

Breakouts By Subject

The purpose of the breakout sessions is to give you a chance to meet your colleagues and brainstorm with them ideas about how use computational thinking/ideas to enhance your curriculum. It is also a chance for you to think as a group about how your subject/field is related to computer science.

The questions below are provided to get you thinking. Do not feel obligated to answer all of them; they are merely suggestions to get a discussion going.

At the end of the workshop (4:00-4:30 Sunday), we will have a half-hour session in which each breakout group will informally present one idea that they developed during their session. An answer to any of the below questions might be a good topic for presentation, but feel free to present the outcome of any relevant discussions that arise during your breakout. If there are many people in your breakout group, feel free to break into smaller groups to facilitate discussions.

Starter Questions: CS and Your Field

1. What are some examples of principles, processes, or ideas in your field that embody computational thinking?
2. Think about the careers that are typical choices for someone who studies your subject in college. Name 3 ways in which people in these careers rely on computing technologies. Name three ways in which these people rely on computational thinking.
3. One of the fundamental misconceptions about computer science is that it is the same thing as programming, when in fact programming is just the tool used by computer scientists to do their “real” work. Come up with a similar tools-vs.-concepts analogy for your own subject/field.

Starter Questions: Understanding Computer Science

1. If you had the power to take students on a field trip to 4 places near most high schools, with the goal being to demonstrate to them what computer science is about, where would you take them?
2. What are 4 concrete things that you can do as a teacher of math/science to help your students understand what computer science is, how it is relevant to them, or what kinds of opportunities it might offer them as a career?

See reverse side for more starter questions.

Starter Questions: Using Computer Science in the Classroom

1. Think of a lesson that you teach in your classroom that could be demonstrated using a simulation written in either Python or Squeak. Outline the basic steps involved in building and running this demo for your students.
2. Can you think of any exercises similar to those described in the previous question, but that would involve the students programming up their own simulations?
3. In introductory CS courses, students often fail to see the connection between the programming that they are learning and the ways that they can put that learning to use in fields that have nothing to do with computers. Imagine that you teach a computer science class at your high school. Come up with a programming assignment that does *both* of the following:
 - a. Teaches a fundamental programming concept (e.g. loops, branches (if/then/else), etc.)
 - b. Demonstrates a fundamental idea or process from your subject/field.
4. What resources do you need as a teacher that you do not currently have access to, that would help you incorporate computational thinking ideas into your curriculum? Conversely, what are the most valuable tools that you *do* currently have access to that might help you do this?