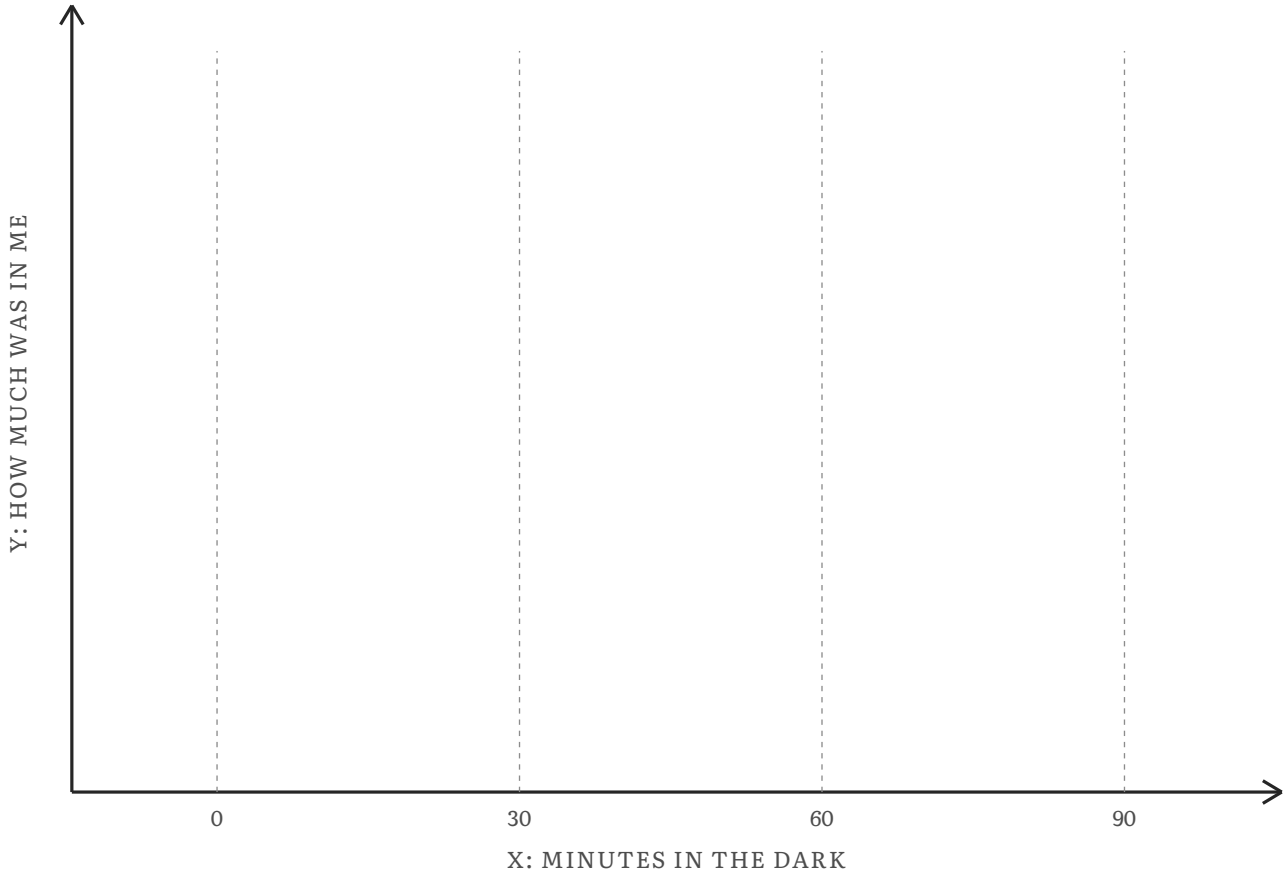
Draw the Gap

Read a two-line graph and connect it to the story.

Ages 7–9 · 15 min · Book link: Lab Notes, page 41

1. Look at Lumi's graph on page 41. Find the two lines and the gap between them.
2. On your sheet, draw Jiwoo's two lines in color 1 and shade the gap. Write DRY MOUTH, TIGHT HAT and HEADACHE where they showed up.
3. Now draw a made-up day in color 2: same bucket, but Jiwoo takes a water cup at the refill. Draw her new water line. Label it MY GUESS.



☐ **Jiwoo's Saturday** (color 1) ☐ **MY GUESS — water at the refill** (color 2)

Talk about it — why is your new line a guess and not a measurement?

This is Jiwoo's gap. Saturday. No drink. — L.

The Thirst Department Game

Model how salt pulls water out of cells, how the Thirst Department rings the bell — and why nobody hears it when attention is somewhere else.

Ages 6–9 · 20–25 min · Book link: Chapter 6 and Lab Notes, pages 42–44

YOU NEED

20 paper salt squares (printable), three spots labeled BLOOD, CELLS and WATER CUPS, role cards, two paper flags, a bell if you have one. Signs, role cards and salt squares are on the next pages.

HOW TO PLAY

1. Hand out roles: Popcorn Hand, Thirst Department, Attention, Prince, Maya, two Signals with paper flags (DRY MOUTH and TIGHT-HAT HEAD), three or four Drink players at WATER CUPS — and everyone else is Water, holding hands in a circle in CELLS: a full cell.
2. The body's two rules. One SALT in, one WATER out: each time a salt square lands in BLOOD, one Water player lets go of the circle and walks to BLOOD. One drink in, one WATER home: each Drink player who reaches BLOOD sends one Water player back to the circle.
3. Round 1 — the bottomless bucket. Popcorn Hand drops a salt square into BLOOD every five seconds. The Thirst Department rings each time the cell shrinks, and the Signals wave. Attention keeps copying the Prince. Stop when the cell is down to three.
4. Lights up. Maya asks Attention, "You okay?" Attention turns around and tells everyone what the Signals were saying. Then the drink: Drink players walk to BLOOD one at a time. Watch the cell grow back.
5. Round 2 — picking up the phone. Full cell again, same number of salt squares. This time, whenever a Signal waves, Attention may turn and say "I hear you!" — and one Drink player walks in. Is the cell bigger at the end?
6. Round 3 — a quiet bell. The Thirst Department whispers instead of ringing. Attention closes their eyes and listens. Can they catch it? Swap roles and play again.
7. Talk: which round kept the cell fullest? In Round 1, was the bell quiet — or was nobody listening? What did Attention need?

For the grown-up

It's a model, so it simplifies. Salt doesn't pull exactly one water for each salt, and water leaves cells all over the body at once, a little from each. The real Thirst Department senses the salt-to-water mix — nobody counts. The game leaves out the kidneys, which hold on to water and, over the next hours, send the extra salt out. Jiwoo got a headache too, but a headache isn't part of the thirst bell — many thirsty people never get one. And many children feel nothing on a day like Jiwoo's (page 74). If a player follows a salt or fluid plan from their doctor, let them choose their role; never ask them to explain it.

Nobody turned the bell off. The bell was loud. — L.

Who's who at the movies

POPCORN HAND

JIWOO'S HAND, ON AUTOPILOT

Hold all the SALT squares. Every five seconds, drop one into BLOOD. Don't watch your hand — it keeps moving on its own.

THIRST DEPARTMENT

A TINY OFFICE IN THE BRAIN

Watch the cell. Each time a Water player leaves it, ring the bell — DING! Keep ringing whether anyone is listening or not.

WATER

EVERYONE ELSE, IN CELLS

Hold hands in a circle — a full cell. One SALT in: one of you walks to BLOOD. One drink in: one walks home.

DRINK

WAITING AT WATER CUPS

Stand at WATER CUPS. When Maya waves you in — or Attention says "I hear you!" — walk to BLOOD, one at a time.

ATTENTION

JIWOO'S NOTICING POWER

Face the Prince and copy every move. You only get one attention. Turn around only when the round says you may.

PRINCE

THE MOVIE

Climb an invisible tower very, very slowly. Rest. Wave. Climb again. Your job: keep Attention watching you.

SIGNALS

DRY MOUTH + TIGHT-HAT HEAD

Two players, one flag each. When the bell rings, wave your flag high, where Attention could see it — if Attention looked. No touching. No talking.

MAYA

ASKS THE RIGHT QUESTION

Sit by Attention. When the grown-up calls LIGHTS UP, ask, "You okay?" Then wave the Drink players in.

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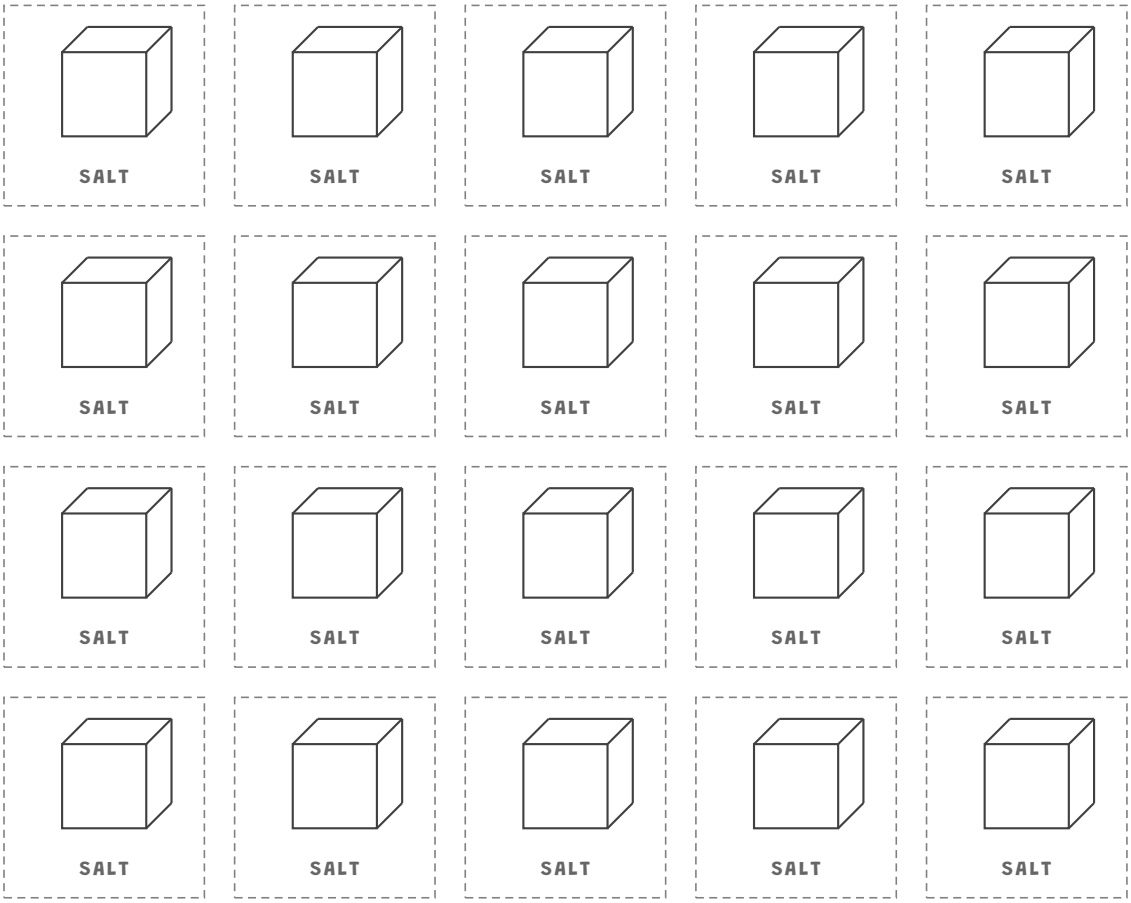
Signs for the three spots

BLOOD

CELLS

WATER CUPS

20 SALT SQUARES



The Paradox Sort

Tell causes from coincidences, then plan a fair test that changes one thing.

Ages 7–9 · 15–20 min · Book link: Lab Notes, pages 41–47, and page 70

1. Cut out the twelve cards. Sort them onto the mat: Part of the paradox or Just true that day.
2. Check your sort against Lumi's notes on pages 41–44 and Jiwoo's own words on page 70. Did you find all four?

Ninety minutes in the dark	**The seats were velvety**	**A bucket of salty popcorn, filled twice**
A screen the size of three buildings	**Maya had seen the movie four times**	**It was Maya's birthday**
Nothing to drink, all movie long	**Her noticing had wandered off**	**The refill teenager had green hair**
The popcorn was warm	**A tiny gold sign promised refills**	**Maya's mom waited in the cafe**

Cut on the dashed lines.

Part of the paradox — or just true that day?

PART OF THE PARADOX	JUST TRUE THAT DAY

Split your four: which made the thirst, and which made the not-noticing? (Page 44.) And the gold-sign card: it put no salt in Jiwoo's blood — but did it change what she did?

MY FAIR TEST

I will change: _____

I will keep the same: _____

I will notice: _____

The salt made the thirst. The attention made the not-noticing. Two questions. Two answers. — L.

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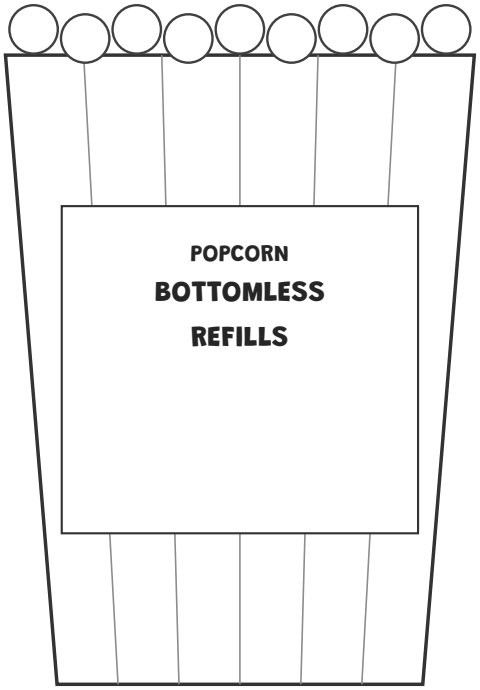
Sign Detective: BOTTOMLESS REFILLS

Notice what a sign promises — and what it leaves out.

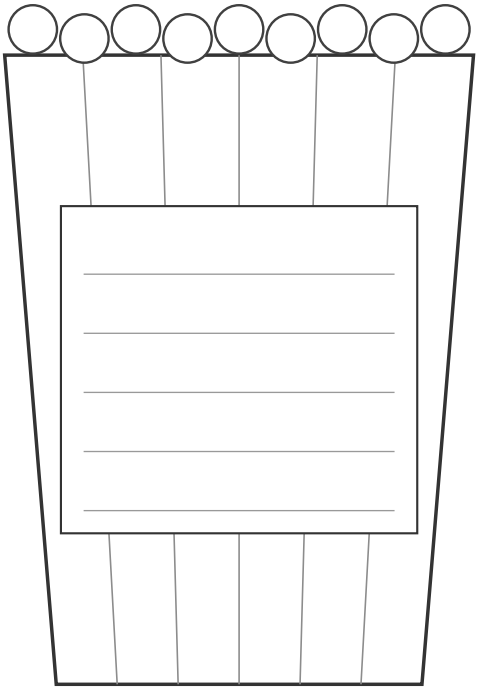
Ages 7–9 · 20 min · Book link: Chapter 1 and Lab Notes, page 41

The bucket and its sign



The bucket was bottomless. Jiwoo was not.

Your honest sign



1. What does the sign promise?

2. Was the promise true? Read Lumi's note in the middle.

3. What does the sign NOT tell you?

4. Who wrote the sign — and what did they hope you would do?

Grown-ups: This activity is about promises and words, not numbers. The front of a package is enough — please skip the nutrition panel. The book leaves sodium numbers out on purpose.

A sign can tell the truth about a bucket and say nothing at all about you. — L.

Lumi Holds Up a Flag

Notice a body signal in an ordinary moment — and tell it in Lumi's calm, dry voice.

Ages 6–9 · 15–20 min · Book link: Chapters 5–6

1 · I was so busy...

2 · Lumi pops up on...

3 · Lumi holds up a flag:

The flag says: _____

4 · When I listened, I...

Lumi's style: short, calm, a little dry. "You are receiving signals." · "You tell me." · "Writing that down."

I whispered the whole time. It was a theater. I have manners. — L.

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Word Lab Workout

Practice the words a scientist needs, from Lumi's Word Lab.

Ages 7–9 · 15 min · Book link: Lumi's Word Lab, pages 53–65

1 · FIND ALL 16 WORDS (across, down or diagonal)

T	N	S	I	K	G	M	H	H	L	P	G	W	E
N	M	S	N	B	E	I	H	Y	A	A	C	A	W
I	O	O	T	D	F	S	E	P	B	R	H	T	C
Y	N	D	E	E	C	A	A	O	B	A	Y	T	S
D	Y	I	R	H	A	T	D	T	O	D	D	E	K
I	V	U	O	Y	U	T	A	H	D	O	R	N	H
L	K	M	C	D	S	R	C	A	Y	X	A	T	S
U	B	B	E	R	E	I	H	L	S	P	T	I	Y
T	A	F	P	A	T	B	E	A	I	F	I	O	M
E	L	I	T	T	H	U	P	M	G	A	O	N	P
I	A	M	I	I	I	T	S	U	N	L	N	T	T
L	N	H	O	O	R	I	A	S	A	B	K	G	O
M	C	F	N	N	S	O	L	A	L	L	N	C	M
R	E	I	S	W	T	N	T	G	H	S	A	C	I

- ☐ PARADOX
- ☐ SODIUM
- ☐ SALT
- ☐ BALANCE
- ☐ DILUTE
- ☐ THIRST
- ☐ HYPOTHALAMUS
- ☐ BODY SIGNAL
- ☐ DEHYDRATION
- ☐ HYDRATION
- ☐ SYMPTOM
- ☐ HEADACHE
- ☐ ATTENTION
- ☐ INTEROCEPTION
- ☐ MISATTRIBUTION
- ☐ CAUSE

2 · MATCH THE WORD TO LUMI'S DEFINITION

PARADOX	☐	A Blaming the wrong thing for a real feeling.
BALANCE	☐	B Keeping enough water in your body so everything runs smoothly.
DILUTE	☐	C The just-right mix of water and salt your blood insists on keeping.
HYDRATION	☐	D Something that sounds impossible but is somehow true.
DEHYDRATION	☐	E The thing that really made something happen — which is not always the first thing you noticed.
ATTENTION	☐	F To add water until something too strong becomes gentle again.
MISATTRIBUTION	☐	G Your noticing power. You only get so much of it.
CAUSE	☐	H When your body runs low on water and starts making do.

Sixteen words from one trip to the movies. A few come back in later cases. Most stay here. — L.

Word Lab Workout — answers

For grown-ups and for checking your own work afterwards.

T	N	S	I	K	G	M	H	H	L	P	G	W	E
N	M	S	N	B	E	I	H	Y	A	A	C	A	W
I	O	O	T	D	F	S	E	P	B	R	H	T	C
Y	N	D	E	E	C	A	A	O	B	A	Y	T	S
D	Y	I	R	H	A	T	D	T	O	D	D	E	K
I	V	U	O	Y	U	T	A	H	D	O	R	N	H
L	K	M	C	D	S	R	C	A	Y	X	A	T	S
U	B	B	E	R	E	I	H	L	S	P	T	I	Y
T	A	F	P	A	T	B	E	A	I	F	I	O	M
E	L	I	T	T	H	U	P	M	G	A	O	N	P
I	A	M	I	I	I	T	S	U	N	L	N	T	T
L	N	H	O	O	R	I	A	S	A	B	K	G	O
M	C	F	N	N	S	O	L	A	L	L	N	C	M
R	E	I	S	W	T	N	T	G	H	S	A	C	I

MATCHING

PARADOX — D

BALANCE — C

DILUTE — F

HYDRATION — B

DEHYDRATION — H

ATTENTION — G

MISATTRIBUTION — A

CAUSE — E

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Junior Scientist Badge

Celebrate thinking like a scientist — whatever the result.

Ages 6–9 · 10 min · Book link: Think Like a Scientist, page 50



Scientist: _____

Lab partner: _____

Date: _____

This badge is for checking your reasons. Even the ones you were sure about. Especially those. — L.