

Things in the Sky

Target Standard Reasoning and Proof

- Recognizing reasoning and proof as fundamental aspects of mathematics
- Make and investigate mathematical conjectures
- Develop and evaluate mathematical arguments and proofs
- Select and use various types of reasoning and methods of proof

Related Standard Communication

- Organize and consolidate their mathematical thinking through communication
- Communicate their mathematical thinking coherently and clearly to peers, teachers, and others
- Analyze and evaluate the mathematical thinking and strategies of others

Prior Knowledge

- Awareness of different attributes

Teaching Plan

Implementation

Give the students (individually or in small groups) a collection of pictures/photos to sort. Explain to them that they will be sorting these pictures into groups, based on attributes that the teacher will give them. First, have them sort into two groups based on things that are found in the sky and things that are not found in the sky.

During the process, go from group to group and ask them why they are choosing to place the pictures into the two specific groups. Try to get the students to verbalize their thought process by asking questions like:

1. Tell me about each group, and what makes them different.
2. Tell me where the next pictures goes. How did you know that?
3. Why did you put this picture (pulling one from either group) in this group?
4. Why does your solution work?

Once they are finished, bring the class together and ask them how they arrived at their solution, and why it worked. Pick specific pictures and say you believe it should be in the other pile. Ask if everyone agrees with you. Have them explain to you why they agree or disagree with you to further help discover their problem-solving processes.

Now, have them sort the pictures selecting different attributes, repeating the questioning process described above. Some of the attributes that you could choose include:

1. Things that fly /not fly
2. Things that are human made/ not human made
3. Things that are alive/ not alive
4. Things that you can touch/ cannot touch
5. Things that fly and are not human made/ human made/ things that don't fly
6. Etc., etc., there are many attributes you can use.

Extensions

1. Rather than providing the pictures for the students, ask them to find pictures in magazines and cut them out.

2. Students can also sort pictures according to categories they create. Students will then share these ideas with their peers.
3. Teacher will arrange pictures and then ask the children to figure out which attribute was used in sorting.



