

## THE STANDARD

# Transferring Information

"Generate and compare multiple solutions that use patterns to transfer information."

## DCI

DISCIPLINARY  
CORE IDEA

### PS4.C • Information Technologies and Instrumentation

"Digitized information can be transmitted over long distances without significant degradation. High-tech devices, such as computers or cell phones, can receive and decode information (convert it from digitized form to voice) and vice versa."

This standard is really about codes. **A code is a pattern that stands for something else, like two drum beats meaning "come home" or a black square meaning "on."** 4th graders design more than one way to send a message using a pattern, try each one, and decide which works best.

## SEP

SCIENCE &  
ENGINEERING  
PRACTICE

### Constructing Explanations and Designing Solutions

"Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design solution."

The key word is multiple. 4th graders don't build one code and stop. They build more than one, then line them up against the same goals: Did the message get through? Was it fast? Could a partner read it? **Comparing two real solutions, with reasons, is the actual skill here.**

## CCC

CROSSCUTTING  
CONCEPT

### Patterns

"Similarities and differences in patterns can be used to sort and classify designed products."

Every code in this lesson is a pattern. The reason a code works is that the pattern stays the same every time, so a partner can tell beats apart and figure out the message. **4th graders compare patterns from different codes and sort which ones are easy to read and which get mixed up.**