

Signal System Design Workspace

Use with your Challenge Card and team kit.

Define the system and connect it to nature + physics

Team name _____

Challenge card _____

Date / version _____

Class / period _____

1. Define your system

What information will your system send or help someone detect?

Sender _____

Signal or cue _____

Receiver _____

Meaning _____

2. Nature + physics connection

Which natural model inspired your team, and what design idea are you borrowing?

Physics concept that helps explain the signal _____

3. Constraints + success criteria

What limits or rules do you need to work within, and how will you know the design works?

Materials _____

Distance / visibility _____

Time / testing _____

Success criteria _____

Signal System Design Workspace

Sketch, choose materials, and plan the build

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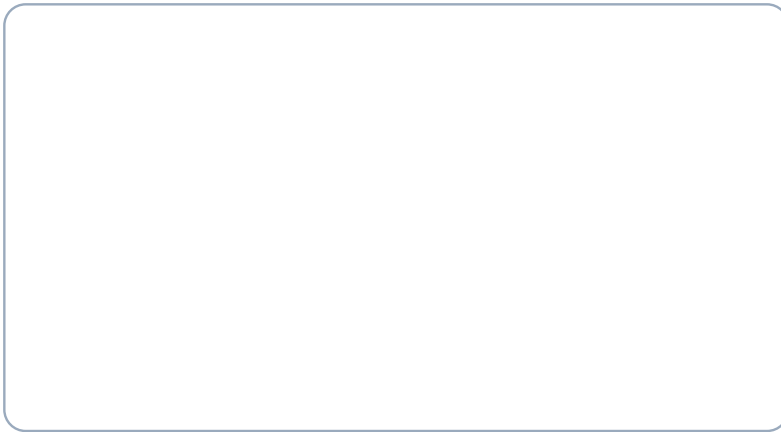
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4. Sketch your signal system

Sketch your system. Label the obstacle, sender, signal, receiver, meaning, and key materials.



5. Choose your signal or cue

Choose the main cue(s) your design will use.

Options: light, sound, reflection, pattern, color, movement, vibration, directional cue, or another signal.

Our main cue(s) _____

Why this cue should work _____

6. Materials + build plan

Materials we will use _____

Step 1 _____

Step 2 _____

Step 3 _____

7. Assumptions to check before testing

We think the receiver will... _____

We think the signal will be... _____

We need to verify... _____

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Test your signal system and collect feedback

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8. Fair test plan

How will you test your design fairly?

What will another team do? _____

What will stay the same each time? _____

What counts as success? _____

9. Peer test feedback

What signal did the other team notice? _____

What did they think it meant? _____

What was clear? _____

What should be improved? _____

10. Test results

Use evidence from your test. Compare what you expected with what actually happened.

Expected result _____

Actual result _____

What happened? _____

What worked well? _____

What was unclear or confusing? _____

Evidence or observations _____

What should change next? _____

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Improve, explain, and reflect

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11. Troubleshoot + improve

Problem we noticed _____

Possible cause _____

Change we made _____

Why we made that change _____

What we would test next _____

12. Explain your design

Inspired by _____

Sender _____ Signal or cue _____

Receiver detects _____ System communicates _____

Physics concept _____

13. Final design diagram

Draw your improved design. Label the key parts.

14. Final reflection

What are you most proud of? _____

What did you learn about signals or physics? _____

How did testing improve your idea? _____

What would you improve with more time? _____

How could this work in the real world? _____