The Sponge Test

Read a testing procedure, then track the steps and exceptions that keep it fair.

9-10.RST.3 "Analyze a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Number the steps you must follow for each sponge piece. Circle each condition that makes you stop or repeat a trial, and underline what you must do next.

Which Sponge Holds More Water?

1. To compare how much water two sponge materials hold, cut three equal-size pieces of each material. Label them A1 through A3 and B1 through B3. Use one digital scale, a shallow dish, a basin of room-temperature water, and tongs. Before testing a piece, make sure it is completely dry. Put the empty, dry dish on the scale and set the display to zero. Place the dry piece in the dish and record its mass in grams. Remove the piece, but do not reset the scale before weighing it wet. If a piece is already damp, dry it fully or replace it before recording a dry mass.

2. Lower the piece into the water for exactly 30 seconds, making sure it is fully covered. Lift it with the tongs and hold it over the basin for 20 seconds so loose water drains away. Do not squeeze it. Put it back in the dish and record its wet mass within 10 seconds of draining. Timing matters because a longer soak or drain could change the mass for reasons unrelated to the material. If the piece tears while lifting, discard that trial and begin with a new, dry piece of the same material. Before the next piece, dry the dish and set the scale to zero again.

3. Subtract each piece's dry mass from its wet mass to find the mass of water it held. Calculate the average water mass for the three valid pieces of each material, then compare the averages. If the scale reads "OL" at any point, stop that trial: its capacity has been exceeded. Dry the piece fully or use a new piece, then repeat both weighings on a higher-capacity scale. If a piece's dry mass was never recorded, its wet mass alone cannot show water held. Repeat that trial with a dry piece rather than averaging only two pieces for its material.

2 ANSWER WITH EVIDENCE

Use the passage

1. Why must you set the scale to zero with the dry dish on it, but not reset it between a piece's dry and wet weighings?

2. A piece tears as you lift it from the water. What should you do before using a mass from that material in the average, and why?

3. A student soaks every piece for 30 seconds but lets some drain for 20 seconds and others for 40 seconds. How could this change what the final comparison shows?

4. The scale shows "OL" when a student tries to weigh a wet piece. What sequence should the student follow before calculating water held?

3 YOUR TURN

Your own words

A team has three sponge materials but only one basin, dish, and scale. In five or six sentences, adapt the procedure so each material gets three fair trials. Explain how you will keep the shared equipment from changing the conditions, handle a torn piece, and decide which material holds the most water.

ANSWER KEY

The Sponge Test

HIGH SCHOOL · 9-10.RST.3

PART 1 · READ AND MARK

Number the steps you must follow for each sponge piece. Circle each condition that makes you stop or repeat a trial, and underline what you must do next. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	Why must you set the scale to zero with the dry dish on it, but not reset it between a piece's dry and wet weighings?	**Zeroing removes the dish's mass from both readings. Keeping that setting lets the dry and wet masses be compared.**
2	A piece tears as you lift it from the water. What should you do before using a mass from that material in the average, and why?	**Discard the torn piece's trial and test a new, dry piece of the same material. Only valid trials belong in the three-piece average.**
3	A student soaks every piece for 30 seconds but lets some drain for 20 seconds and others for 40 seconds. How could this change what the final comparison shows?	**The longer-drained pieces may have less water when weighed. The averages could reflect different draining times rather than differences between materials.**
4	The scale shows "OL" when a student tries to weigh a wet piece. What sequence should the student follow before calculating water held?	**Stop that trial, dry the piece fully or get a new one, and repeat both the dry and wet weighings on a higher-capacity scale. Then subtract the dry mass from the wet mass.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

We will cut three equal-size, dry pieces from each of the three materials. Before each trial, we will use fresh room-temperature water at the same depth in the basin. We will dry the shared dish and set the scale to zero before weighing each dry piece. We will keep the soaking, draining, and wet-weighing times the same for every piece. If a piece tears, we will replace it with a new, dry piece of the same material and repeat that trial. We will subtract each dry mass from its wet mass, then compare the three materials' averages.

Accept plans that maintain the same testing conditions across materials and use three valid trials for each. Students may suggest another workable way to keep the basin water consistent.