

Name(s) _____ Period _____ Date _____

Activity Guide - Card Sorting



Objective

Develop an algorithm to sort a row of cards, using the rules below

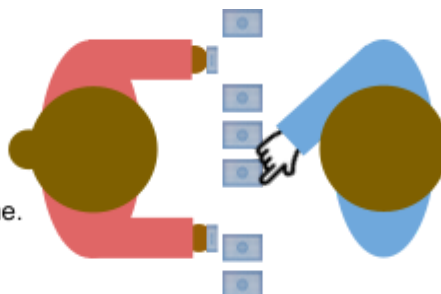
Tips

- Start with only 3 or 4 cards and work up to 8.
- Switch roles frequently.
- Practice with the cards face up first
- Test your work and even try to “break” your solution.
- Stick with it! There are many possible solutions. The point is to find yours!

Rules

Sorter

1. Can pick up, put down, and swap cards in any order they wish.
2. Shows cards to pointer without looking at them.
3. Only one card in each hand at a time.
4. Cards go back into empty spots on the table.



Pointer

1. When shown two cards can point to the bigger one.
2. For a tie point to either.
3. No other communication is allowed

Your Algorithm

Once you've developed your algorithm for processing cards, write the steps of your way of processing the cards in the space below. Feel free to draw pictures, number steps, or do anything else that helps communicate your algorithm.

We will compare all of them, and always put the bigger one on the right.
We will keep going until we don't have to switch any more.

1. Hold up two cards, starting with the two most on the left
2. Put the bigger card on the right
3. Go one card to the right and compare them
4. When you get to the end, do it again until you can go through without having to switch any.

Share and Test

Present your algorithm to another group. Show them the steps of your algorithm and the different ways you've tested it. Make sure both groups get a chance to share and test their algorithms. Here's some tests to consider.

- Use different numbers of cards
- Cards are in reverse order
- Cards are already in order
- Cards are nearly in order

Iterate

Based on your tests or ideas from another group, update your algorithm.

It is the same, but each time we don't look at the cards on the right. For example, after the first time we don't look at the one most to the right, the next time we don't look at the two on the right, the next time don't look at the three on the right. That is because we already know it's the biggest because we already compared it to all the other cards.

Processing Uses Algorithms

Processing is anything a computer does to turn input information into output information. Humans can process information, but usually they're making lots of assumptions or mental leaps to do it. When computers process information, they use **algorithms**, or sets of instructions, that will always turn an input into a desired output. The steps you just created are an algorithm to sort cards.

Reflection

1. What step of the problem-solving process did you think was most important in this activity? prepare

2. Why?

You have to have a very good plan or it won't work. If you prepare very well, then try is a lot easier.

3. Why would someone create an algorithm to process information if they already know how they would do it by hand?

If you make a good algorithm, then you can tell someone else how to do it (or a computer), or you can just prepare once, then when you try it's a lot easier each time.