

# Light Pattern Communication



Natural model

## Inspired by Firefly Signaling

Challenge Card 3

OBSERVE

DESIGN

TEST

IMPROVE

### Design mission

Design a light-based signal system that uses flashes, color, timing, or pattern to communicate a message to another team.

### Signal or cue

- light
- flash pattern
- timing
- color

### Physics connection

- light
- visibility
- signal pattern
- information transfer
- sender and receiver

### What is communicated?

- identity
- location
- readiness to respond

### Student thinking prompt

How can a pattern of light communicate more information than a single flash?

# Firefly Signaling Challenge Card

## Back of Challenge Card: Plan, Test, and Explain

Use this card with your Team Design Mat.

### 1. Define your system

- Sender:** What sends the signal?  
**Signal:** What carries the information?  
**Receiver:** Who or what detects it?  
**Meaning:** What should be understood?

### 2. Choose your signal or cue

- light
- color
- pattern
- flashes
- timing
- rhythm

*Pick one main light cue, or combine two if it helps.*

### 3. Plan before you build

Sketch the flash pattern. Label the sender, signal, receiver, meaning, and timing. Decide what counts as success before you test.

### 4. Test it

Another team should try to interpret your flash pattern before you explain your answer.

### 5. Troubleshoot

What did you expect? What happened? Was the signal too dim, too fast, too slow, confusing, or misread? Change one thing and test again.

### Use this explanation frame

Our design is inspired by firefly signaling because \_\_\_\_.  
The sender is \_\_\_\_.  
The light signal is \_\_\_\_.  
The receiver interprets \_\_\_\_.  
We improved our pattern by \_\_\_\_.

### Your challenge

Use light patterns to send a clear message.