

Three (Basic) Principles of Algorithms

Type: in person activity, groups

Time Needed: 20-30 for all three.

Materials Needed: Jar with (12 pieces of candy and 1 Pepper or undesirable edible item); Deck of Cards

Source/credit: Noah Wilson | Activity [Slides](#)

Description: These three activities encourage active participation and can be completed in approximately 10 mins each.

- **Candy Jar Algorithm:** Place 12 pieces of candy in a clear container alongside a hot pepper (or other undesirable but edible item). As for a student volunteer. Explain to students that the object of this game is to go back and forth between each of you selecting 1, 2, or 3 pieces of candy. If your next turn has the pepper, you lose. The instructor also goes first. What you don't tell students: on your first turn (and the instructor always goes first) you will always select one candy. From there, you will select an amount of candy based on your students' selection (4 minus student selection). If your student selects 3, the instructor selects 1. If they select 2, the instructor selects 2. Following this pattern, the instructor will never be the last. Multiple students can have a try. At the end of the activity explain to students you were following an algorithm that was based on their selection. *Larger Takeaway: Algorithms are solutions to problems.*
- **Birthday Arrangement:** Ask for at least 5 student volunteers (you can also have the entire class participate). Have students arrange themselves by their birthdays. Do not tell them whether to do this as a line or by year or month, let them make those decisions. Once students have finished, have them speak out their order. Afterwards, ask them the following questions: "Why did you choose a line to arrange in?" "Why not a circle?" "Why only arrange by month and?" *Takeaway: We build assumptions into algorithms.*
- **Card Discrimination:** Instructor will deal out a deck of cards (standard playing card deck) telling students NOT to look at their card but to hold it in front of them. Students then move around the room at will and will treat each other according to the value of the card (ex: if someone has a "2" you should snub them and avoid them at all costs, if they have a "Ace" you should actively seek them out, if they are in the middle, acknowledge them normally and move on, etc). After 5-10 minutes, ask students what value they think they had on their card and why along with how they felt about how they were treated. *Takeaway: Algorithms do not care if the data is objective.*