

What needs to change?



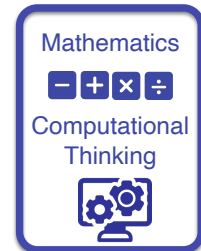
Situation

Human needs and wants

What might work?



Designing Solutions



What works best?



Optimizing the Design Solution



What is the design for?



Defining Problems

What might work?

Designing Solutions



Solutions



Criteria



Constraints

Good Solutions:

- Describe the **problem** to be solved.
- Design multiple **solutions** for the problem.
- Identify and describe the **scientific information** used to design the solutions.
- Describe the **criteria** for the design solutions.
- Describe the **constraints** of the design solutions.

What is happening?



Phenomenon

Observable events in
the real world

What is the design for?

Defining Problems



Problem



Criteria



Constraints

Good Designs:

- Define a **design problem** that can be solved.
- Identify and describe the **scientific information** necessary for solving the problem.
- Identify and describe the **criteria** for a successful solution for the problem.
- Identify and describe the **constraints** of the design solutions.

What works best?

Optimizing the Design Solution



Solution



Criteria
Constraints



Refine

Optimized Solutions:

- Describe the **problem** to be solved.
- Use the **results of tests** to determine how well the solution meets the criteria and constraints.
- Refine the **design** based on the results of iterative testing.
- Identify and describe the **best solution** given the criteria and constraints.