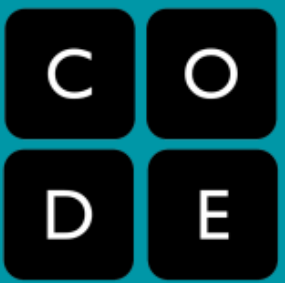
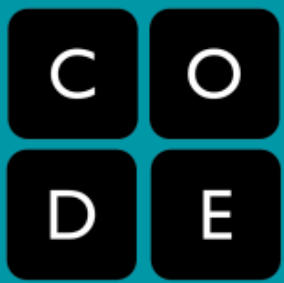


# Number Systems

## Unit 1 Lesson 4 (U1.4)



## Getting Started (5 mins)

Prompt:

**How many different ways can you represent the quantity 7?**

Take one minute to write your ideas in your INB before sharing with your neighbors.

If we kept going how many ways of representing “7” do you think we could come up with?

Why do you think we use the symbols we do use to represent numbers? Who decided that?

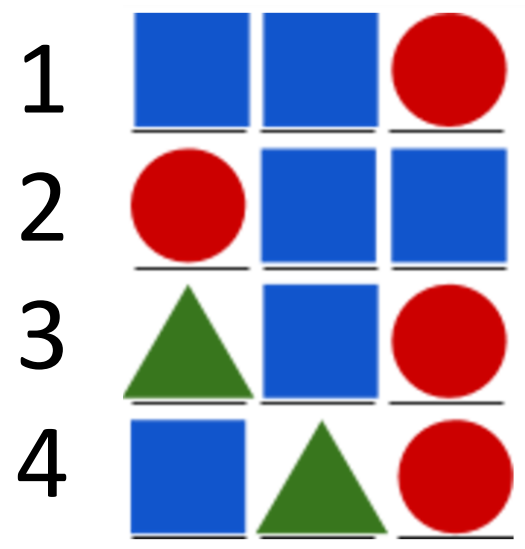
In the previous lessons you all invented ways to represent a set of messages with bits. Today we will focus on representing numbers. By the end of class, you will have invented your own number system.

### Challenge 1 - Find all of the 3-place patterns

Record all of the unique 3-place patterns you can find in your INB.

**How many are there?** Number each one you find to keep track.

***Suggestion:** think about trying to find the patterns in an organized or systematic way, rather than just randomly.*



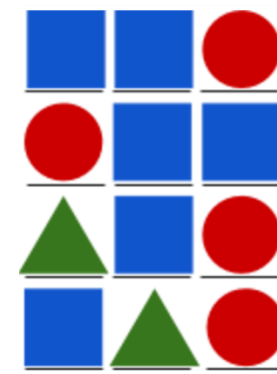
**Challenge 2** - make a system for generating all the patterns

Now that you've listed out all of the 3-place patterns of circles, triangles, and squares, let's put them in a systematic order. You can use any system you like, as long as you create and follow a clear set of rules for getting from one line to the next. (*Figure out a way to order them so that the sequence is predictable*)

Jot down the rules (*Write how you organized the patterns in a systematic way*) of your system in your INB.

When you have a set system, write your rules on the whiteboard or poster paper.

We will share our rules at the end of class.



## Wrap Up

### Gallery Walk of Number Systems

#### **You just made a number system!**

If you have good rule for generating all the patterns, and for getting from one pattern to the next, and you have numbered each pattern so you have a symbol-to-number mapping, you have the beginnings of a number system!

Were some sets of rules easier to use than others? If so what do you think led to this difference?

Do you think there are any limits to the number of the symbols we could use to represent numbers?


What if we only had two symbols: a circle and square?

Could we still make a number system?

What if we had 10 symbols: a circle, a triangle, a square, a star, and so on...Could we still make a number system?

Check your

▼ Lesson 4: Number Systems

 1 Lesson Vocabulary & Resources

2-3 Check Your Understanding

