KOHL CHILDREN'S MUSEUM

STEAM Explorers

THE PLACE WHERE AWESOME LIVES

Mathematizing Weather

Explore how we can use math to investigate the weather

Big Idea

Children will use a hands-on approach to explore different mathematical concepts with a weather-related theme.

Standards

6.D.ECb Describe comparisons with appropriate vocabulary, such as "more", "less", "greater than", "fewer", "equal to", or "same as".	Students will compare the items they are able to fit inside their water bottles by describing which they use more or less of. Students will also use appropriate terms to describe the weather-related graphs they create.
7.A.ECc Use vocabulary that describes and compares length, height, weight, capacity, and size.	Students will use appropriate vocabulary to classify and describe items they test in front of the fan, experimenting with weight and force.
12.F.ECa Observe and discuss changes in weather and seasons using common vocabulary.	Students will observe and describe weather-related changes and characteristics as a way to sort clothing.

Materials

- Multiple pictures of sunglasses, umbrellas, gloves, and other weather-dependent clothing
- Bowl full of clipped, yellow pipe-cleaners
- Bowl full of blue beads
- Large bowl full of cotton balls
- One recycled water bottle per child
- Blocks
- Pieces of fabric
- Feathers
- Rocks
- Plastic bag
- Piece of paper
- Fan

Setup

For this lesson, you will need three tables or stations. At the first area, children will create their own rain storm by counting and collecting clouds, lightning bolts, and rain drops. At the second, children will be graphing clothes for different climates. At the third station, children will test out materials and weights of different sizes to see what objects the wind is successfully able to blow, and what is too heavy for the wind to move.

Directions

1. At the first station, students will be creating their own rain storm. The clipped pieces of yellow pipe cleaners represent lightning, the cotton balls represent the clouds, and the blue beads represent rain. Have children use tablespoons to measure out servings of each material to put in their water bottle. As they place each item into their water bottle, they should be counting the individual materials to see who has the most of each material in their bottle. Limit children to one to three scoops of each material. When they're done, students can test out shaking their water bottle and describing the different sounds they hear.
2. At the second station, have students sort the pictures of weather-related clothing into different groups ("I'd wear this in a rain storm, but I'd wear this when it's sunny outside"). Students can then label the different climates on their x-axis and begin graphing the various pictures of clothing. Alternatively, real clothing items can be used in lieu of the photos, if larger quantities and more floor space is available.
3. At the third station, students can experiment with weight and force by testing objects of different weights in front of a blowing fan. Students should make predictions about the various materials (blocks, feathers, fabric, plastic bag, rocks, pieces of paper, etc.) and whether or not they believe the fan will be able to move that object. They can then move onto testing and verifying their predictions. Other materials available in the classroom can be tested by the students as well.

Investigation Questions:

- How many cotton balls did you put in your bottle?
- Can we count together?
- What are you graphing? How many items can you graph for the summer? Winter?
- How many scoops of beads did you put in? How many beads did that end up totaling?
- How many items/things do you have in your summer group?
- What group does this object belong in?
- Why do you think this isn't being moved by the wind?
- What surprising things do you notice the wind blowing during a bad storm?