent no change? (Grades 4-5)

Population Change