Sets & Sorting:
Adult Learning Activities

Same & Different

Whole group **5 -10 minutes**

Materials: None.

Introduce and Lead the Activity

Invite participants to stand in a circle. Leader turns to person on her/his left and says, "I'm [name], and one thing that is the ***same*** about us is …" (Label an observable attribute that is the same, such as wearing glasses.) The person spoken to says, "I'm [name], and one thing that is ***different*** about us is …" (Label an observable attribute that is different, such as long or short sleeves.) This person then turns to the person on her/his left, and the activity continues, with the first speaker in a pair labeling something the same about the two and the second speaker labeling something different about the two. Continue until the leader becomes the second person in the last pair.

Conclude the Activity

Discuss with participants the importance of the idea that two objects can be both the same and different.

Same & Different
Emphasizes:

- Identifying and describing observable attributes
- Building attribute language using precision
- Objects can be sorted using the have, have not principle
- Objects in a single set can have attributes that are both the same and different

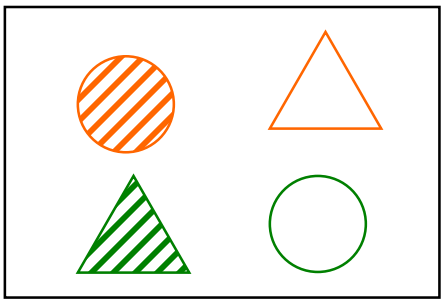
Key Questions to Ask:

- *Was it more difficult to find similar attributes or differing attributes with your partner?*
- *As the group shared, did it become more or less difficult to identify common attributes? Was the language tricky to keep straight?*
- *Why is it important to have children identify how objects are both the same and different?*

Making Matches

Whole group **5 minutes**

Materials: Prepare a display of four shapes that is large enough to be visible to the entire group. The four shapes must include two different shapes, two different colors and two different shadings, such that each shape is the same as each other shape in one (and only one) attribute. An example:



Activity

Ask teachers to look at the four shapes and consider how they could make matched pairs of shapes. Some teachers may note that there are no exact matches; urge them to find a pair that matches in some attribute. After a few moments, ask teachers to share the "pairs" they have found. It should quickly become apparent that each of the shapes can be matched with all three of the other shapes, depending which attribute (shape, color or shading) is being used.

Conclude the Activity

Discuss with teachers the importance of the idea that matches can be defined by different attributes, resulting in different pairs …

Making Matches Emphasizes:

- Attributes can be used to sort collections into sets
- Identifying and describing observable attributes
- Objects in a single set can have attributes that are both the same and different
- Closed sorts offer a limited number of attributes by which to sort

Key Questions to Ask:

- *What attributes did you naturally gravitate towards when trying to find matches with the objects in the set?*
- *Why is it important to give students experiences with attributes beyond color or shape?*
- *How does this activity exemplify how objects can be the same and different from one another?*
- *What makes this activity an example of a closed sort?*

Sort & Re-sort

Table groups **20 minutes**

Materials: None.

Introduce Activity

Ask teachers to take three items from pocket or bag and work in groups to sort & re-sort the resulting collection.

Share sorting schemes

Once every group has sorted their collection of objects at least two different ways, ask them to share with the larger group. Some possible schemes are "items for communicating & personal care items"; or "black, silver & other colors."

Conclude the Activity

Sorting and re-sorting focuses teachers' attention on attribute, which is key to the concept of a set. …

Extension/Alternative

Give participants sets of objects to sort and re-sort – a few commercial "sorting sets," but mostly natural or found materials like rocks or caps.

(If you use playing cards, you could introduce the idea of overlapping and hierarchical sets …)

Sort & Re-sort Emphasizes:

- Attributes can be used to sort collections into sets
- Collections can be sorted in different ways using rules
- Identifying and using attribute language in a precise manner
- The importance of having open sorts for students where categories and attributes are decided by the sorter.
- Sets can be labeled based on the rule used. Sorters and observers should be able to identify the rules used based on looking at the sorted sets.

Key Questions to Ask:

- *What learning occurs what the same set of objects is sorted in different ways?*
- *How is this activity an open sort?*
- *How does sorting lay a foundation for algebraic thinking?*