

Signal Across Space

Plan, test, and improve a light or sound communicator.

S4P2.b "Design and construct a device to communicate across a distance using light and/or sound."

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline actions the team takes to design, build, test, or improve its communication device. These actions show how a device can send a message across a distance.

Maya's Light Communicator

- ① Maya needed to send a message from one end of the playground to the other without walking over. Her team chose light because a flashlight can be seen across an open space. They made a simple light communicator with a flashlight, a piece of cardboard with a narrow slit, and dark paper. The slit helped the team aim the beam at one partner.
- ② Before sending a message, the partners agreed on a code. One quick flash meant "yes," and two quick flashes meant "no." Maya held the cardboard in front of the flashlight so only a thin beam showed. Her partner watched from far away and wrote each signal she saw. When the sun made the beam hard to see, the team moved into shade and tried again.
- ③ A communication device must send a signal that another person can notice and understand. The team tested whether their partner could tell one flash from two flashes at different distances. At a longer distance, the beam spread out and was harder to see. The team could improve its design by using a tube around the flashlight, choosing a darker place, or changing to a loud sound signal if light was blocked.

2 ANSWER WITH EVIDENCE _____ Use the passage

1 What materials did Maya's team use to make its light communicator?

2 How did the team's flash code help the partners communicate?

3 What did the team test to find out whether its device worked across a distance?

4 Name two changes the team could make if its light signal was hard to see.

3 YOUR TURN _____ Your own words

Design a device that sends a yes or no message across the classroom using light or sound. In the three panels, sketch the device, show the sender making each signal, and show the receiver reading it. Label at least three materials or parts, then write two sentences telling what each signal means and how you would test the device.

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PART 1 • READ AND MARK

Underline actions the team takes to design, build, test, or improve its communication device. These actions show how a device can send a message across a distance. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	What materials did Maya's team use to make its light communicator?	A flashlight, a piece of cardboard with a narrow slit, and dark paper.
2	How did the team's flash code help the partners communicate?	The code gave each flash pattern a shared meaning. One flash meant yes, and two flashes meant no.
3	What did the team test to find out whether its device worked across a distance?	They tested whether the partner could tell one flash from two flashes at different distances.
4	Name two changes the team could make if its light signal was hard to see.	Any two: use a tube around the flashlight, choose a darker place, or change to a loud sound signal if light is blocked.

PART 3 • YOUR TURN (SAMPLE ANSWER)

Panel 1 shows two paper cups connected by a tight string, labeled cup, string, and hole; panel 2 shows the sender tapping one or two times; panel 3 shows the receiver holding a cup to an ear and recording the signal. One tap means yes and two taps mean no, and I will test the device by having a partner across the classroom identify five signals.

Accept accurate material lists, signal codes, and improvement ideas that match the passage. For the open task, accept any workable light or sound device with labeled parts, a clear two-signal code, and a reasonable test across a distance.