

Solve the Slippery Floor

Plan fair tests, gather evidence, and improve a design.

5.1.B “use scientific practices to plan and conduct descriptive and simple experimental investigations and use engineering practices to design solutions to problems;”

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline actions that gather or test evidence. Circle details that make the material test fair, then number the steps that show how the class improved its design.

A Safer Entryway

- ① After rain, water dripped from students' boots onto the classroom floor. A class wanted to keep the entry less slippery. They first made a descriptive investigation. They observed where puddles formed, measured each puddle's width with a ruler, and recorded the time it took for the area to dry. This information helped them define the problem.
- ② Next, the class asked, "Which mat material absorbs the most water?" They placed equal-sized squares of cotton, rubber, and recycled felt in separate trays. Each square received 50 milliliters of water. They waited two minutes, measured water left in each tray, and repeated the test three times. Mat material was the variable. Water amount, square size, wait time, and measuring method stayed the same.
- ③ Felt left the least water in the trays, so the class chose it for a mat prototype. They placed felt inside a shallow tray with raised edges to hold drips. To test the design, students poured the same amount of water onto it and checked the floor after five minutes. The first tray leaked at one corner. They sealed that corner and tested again.

2 ANSWER WITH EVIDENCE _____ Use the passage

1 What observations and measurements did the class make during its descriptive investigation?

2 What question did the class test, and what was the variable they changed?

3 Name two parts of the material test that stayed the same for every mat square.

4 How did the class improve its first mat prototype after testing it?

3 YOUR TURN _____ Your own words

A lunchbox leaks when a water bottle tips over inside it. Write exactly four sentences that plan a fair material test for a new seal, then describe a prototype, a test of the prototype, and one possible improvement.

PART 1 • READ AND MARK

Underline actions that gather or test evidence. Circle details that make the material test fair, then number the steps that show how the class improved its design. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	What observations and measurements did the class make during its descriptive investigation?	They observed where puddles formed, measured puddle width, and recorded how long each area took to dry.
2	What question did the class test, and what was the variable they changed?	They tested which mat material absorbed the most water. The material, cotton, rubber, or recycled felt, was the variable.
3	Name two parts of the material test that stayed the same for every mat square.	Answers include the water amount, square size, wait time, and measuring method.
4	How did the class improve its first mat prototype after testing it?	The first tray leaked at one corner. The class sealed that corner and tested the design again.

PART 3 • YOUR TURN (SAMPLE ANSWER)

I would ask which seal material stops water from leaking from a small container. I would test equal strips of foam, cloth, and rubber by adding 30 milliliters of water to identical containers and checking each one after five minutes. I would keep the container size, water amount, and wait time the same. I would build a lunchbox seal from the material with the least leak, test it, and add a second strip if water still escaped.

Accept equivalent descriptions of the observations, fair-test controls, and design revision in the passage. For the open response, look for a testable question, one changed material, controlled conditions, a prototype test, and a reasonable improvement.