

Sorting Junk

Groups: 3 to 5

Materials: single sheet of paper and an assortment of eight everyday objects for each group.

Time: 20-40 minutes.

Sources: *About Teaching Mathematics* by Marilyn Burns, also suggestions by Scott Kim.

After examining the class's eight objects, one person in the class sorts them into two groups of four objects each, based on a rule chosen by that person and kept secret. The other members of the class try to guess the rule. Do this activity several times as a warm-up, with a new member of the class sorting the objects each time according to his or her rule. You might start the process by demonstrating a simple sort: all bluish objects go in group A, all other objects in the other group, for example.

Then divide the class into groups of 3 to 5 students each. Each group chooses 8 everyday objects, and sorts them into two piles, based on a rule that the group agrees to use. This rule is written on a sheet of paper, which is turned face down. Each group then rotates around the room to the next collection of objects, trying at each "station" to guess the rule used to sort those objects. When they think they have guessed, they may turn over the paper and check. They then write a comment on that rule: is it an effective one, did it have flaws, what might have made it better, etc. They then turn the paper face down and go on to the next station, as soon as all groups are ready to rotate.

Alternatively, if there is time, each group might resort the objects at each station, writing a new rule on the sheet of paper, which is then turned face down.

Continue until interest wanes, or class time is no longer available! You may wish to vary the pattern of rotation so that one group does not always set problems for the same classmates each time (in case the alternative method is used, in which a group resorts the objects at each station).

Follow-up: Each student chooses one object from the final set of objects and writes a list of all the attributes of that object that he or she can think of. Collect the lists, and read out the list of attributes for one object (you may wish to edit the list!), and see whether the other students can determine what the object described is.

Further resources: *About Teaching Mathematics* by Burns (especially the chapter on logic), and any of Raymond Smullyan's books of logic puzzles. Also see Barbara McClintock's writings on examining seeds and noting the differences.

[Taught at the Raft, Oct. 28, 2000, by Karl Schaffer]