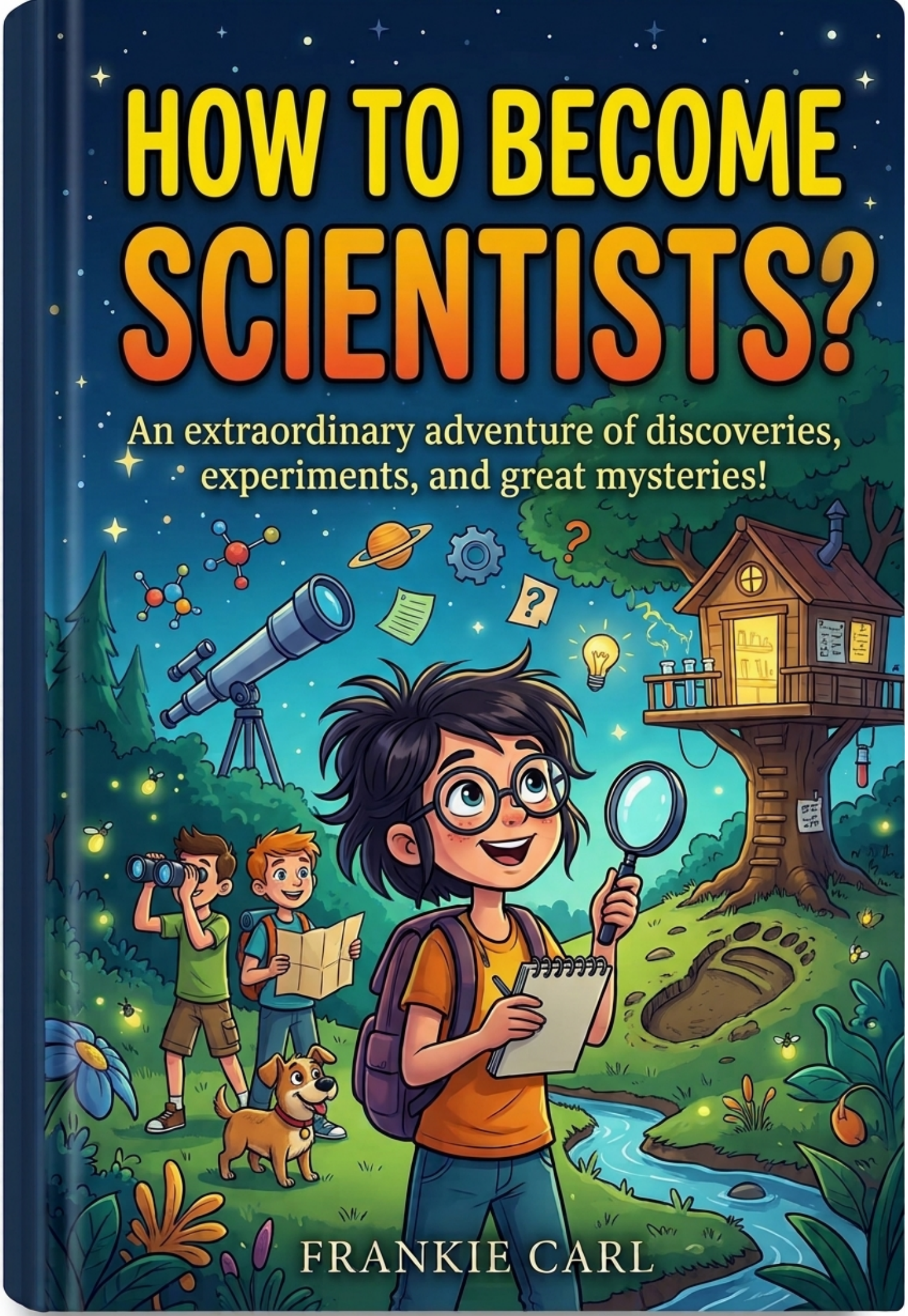

HOW TO BECOME SCIENTISTS?
An extraordinary adventure of discoveries, experiments, and great mysteries!
FRANKIE CARL

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The Question in the Puddle

When Ada arrived at school, the courtyard smelled of rain. The storm the day before had left drops hanging from the gutters and small, shiny puddles between the paving stones. The sun peeked out from behind a cloud, as if it had sneaked a look to check on the mess.

Ada put her backpack down by the door and stopped. In the middle of the courtyard there was a puddle. Or rather: there was a small puddle, with an uneven shape and a thin edge. The day before, when she had left school, there had been a huge one there. Ada remembered jumping around it with such a long leap that she had almost landed inside Leo's backpack.

"But where did it go?" she said.

Leo, who was trying to close a stuck zipper, looked up. "Who?"

"The puddle. Yesterday it reached almost to the bench. Today it looks like a bowl left behind by a very thirsty giant."

Leo looked across the courtyard. "Maybe the giant came back last night."

"And took only the water?"

"He was thirsty. We can't judge him."

Ada laughed, but she kept staring at the shiny patch. The puddle didn't have legs. It didn't have a door it could walk out through. And yet it had become much smaller.

For a moment, she thought the sun had dried it up. It was a ready-made answer, simple and even plausible. But a question got in her way: if it had been the sun, what exactly did that mean? And why hadn't the puddle disappeared all at once?

The courtyard was filling up with voices and footsteps. Ada pointed to the water for Leo. "Come on. Let's take a better look first, then see if we can figure it out."

Leo finally freed the zipper. "All right. But if the giant comes back, I'll ask questions from a respectful distance."

The two of them approached without stepping on the edge. They didn't have an explanation yet. All they had was a puddle smaller than the one they remembered and a question that wouldn't leave them alone.

Ada crouched down, keeping her shoes away from the water. Up close, the puddle was even less impressive: a patch about as wide as her science notebook, maybe a little more. But the ground around it was dark and shiny. A little farther away, the paving stones looked almost dry.

“Was it really big yesterday?” Leo asked.

“Yes. I didn’t measure it, but I remember it reached almost to the bench.”

“Then we have a problem.”

“What problem?”

“If you didn’t measure it, how do we know it was bigger?” Leo looked very serious, but one corner of his mouth was tugging upward.

Ada narrowed her eyes. “Because yesterday I had to jump so I wouldn’t get wet. Today I can step over it without even tying my shoes.”

“Don’t actually try it. Mrs. Riva always says running on a wet floor is an idea for inexperienced penguins.”

Ada stood up. He was right: she didn’t have an exact measurement from the day before. But she remembered where the water had reached and the jump she had made. It wasn’t perfect evidence, she thought. Still, it was a useful memory to check against other observations.

Just then, a girl from their class ran past and jumped over the puddle. She landed on the other side without getting wet.

“There’s a measurement!” Leo said. “One and a half girls wide.”

“That’s not a very handy unit of measurement.”

“Depends on the girl.”

The bell hadn’t rung yet, but more students were arriving in the courtyard. Ada looked again at the little mirror of water. It occurred to her that a question could start like this: something changes, and you want to know why. You didn’t need a laboratory, a lab coat, or a complicated machine. You just had to notice the change and not let it slip out of your mind.

“The question is: where did the water go?” she said.

Leo nodded. “And the answer could be: into the giant.”

“We’ll put that under ideas to check.”

“With a giant as a research assistant?”

“Only if he promises not to drink the notebook.”

“Before we go in, let’s check something,” Ada suggested. “If the giant came by, maybe he left footprints.”

Leo looked around with exaggerated care. “Enormous footprints, of course. And cookie crumbs. Giants are always hungry.”

They walked along the edge of the courtyard without going far from the door. There were leaves stuck to the ground by the rain, a few little stones, and a strip of mud near the gutter. No footprints as big as a bathtub. No crumbs. No giant hiding behind the trash can, although Leo checked anyway.

“We haven’t found any evidence of the giant,” Ada said.

“Not yet,” Leo clarified. “He might be very good at cleaning up.”

“Or your explanation is just a joke.”

“A very scientific joke.”

Ada shook her head. “A joke can give us an idea. But it isn’t enough to prove the idea is true.”

Leo put a hand on his chest. “Are you saying I’m not a giant?”

“We can check that with a measuring tape.”

“And what if the measuring tape is faulty?”

They laughed softly. Then Ada took out her little notebook from her pocket, the one she used to draw imaginary animals and jot down things she wanted to remember. On a blank page, she drew a crooked circle. “This is today’s puddle.”

“It looks like a potato.”

“It’s a puddle seen from above. Potatoes don’t usually reflect clouds.”

Leo bent over to look at the drawing. “And here you write: ‘No giant found, but the check isn’t conclusive.’”

Ada wrote exactly that, then added: “Joke idea: someone drank the water. To check?” She stopped and smiled. “No, we’re not really checking that. We don’t need to chase giants. We need to figure out which possibilities make sense and how to tell them apart.”

The page already had two different things on it: a drawing of what they could see and an imagined explanation. Ada drew a line between them. On one side was the small puddle, right in front of their eyes. On the other was the idea of the thirsty giant.

“That way, we won’t end up confusing what we know with what we make up,” she said.

Leo looked at the line. “The giant is sad, but science is tidier.”

“But we’ve discovered one thing,” Ada said. “If we want to understand the puddle, we have to look for something we can observe.”

Leo pointed to the drawing. “We can observe that it’s small. We can also observe that there’s no giant. But we can’t observe the giant drinking, because we didn’t see it happen.”

“Exactly. And if someone asked us how we know it was the sun, it wouldn’t be enough to say ‘because’ or ‘because it seems right.’ We’d have to find a way to check.”

“Like waiting for the giant to come back?”

“Better not. He might be allergic to notebooks.”

Leo bowed to the puddle, as if apologizing for accusing it without evidence. Then he stood beside Ada. The courtyard suddenly seemed like a different place: not just somewhere to run around before the bell, but a place full of details to notice.

The strip of mud, for example, started near the gutter. A leaf had stuck to a paving stone. And the puddle, just as they were talking, quivered a little in a gust of wind.

“Can anything become a clue?” Leo asked.

“It can be a clue, but we have to figure out what it’s a clue to.”

“Like when you find a crumb and immediately think of a cookie?”

“Or a hungry pigeon. One crumb by itself doesn’t tell us who left it.”

Leo looked at the page. “So one thing we see can have more than one explanation.”

Ada nodded. The drawing didn’t solve the mystery, but it kept them from forgetting where they

had started. The puddle was small. There was mud and there were dry patches around it. The giant, on the other hand, was still just a joke.

“Shall we go in?” Leo said.

Ada closed the notebook, but didn’t put it back in her backpack. “Yes. Before the bell, I want to remember what it looked like yesterday. Maybe that will give us a clue.”

In class, Ada kept thinking about the puddle. During math, she drew a bench, three paving stones, and a big blue patch in the margin of her notebook. Then she erased the patch and drew it smaller.

“If you draw that again, the puddle will turn into a postage stamp,” Leo whispered from the desk next to hers.

“I’m trying to remember.”

“Then draw the acrobatic leap too.”

Ada added an arrow and a figure that looked like an insect with arms. “Is that supposed to be me?” Leo asked.

“It’s the jump.”

“I feel represented.”

The teacher was explaining fractions. Ada started listening again, but every now and then her eyes drifted toward her notebook. The puddle from the day before hadn’t had a perfect shape. It followed the cracks between the paving stones and curved around a crack. It had seemed big because she’d had to change her route to avoid getting wet.

At recess, the two friends sat on the bench overlooking the courtyard. Ada tried to remember what time she had left. The storm had been moving away. The last drops were still tapping on the roof, and water was running down from the gutters. The water had gathered in the lowest part of the courtyard, right by the bench.

“I think it reached here yesterday,” she said, pointing to a paving stone. “But I’m not sure exactly where the edge was.”

Leo looked at the spot. “I remember we raced to see who could jump farther.”

“And who won?”

“The puddle. It got both of my shoes wet.”

Ada wrote in her notebook: “Yesterday, after the storm: water spread farther, near the bench. A memory, not an exact measurement.” Then she drew a little picture of the courtyard from above. She didn’t mark distances with numbers. Instead, she drew an approximate outline and added a question: “How big was it really?”

“Why do you write that it’s a memory?” Leo asked.

“Because we didn’t take a photo or measure the edge. We can say that it seemed bigger to us. But that’s different from knowing exactly how big it was.”

Leo thought for a moment. “So memory is useful, but it can be wrong.”

“Yes. It gives us a place to start. Then we can look for more precise observations.”

Ada turned the page toward him. The blue patch looked enormous next to today’s little puddle. But the drawing wasn’t proof: it was a way to keep what they remembered together, without turning it into a measurement they had never made.

“If we were scientists with a time machine, we could go back to yesterday and measure it,” Leo said.

“Or we could start measuring it today, if we want to know how it changes from now on.”

“So we can’t get back the information we’re missing?”

“Not yesterday’s. But we can be honest about what we don’t know.”

Leo grimaced. “Not knowing is a little annoying.”

“Sometimes. But making up a measurement would be worse.”

Under the drawing, Ada wrote: “We don’t know exactly how much water there was yesterday.” It seemed like a small sentence to her, yet an important one. If she had written down a number at random, the notebook would have seemed more certain, but it would have told something untrue.

Leo took the pencil and added an enormous question mark above the bench. “Now you can see we’re missing a piece.”

“Now it looks like the bench is thinking.”

“Maybe it’s wondering where the water went, too.”

Ada smiled. She realized that remembering together was different from remembering by herself. Leo noticed things she hadn't thought of: the jump, his wet shoes, the rain still on the roof. She had noticed the point where the water reached and the crack between the paving stones. Neither of them had the whole picture.

When the bell rang, Ada put away her notebook. Before going in, she turned around one last time to look at the courtyard. The puddle was still there, but from that moment on, it seemed less like a patch and more like a question with many pieces: what it had been like yesterday, what it was like today, and what had happened in between.

"Shall we look at it again tomorrow?" Leo asked.

"Yes. And maybe this time we'll pay attention to what we see, not just what we remember."

After classes, the courtyard was almost empty. Ada and Leo asked the teacher if they could stay by the door for a moment to look at the puddle. She said yes, as long as they stayed on the dry path and didn't go near the gutter.

The sun was higher than it had been in the morning. The clouds had moved away, and in many places the ground no longer glistened. Ada stopped in the doorway and pointed to the dry paving stones.

"Was it the sun?" Leo asked.

"It's one possibility. But first let's look at everything there is."

They didn't go into the wet part. From where they were, they could see a large dry area, a dark patch near the puddle, and a few drops still clinging to the gutter. The puddle remained inside the crack between two rows of paving stones. A few steps away, the ground near a flower bed looked dark.

Ada opened her notebook again. She divided the page into two columns. At the top, she wrote "I See" on one side and "I Think" on the other.

"I see the sun," Leo said.

"I see dry patches and dark patches."

"I see that the puddle is still here."

"And that it's smaller than the one we remember."

Ada wrote the first three sentences under “I See.” She put the last one next to the drawing of the day before, clarifying that it was a comparison with their memory. Then Leo said, “I think the sun dried up the courtyard.”

That sentence went in the other column. Ada added: “Possible, needs checking.”

“Why don’t you put it in the first column?” Leo asked.

“Because we can see the sun. But that it was the sun that made the water disappear is an explanation. Maybe it’s a good idea, but we haven’t proved it yet.”

Leo peered at the notebook. “So if I write that the sun is having a party with the drops, it goes in the ideas column?”

“Yes. And if you add that the drops invited the giant, the column will get crowded.”

Leo pretended to write it down. “Party for the drops. The giant brings cookies.”

Ada laughed, then looked back at the ground. The edge of the puddle was uneven. In some places the water reached the next paving stone; in others, it seemed to seep along a crack. She couldn’t tell whether it had moved or had always been like that. She hadn’t followed the edge throughout the day.

“There are clues, but they don’t tell us just one thing yet,” she said.

Leo nodded. “Like the giant’s footprints that aren’t there.”

“Those aren’t there at all. These, though, we can describe.”

Ada wrote: “Paving stones mostly dry; dark ground near the puddle; water still present in the crack.” She realized that putting the words on the page helped her look more closely. When she tried to explain everything right away, she risked forgetting the simplest details.

The teacher called them from the door. “It’s time to go. Watch out for the wet ground.”

“Let’s go,” Ada said. “Tomorrow we’ll see if anything has changed.”

They left the courtyard, leaving the puddle where it was. No overturned bucket, no broken pipe, no giant. But the sun, the dark ground, and the cracks between the paving stones had become questions to follow up on.

That evening, Ada told her mother about the puddle while she tidied her notebooks on the table.

“It was big yesterday and small today,” she said. “Where do you think the water went?”

Her mother set a cup on the counter. “I don’t know. What did you observe?”

Ada had expected a ready-made answer, maybe that it was the sun. Her mother’s question surprised her. She opened her notebook and read her notes: the paving stones were mostly dry, the ground was dark near the puddle, and the water remained inside a crack.

“And then the sun came out,” she added.

“You saw that. Whether its presence caused the change is another matter. How could you find out?”

Ada didn’t have an answer. “I could go back tomorrow. If the puddle is even smaller, does that mean the sun made it disappear?”

“Not necessarily. Other things might have changed. But observing more than once would help you understand what happens over time.”

Her mother didn’t add anything else. She didn’t take the notebook to write in it for Ada and didn’t suggest a solution. She just handed her a pencil, because hers had gone blunt.

Ada drew a line with two dots: “yesterday” and “today.” Under the first, she wrote “rain stopped not long ago; big puddle, according to memory.” Under the second: “sun; small puddle; courtyard partly dry.” She drew an arrow between the two dots.

“Something happened here,” she said.

“Yes. But we don’t know exactly when, or how.”

Ada circled the arrow. The puddle hadn’t shrunk in front of her eyes. It had changed while they weren’t watching: between leaving school and the next morning, or maybe in an even shorter stretch of time. Her memory of the day before was a little fuzzy. To find out more about what was happening, they would have to observe from that moment onward.

“I’ll tell you the rest, too,” Ada said to her mother. The memory took her back to that morning, before recess, when she had returned to the door with the teacher’s permission.

The puddle was still there. Ada stopped in the doorway and looked toward the bench, as if the courtyard were a page she had to read before turning it.

The puddle seemed similar to the one she had seen when she arrived, but she wasn’t sure. The

lines between the paving stones still showed her that it was small. The edge, though, was so uneven that it looked different every time.

“Has it changed?” Leo asked, arriving behind her.

“I don’t know yet. We’d have to compare carefully.”

“Can we use the bench as a ruler?”

“We can remember where it is compared with the bench, but we can’t call it a ruler.”

“Too bad. The bench would have been proud.”

Ada opened her notebook to a new page. She wrote the date and time, then added: “Puddle still present.” She paused, crossed out the word she had misspelled, and wrote it again: “Puddle still present.”

“This time we’ll write down when we look,” she said. “Then we won’t have to guess everything afterward.”

Leo searched his pencil case for a pencil. “And what if it’s gone in an hour?”

“Then we’ll know it changed sometime between now and an hour from now. We still won’t know why, but we’ll have one more piece of information.”

Leo thought that sounded like a rather slow answer. “Doesn’t science have a button that jumps straight to the solution?”

“If it does, it must be hidden behind the eraser.”

“My eraser has already disappeared. Maybe the giant drank it.”

Ada laughed. Then they both looked back at the puddle. The change was no longer just something that had happened yesterday. From that moment on, they could follow it, one visit at a time.

“The sun might have drunk the water,” Leo said, staring up at the sky.

Ada looked at the notebook. “That’s a funny way to put it. But the sun doesn’t have a mouth.”

“Maybe it has an invisible mouth.”

“Then we’d have to explain what we mean. The water disappeared from the puddle, but that doesn’t mean it disappeared from the world.”

Leo wrinkled his nose. “How can it not disappear if we can’t see it?”

“It might have moved somewhere else. Or it might have changed into something we can’t see easily.”

Ada remembered a pot on the stove, when hot water made a thin cloud. Her mother had explained that some of the water turned into vapor: a gas that mixed with the air, invisible to their eyes. But Ada didn’t know if that was what had happened to the puddle, or how much.

“Maybe some of it turned into vapor,” she said. “And maybe some of it went into the ground.”

“And maybe the giant drank it.”

“We’ll leave that out of the serious explanations.”

Leo gave a military salute. “Goodbye, giant.”

They wrote two possibilities in the ideas column: “water passed into the air as vapor” and “water went into the ground.” Ada put a question mark next to both.

“How do we know which one is right?” Leo asked.

“We don’t know yet. Both could be true, or only one, or neither in the way we’re imagining them.”

“So we don’t just choose the one we like best?”

“We can have a favorite, but we have to look for evidence.”

Leo stared at the sun. “I like the vapor one. It sounds like a magic trick.”

“Science can seem like magic when we don’t know how it works. Then we try to understand.”

“And what if the answer is boring?”

“Even a simple answer can hide lots of questions.”

Ada wrote in the margin: “What could we observe to tell the possibilities apart?” She didn’t have a plan yet, but the mystery had changed shape. They weren’t just asking where the water had gone anymore; now they were wondering what explanations were possible and how they could be tested.

“Can you see vapor?” Leo asked.

“Sometimes we see a little cloud near hot water, but water vapor itself in the air is invisible. That

little cloud is made mostly of tiny droplets that form when the vapor cools."

Leo looked carefully across the courtyard. "So we don't see a little cloud above the puddle."

"We don't see one. But that alone isn't enough to say there wasn't any vapor."

"It's complicated."

"A little. That's why we don't write 'the sun drank the water' as if it were proven. We write that we're trying to understand."

Ada drew an arrow from the puddle toward the air and another toward the ground. They weren't arrows showing what had happened; they were possibilities. To remind themselves, she made them dashed.

"This is the air, this is the ground," she explained. "It's not an exact map. It's just to help us remember the ideas."

Leo added a little cloud wearing sunglasses next to the first arrow. "The vapor went on vacation."

"We don't know if it really went away."

"It's a hypothetical vacation."

Ada wrote "hypothesis" above the list. The word meant an idea that might explain something, but still had to be checked. It wasn't a certain answer, and it wasn't a fantasy to dismiss right away. It was a suggestion to test.

"So a hypothesis is sort of like a lead?" Leo asked.

"Yes, a lead that tells us where to look next."

"And what if the lead is wrong?"

"Then we learn that we have to look for another one."

The teacher, who was coming out of the door, heard them. "Just remember not to touch the water and not to go into the flower beds. You can observe from the path."

"Yes, Miss," Ada replied.

The rule didn't spoil their investigation. In fact, it gave her an idea: they didn't need to put their hands in the puddle or do dangerous experiments. They could start by observing, drawing, and

taking notes. If later they wanted to try something, they would ask an adult to help them choose a safe way to do it.

Leo closed the notebook carefully. “We have two leads, one puddle, and no giant.”

“That’s enough for today.”

“Tomorrow, shall we look for clues for the leads?”

“Tomorrow, we’ll take a better look.”

Ada knew that taking a better look didn’t mean staring at the water until it confessed. It meant noticing details, asking questions, and not turning an idea into a certainty just because it sounded good. The two dashed arrows stayed on the page, waiting for evidence.

Ada looked again at the area near the flower bed. The ground was dark in one spot and lighter in another. She didn’t know if it had always been that way: she didn’t have a photo of the courtyard from before the rain.

“If the water went into the ground, why didn’t it go in everywhere?” Leo asked.

Ada pointed to the paving stones. “Maybe the ground and the pavement aren’t the same. But that’s just an idea.”

“Can the ground absorb water?”

“I think so. But we don’t know how much of it went in here.”

Leo suggested that the ground had drunk like the giant, but Ada reminded him that “absorb” didn’t mean it had really drunk the water. The water could seep into the spaces between the grains of soil, even if they couldn’t see it. It might also have collected somewhere beneath the surface. To find out, they would need more observations and perhaps an adult’s help.

They wrote down the question without answering it: “Did the dark soil absorb water?” Beside it, Ada added: “Don’t touch; observe from the path.” They didn’t want to dig or make a mess in the courtyard while chasing an explanation. For now, it was enough to notice that the areas weren’t all the same.

Ada turned the page and wrote in big letters: “What do we know?” Below it she put three points: the puddle was still there; the courtyard was partly dry; near the water there was a patch of dark soil. Then, in a separate box, she added: “What are we imagining?” There she listed the vapor and

the water that had gone into the ground.

Leo read the page. “That way, we won’t forget which thing we saw and which thing we thought.”

“Exactly. And when we have new observations, we can add them.”

“Can we draw the giant too?”

“On the back. But he has to stay in the joke box.”

Leo drew a very tall creature with an umbrella and an empty glass. Ada wrote underneath: “Not observed.” The notebook now contained memories, details, and possibilities, each in its proper place. It didn’t give them the solution, but it stopped ideas from dressing up as facts.

Ada read every line again. “We won’t write ‘the sun dried up the puddle.’ We’ll write ‘the sun might have contributed.’”

“That’s a longer sentence,” Leo said.

“But more precise.”

He sighed as if precision were an exercise in gymnastics, then copied the sentence onto his own page. “Might have contributed. Sounds like a sentence wearing glasses.”

“Then draw it some, too.”

Ada’s story reached the bell, which had rung just as Leo was adding a pair of glasses to the sentence. The children headed toward their classrooms. Ada closed the notebook and put it in her backpack, leaving the bookmark on the puddle page.

They hadn’t found the answer. They had found a better question, a few observations, and two explanations to check. For the moment, that was all they could say without making up the rest.

Before going back inside, Ada looked once more at the dark strip near the edge. Leo bent down a little, staying on the dry path.

“That part looks different,” he said.

“Yes. But we don’t know if it’s dark because it’s wet or if it was already dark.”

“Can we check tomorrow?”

“We can look to see if it changes. Without touching it.”

Leo added a little drawing of the strip in the notebook. The question was no longer just where the water had gone: the ground might have something to tell them, too, if they learned to observe patiently.

“Shall we come back tomorrow?” Leo asked, as the teacher called them from the door.

“Yes. We’ll look at the puddle and the ground, and write down what has changed.”

“And what if the giant comes back in the meantime?”

“We’ll write that down, too. But first we’ll look for his footprints.”

Leo slung his backpack over his shoulder. “Then the mystery is still open.”

Ada looked one last time at the little patch of water. “For now, yes.”

They didn’t know where the water had gone, or which of their ideas was right. They had a question, a few clues, and a notebook full of observations and possibilities kept separate. Ada closed the notebook on the table at home: the next day, they would look again. The investigation had just begun.

Detective with Their Eyes Open

The next morning, Ada arrived in the courtyard with her notebook held tightly to her chest. The air was cool and the sky had thin clouds, so light that the sun managed to shine through them. Leo was waiting for her near the school door, with his backpack open and a pencil sticking out of one pocket.

“Did you bring your detective glasses?” he asked.

“No. But I brought a detective pencil.” Ada showed it to him. “It’s for writing, not for magnifying footprints.”

“Too bad. I’d already prepared an imaginary magnifying glass.”

The puddle hadn’t disappeared. In the middle of the courtyard, a patch of water remained, smaller than Ada remembered it being the day before. Near the edge, the strip of dark soil was still visible. Neither of them went close enough to step in the mud.

Ada opened her notebook to the page with the drawing of the puddle. “Yesterday we decided to come back and look. So let’s look. For now, no fingers in the water, no jumping, and no tests with our shoes.”

“Not even a test to see if our shoes float?”

“That would be a test of the shoes.”

Leo nodded solemnly. “And the shoes aren’t today’s mystery.”

They stopped on the dry path, where they could see the patch and the ground around it clearly. Ada wrote the date at the top of the page. Leo leaned toward the courtyard without stepping off the path.

“What do you notice?” Ada asked.

“That the puddle is small.”

“Compared to when?”

Leo thought about it. “Compared to yesterday’s drawing. And what I remember.”

“Good. In the notebook, we can write that today it seems smaller than in the drawing. But our memory alone doesn’t tell us how big it really was.”

Leo pointed to the page. “Then should we also write that memory can be wrong?”

“Yes. A careful detective shouldn’t pretend to know more than they do.”

Ada left a little space beneath the date. Before adding explanations, she wanted to collect the details one at a time. The puddle was still there. The courtyard was dry in many places. The soil near the water was dark. They were clues, not yet a solution.

The teacher joined them while Ada was drawing a little line to separate the heading from the rest of the page. “Do you remember the courtyard rule?” she asked. “Look from somewhere safe, without running near the wet ground.”

“Yes,” they answered together.

The teacher pointed to the concrete path. “You can see enough from here. If you need to go closer or do an activity with water, we’ll talk about it first.” She didn’t suggest an answer to their question. She said goodbye and headed back toward the entrance, leaving them with their notebook.

Leo looked at the patch. “After the storm, it seemed enormous to us.”

“That’s what we remember,” said Ada. “But we also have the drawing.”

“Is the drawing more reliable than my brain?”

“That depends on how well you drew it.”

Leo looked at his sketch. The puddle was a little like a potato, but with one side too straight and a corner that looked like a tail. “Maybe my potato has a tail.”

Ada smiled. “It doesn’t need to be a beautiful drawing. It needs to help us recognize the place and remember what we noticed. But if we’re not sure about something, we don’t write it as if we were.”

At the top of a new page, they wrote: **Morning, school courtyard**. Underneath, they added: **The puddle is still there.** Ada read the sentence aloud.

“We saw that,” Leo said.

“Exactly. And the dark soil?”

“We can see it near the edge.”

“Then we can note that. But we won’t write yet that it’s dark because it’s wet. It could be, but we don’t know.”

Leo looked at the pencil. “The detective pencil is hard at work.”

Ada drew a line beneath the first notes. In front of them were the water that remained, the dark ground, and a question that was still open. The day had only just begun.

“Before we write anything else, let’s reread what we wrote down yesterday,” Ada said.

Leo opened the notebook to the previous page. The words were a little crooked, and the sentence about the sun really did have two glasses drawn beside it. Below, Ada had written: **The sun might have contributed.**

“That’s a possibility,” Leo said. “Not something we saw.”

“Right. And here?” Ada pointed to the drawing of the dark strip.

Leo read: “The soil near the edge is dark. We don’t know if it’s dark because it’s wet or if it was already dark.”

“The first sentence describes what we noticed. The second says what we don’t know.”

Leo flipped through the page again. “And the giant who drank the puddle?”

“That was a joke.”

“A well-documented joke.”

Ada laughed, but left the joke where it was. The giant’s drawing helped them remember that they had imagined a funny story; it didn’t prove that a giant had passed through the courtyard. To keep the two kinds of notes from getting mixed up, Ada suggested using a mark beside each sentence.

“A dot for what we observed,” she said. “And a cloud for an idea or a question.”

“And for a joke?”

“A cloud with a mustache.”

Leo drew a mustachioed cloud in the margin. Then he reread the notes while Ada marked the dot beside the puddle, the dark soil, and the sunny sky from the day before, clarifying that this detail came from their memory. Beside the sentence about the sun, she put a cloud instead.

“That way we can tell they aren’t all the same kind of thing,” she said.

“And what if we find out we wrote something in the wrong place?”

“We correct it. The notebook isn’t homework to hand in: it’s there to help us think.”

Ada turned the page and wrote the heading **What can we see today?** Then she looked at the courtyard as if she were seeing it for the first time.

“Let’s start with the shape,” she said. “Is it round?”

Leo narrowed his eyes. “No. It’s longer on one side.”

“Then I’ll write: irregular shape, longer from left to right.”

“Which way is left?”

Ada turned around. “My left.”

“But I’m on the other side. For me, that’s the right.”

They looked at each other, then burst out laughing. “That’s why a description should help someone who isn’t inside our heads, too,” Ada said. “It’s better to use landmarks.”

To the left of the puddle, from the path’s point of view, there was a manhole. A little farther away, they could see a green bench. On the opposite side, the strip of dark soil ran alongside the water’s edge.

“We can write that the puddle is between the manhole and the bench,” Leo said.

Ada drew a simple map of the courtyard: a rectangle for the path, a patch for the water, a square for the manhole, and a line for the bench. “It’s not a navigator’s map,” she said. “But tomorrow we can come back to the same spot.”

Leo pointed at the drawing. “The bench isn’t exactly there.”

“You’re right. I’ll move it.” Ada erased the line for the bench and drew it farther away. “If the map doesn’t match, we correct it.”

In the notebook, they wrote that the puddle was near the manhole and the bench, and that it had an irregular shape. They didn’t decide how many steps long or how deep it was: from where they were, they couldn’t measure it precisely, and they hadn’t yet asked permission to go closer.

“So no ‘it’s as big as a whale’?” Leo asked.

“Only if you add that it’s a very, very small whale and that it isn’t a measurement.”

“My whale has a tail.”

“Like yesterday’s potato.”

Leo added a tail to the drawing of the puddle. Then Ada wrote beside the map: **Approximate drawing, made from the path.** That was a useful detail, too: anyone who read the notes would know where they had looked from.

To make the drawing even easier to use, Ada marked the edge of the path and a long crack in the concrete. “If we come back tomorrow, we can look for this crack and look from here.”

Leo checked the map. “The crack looks like a lightning bolt.”

“A lightning-bolt-shaped crack. But that doesn’t mean lightning struck right there.”

“Too bad. It would have been a spectacular clue.”

Ada added an arrow with the words **where we observed from**. The arrow didn’t show an exact distance, but it reminded them not to change places without noticing. If they looked from a different angle, the shape of the water might look different.

“A map doesn’t have to be perfect,” Ada said. “It has to help us understand where we were looking and what was nearby.”

Leo wrote underneath: **Manhole on one side, green bench farther away, crack in the path in front of us.** Then he reread the sentence and smiled. “That way, even a detective with a bad memory can find the scene again.”

“Especially if the detective didn’t draw a tail on the manhole.”

“I can’t promise anything.”

They left the drawing open in the notebook, without adding lengths or depths they hadn’t measured. The map was a guide to finding the place again, not an exact photograph of the courtyard.

“What could we add besides the drawing?” Ada asked.

Leo looked at the sky. “The weather. It’s sunny, but there are clouds, too.”

“Good observation. Let’s write what the sky is like right now, not what we think it’s doing to the water.”

Ada noted: **Sky with thin clouds; the sun is visible.** Then she added the time, reading the school clock through the window. “It’s nine ten.”

Leo pointed at the patch. “If it’s smaller later and the sun has stayed out, does that mean the sun dried it up?”

“We can’t say that just from this,” Ada replied. “Other things might change, too. And one observation isn’t enough to understand the cause.”

“Like when I think my toast disappeared because I looked at it the wrong way?”

“That disappeared because you ate it.”

“We don’t have proof.”

“You still have crumbs on your sweatshirt.”

Leo looked at them. “Very convincing clues.”

Ada also wrote a note: **We’re recording the time and the sky; we don’t know whether they caused the change.** That way, if the puddle was different later, they would have something to compare it with. But they still wouldn’t have a definite answer.

Leo suggested drawing the sun above the puddle with an arrow pointing down. Ada shook her head. “An arrow might make it look as if we’ve already decided what’s happening. Let’s draw the sun in the sky, but without arrows.”

“What if the arrow was dashed?”

“We could use that for a hypothesis, but we’d write it in the ideas section, not among the observations.”

Leo added a cloud beside the page and drew a dashed arrow inside it. Underneath, he wrote: **Maybe the sun contributes. To be checked.**

The notebook now showed two different things: what the sky was like at that moment and the question that the sky brought to mind.

“So the notebook is divided in two,” Leo said. “On one side, the things we see, and on the other,

the ideas that come to us."

"Yes. And we can add a third part: questions we can't answer yet."

Leo drew a small box at the bottom of the page. Ada wrote in it: **What has changed in the puddle between yesterday and today?**

"We can observe that," Leo said.

"We can observe how it changes. To understand why it changes, we'll need more evidence."

Leo frowned. "Science takes a lot of detours before it gets to the point."

"Sometimes it does. But if we rush to the answer, we might end up on the wrong track."

For a few seconds, they looked at the patch of water in silence. A cloud passed in front of the sun, and the courtyard grew a little less bright. Ada noted it, but didn't write that the puddle had changed: from where they stood, its edge looked the same.

"What happened?" Leo asked.

"A cloud covered the sun for a moment."

"And what don't we know?"

"Whether that had an effect on the water. We haven't seen a change yet."

Leo nodded. The difference seemed small, but it changed the way the page read. The sentence **the sun dried up the puddle** would tell a story about an answer. The sentence **the sun was visible at nine ten** told only what they had observed.

"It's like having two boxes," he said. "What we know and what we're looking for."

"Exactly." Ada put a dot beside the note about the sky and a cloud beside the dashed arrow.

"This cloud looks thoughtful," Leo said.

"Hypothesis clouds have a lot to think about."

They agreed to keep noting the time and the sky, without turning a change that happened at the same time into a definite explanation. To find a useful clue, they would have to come back, look systematically, and compare the pages.

Ada turned the notebook so they could both see the page clearly. "The map from before was

small. Let's make it a little clearer, but still simple."

Leo drew a rectangle for the courtyard and pointed to the path. "Our observation point is here, near the lightning-bolt-shaped crack."

Ada marked the crack with a jagged line. "In front of us is the puddle, then the manhole on one side. The green bench is farther away."

"And the dark soil?"

"We'll draw it near the water's edge. We don't know yet if its shape changes."

Leo put down his pencil. "Can we count the steps from the path to the puddle?"

"No, because we shouldn't go closer without permission. And from where we are, we can't measure well."

"We could use my shoe as a ruler."

"Your foot is still in the shoe. And it isn't a very reliable ruler."

Leo gave her an offended look. "It's a precision shoe."

Ada added a key: a circle for the water, a line for the dark soil, and a square for the manhole. "Anyone reading it needs to understand what each mark means."

Leo drew the bench as a box with four legs. "There. No one could mistake it for a cupboard."

"Unless someone thinks the cupboard has gone for a walk."

"In that case, it would be another mystery."

The map didn't show every paving stone or every leaf. It showed only what they needed to find the place again and distinguish the important parts. Ada wrote underneath: **Diagram not to scale.**

"What does 'not to scale' mean?" Leo asked.

"It means that the distances in the drawing don't exactly match the real ones. It's a map to help us find our way, not to measure."

"So the bench might look closer than it is."

"Yes. That's why we're writing it down."

Leo reread the note and nodded. If another child looked at the map, they would know that the drawing was useful for finding the spot, but not for figuring out how many steps away they were from the puddle.

To check that the map was easy to understand, Ada covered the notes beside the drawing with her hand. “If tomorrow we see only this drawing, how will we find the spot?”

Leo looked at the visible directions. “We’ll look for the crack in the path, then look toward the green bench and the manhole. The puddle should be between those landmarks.”

“Good. And what if we realize we got the position wrong?”

“We correct it.”

Ada left the map as it was, but added a small arrow showing which side they had looked from. It didn’t point north and it wasn’t a compass; it was only there to remind them of the direction they had been looking.

“Now we have a way to find the scene again,” she said. “But the map doesn’t explain where the water went.”

“It’s a very polite map. It doesn’t interfere with mysteries.”

“For now, it helps us avoid confusing one place with another.”

Leo looked at the courtyard again. The patch was irregular, the dark soil was beside its edge, and the manhole was still where it had been. They wrote down these details without adding what they meant. The page showed where they were and where they were looking from, so they would have a clearer comparison for later observations.

The teacher called them back to class. Ada closed the notebook, but first wrote down the time: nine twenty. The puddle was still in the courtyard, the map was ready, and the sky was cloudy on and off.

During the morning, Leo went back to the classroom window twice. But from there, the view was different: he could see part of the path and almost all of the bench, but not the near edge of the puddle.

“From here it looks smaller,” he whispered.

Ada looked outside. “Or maybe the window makes us see it from a different angle. We can’t

compare them properly."

"So we wait until we get back to the spot on the map?"

"Yes. Otherwise, we might mistake a change in our viewpoint for a change in the place."

Between lessons, Leo opened the notebook again and wrote: **From the window, the puddle looks smaller; different view, uncertain comparison.**

"That's not a very exciting sentence," he said.

"But it's honest."

When the bell rang for recess, Ada and Leo went out into the courtyard. They walked to the crack in the concrete and stopped on the dry path, in the same spot as before. Ada opened the map and checked the landmarks: the bench, the manhole, the edge of the path.

"Now we'll look from here," she said.

Leo followed the puddle's edge with his eyes. "It seems different to me."

"Different how?"

He took a moment. "The part near the manhole looks narrower. But I'm not sure."

Ada wrote: **Some edges seem to have changed; comparison uncertain.** She didn't immediately draw a new shape. First, she wanted to look carefully, without confusing what they remembered with what they could see now.

The time that had passed might be important. The change in the sky, the observation point, and the light could also make some details look different, even if the puddle hadn't really changed. They didn't yet have a way to separate all these factors. For now, they could only record when they had looked and which details seemed different.

"Have you found the culprit?" a voice asked behind them.

Ada turned around. It was Samir, a classmate of theirs, holding an apple and looking as if he had just solved a very complicated case.

"Not yet," Leo replied. "We're observing."

Samir came over to the edge of the path without stepping into the wet area. "It's easy. The manhole swallowed the water."

“Did you see the water go into the manhole?” Ada asked.

Samir paused. “No, but the manhole is nearby.”

“So you noticed the manhole,” Leo said, “and thought it might be the cause.”

Samir looked at the dark opening. “It’s a possible explanation.”

“Yes,” Ada said. “But it’s not a direct observation yet.”

Samir bit into the apple and chewed. “But water goes down there when it rains. Maybe this water ended up there.”

“Maybe,” Ada replied. “But yesterday we didn’t see what happened. And now we don’t know if the manhole had anything to do with it.”

Leo opened the notebook and showed him the map. “We’ve noted that the manhole is next to the puddle. We really did see that.”

Samir leaned over a little to read. “And the rest?”

“The rest is an idea to check.”

Samir looked at the courtyard again. “Then I could write: ‘The manhole drank the puddle,’ but with a cloud?”

“Even better: ‘Maybe some of the water went into the manhole. To be checked,’” Ada said.

“That way the sentence doesn’t sound like something that already happened,” Leo added.

Samir smiled. “My sentence was funnier.”

“You can keep it as a joke,” Ada said. “Just don’t confuse it with evidence.”

Samir sat on the dry wall, with the apple on his knees. He wasn’t offended. In fact, he seemed pleased that they had asked him where his idea came from. He wrote the sentence Ada suggested in a cloud in the margin, without touching the notebook with his juice-sticky fingers.

“One thing I really saw,” he said. “The manhole is nearby. Another thing I imagined: the water going into it.”

“Exactly,” Ada said.

The notebook hadn’t rejected Samir’s idea. It had simply given it the right place: among the

possibilities, not among the facts they had already observed.

Samir looked at yesterday's page and then at the new one. "Here you wrote that after the storm the puddle was big. Here you say that today it's smaller."

"We remember it that way," Leo said. "But when it was big, we didn't measure the edge."

Ada showed him the drawing shaped like a potato with a tail. "It's a sketch, not a measurement. We can say that today it seems smaller than in that drawing, but we don't know by how much."

Samir pointed his pencil at the note about the sky. "And here you wrote that yesterday it was sunny. But today it's cloudy."

"On and off," Ada clarified. "And we don't know if that explains the change."

Leo noticed a line on the previous page: **The ground is wet near the puddle.** "This sentence is too certain," he said. "We saw that the soil was dark. We didn't check whether it was wet."

Ada carefully crossed out the word **wet** and wrote **dark**. "That's more precise."

Samir watched her make the correction. "Doesn't it bother you to cross things out?"

"A little," Leo admitted. "I like it when the pages are tidy."

"But it's better to correct something than to leave a mistake," Ada said. "And we shouldn't fill in the gaps with what seems likely to us."

She reread the notes aloud: the puddle was there; the soil near the edge looked dark; the manhole was nearby; the sky was cloudy on and off. Among the possibilities, the sun might contribute, the ground might absorb some of the water, and the manhole might play a part. None of those explanations had been checked yet.

"Why write down all the possibilities?" Samir asked. "Wouldn't it be easier to choose one?"

"It would be faster," Ada said. "But fast doesn't mean right."

"What if we like one possibility more than the others?"

Leo looked at the sentence about the sun with the glasses drawn beside it. "Then we have to remember that we like it, but that doesn't mean it's been proved."

Samir nodded. "So the page has to show the doubts, too."

“Yes. A doubt written down can help us figure out what to check.”

In the margin, Ada added: **We don’t know how big it was after the storm; comparison based on memory and drawing.** None of them tried to guess a number.

“Did we forget anything?” Samir asked.

Leo slowly flipped through the pages. “Maybe we didn’t write down where we were looking from yesterday.”

Ada checked the drawing. “There’s no arrow here. I remember we were on the path, but I don’t know if we were in the same spot.”

“We can write, ‘We don’t remember our position yesterday for sure,’” Samir suggested.

Leo grimaced. “That sounds like something from a notebook belonging to very serious scientists.”

“Is it a serious sentence?”

“A little.”

Ada wrote it anyway. “It doesn’t mean we did everything wrong. It means next time we can mark the spot right away.”

Samir pointed to another line: **After the storm, the puddle was enormous.** “‘Enormous’ can mean lots of things, too. To me, an enormous puddle is one I could get a shoe wet in.”

“And to me, one I could get both shoes wet in,” Leo said.

“I don’t want to test that difference,” Ada said. “We can write that after the storm it seemed big and that today it seems smaller, but the comparison is imprecise.”

Samir added a small question mark beside the note. They didn’t erase the word **enormous** from the previous day’s account, but they added a clarification: it was an impression, not a measurement.

Then they checked the new page. The time of day was there. The map was there. The sky was described. The dark strip was marked. But they still weren’t certain that it had really changed.

“Then let’s write that it seems different, but we aren’t sure,” Leo said.

“Yes. And if we can’t see it tomorrow, that doesn’t automatically mean we know why,” Ada added.

Samir put his apple back in its bag. “I like this notebook. It doesn’t pretend to be smarter than us.”

“Neither should we,” Ada said.

The three of them looked at the page. There were crossed-out marks, added words, and an imperfect map. That wasn’t a flaw: it showed the work they had done to make their notes more faithful to what they knew.

Ada reread the notebook from the beginning. “The first page tells us what made us curious. The map helps us find the spot again. The notes tell us what we saw and what’s still an idea.”

Leo counted the clouds they had drawn. “And this part reminds us that we haven’t solved the mystery.”

“Exactly.”

Samir stood up from the wall. “I thought observing meant looking really hard.”

“And now?” Leo asked.

“Looking carefully, asking questions, and writing down what you see. Even if you don’t find the answer right away.”

Ada carefully closed the notebook. “And saying when we aren’t sure.”

“That’s the hardest part,” Samir said. “When I don’t know something, I feel like guessing.”

“Me too,” Leo replied. “But if we write a guess as if it were true, afterward we won’t know which part to check.”

Samir looked at the puddle. “Then the next time I see something strange, I’ll try to write down what I see first.”

“And then what you’re wondering about,” Ada said.

“And then my giant theory?”

“That can go on the jokes page.”

The bell called them back to class. Ada put the notebook in her backpack, while Leo pointed to the dark strip still visible beside the water. They didn’t know whether it had really changed or what had made the puddle shrink. But now they knew which clues they had collected, which ones were uncertain, and which questions remained open.

The courtyard hadn't offered an easy answer. For the moment, it had offered something more useful: a spot marked on the map, a time, a description, and a list of possibilities to check. The mystery was still there, but it was no longer just a patch of water and a pile of guesses. Ada and Leo had learned to look at it more carefully.

Before going inside, Ada opened the notebook again and added a line at the bottom of the page: **Next question: how can we check our ideas safely and without changing too many things at once?**

"That's a long question," Leo said.

"But it'll help us choose what to do."

Samir leaned over to read it. "Does the librarian know the answer?"

"We don't know," Ada said. "But she told us about books on scientific questions. We can ask her how to plan a simple test."

"And what if she gives us an answer right away?"

"We'll ask her to help us think, not to solve the mystery for us."

Leo looked at the courtyard one more time, without leaving the dry path. The puddle was there, the manhole was there, and the strip of dark soil remained beside the edge. Looking at them, they seemed like clues almost ready to tell a story. But they didn't speak for themselves: careful observations and a test carried out thoughtfully were needed.

"Tomorrow we'll take the notebook to the library," Ada said.

"And the detective pencil," Leo added.

"As long as you don't draw a mustache on the librarian."

"I can't promise anything."

Ada smiled and put the notebook in her backpack. They hadn't figured out where the water had gone, and they weren't going to pretend they knew. They had done something else: collected clues more carefully, marked the limits of their memories, and kept observations separate from hypotheses.

The mystery of the puddle remained open. But the next question was ready.

Three Ideas and a Test

The school library had a green door that creaked every time someone came in. Ada pushed it with her shoulder because she was holding her notebook open in her hands. Leo followed her with his detective pencil tucked behind his ear. Samir closed the door quietly so as not to startle a woman reading near the window.

The librarian looked up from the table. She wore red glasses and had a sharp pencil tucked into her hair.

“Have you come looking for a book or a mystery?” she asked.

“Both,” Leo replied. “But the mystery won’t fit on a shelf.”

Ada set the notebook on the table. “The puddle in the courtyard has almost dried up. We wrote down what we saw and the questions that came to us.”

“And I added that there might be a little dragon drinking the water,” Leo said. “For now, it’s the least likely hypothesis.”

“And the least tested, too,” Samir clarified.

The librarian smiled, but she didn’t open the notebook right away. “Before I read it, tell me yourselves. What did you actually observe?”

Ada leafed through the pages. “The puddle was much smaller when we came back to the courtyard. The soil near the edge was dark, but we didn’t know whether it was wet. We marked the manhole and the bench on the map.”

“And what do you remember about the day of the storm?”

“When we left school on the day of the storm, the water covered a larger area,” Leo said. “But we didn’t take measurements, so we don’t know how big it was.”

The librarian nodded. “Good. And what don’t you know yet?”

Ada looked at the line at the bottom of the page. “Where the water went. And how we can check our ideas safely without changing too many things at once.”

“Then let’s start here,” the librarian said. “I won’t give you a ready-made answer. I’ll help you come up with questions that can lead you to gather clues.”

Leo took the pencil from behind his ear. “A kind of detective training?”

“Exactly. But science detectives don’t decide who’s guilty before they’ve looked at the evidence.”

Samir opened the notebook to the map page. “Then let’s look at the possibilities.”

The librarian sat down beside them. “Let’s test something with words, too. When you wrote ‘the puddle got smaller,’ did you watch it shrink while you were looking at it?”

Ada shook her head. “No. We saw it bigger one day and smaller the next.”

“Then that’s an important observation, but you didn’t see the exact moment when it changed,” the librarian said. “And the sentence about the day of the storm?”

“It’s a memory,” Leo replied. “It’s what I remember, but I might be wrong about the details.”

Samir added a small mark beside the note. “We can write ‘memory’ here so we don’t confuse it with the observations we recorded at the time.”

Ada took the pencil and added a column to the page: **Seen**, **Remembered**, **To check**. In the first, she put the dark soil and the manhole. In the second, the size of the puddle after the rain. In the third, the question about where the water had gone.

“And the dragon?” Leo asked.

“To check,” Samir said, very seriously.

“It’s not a possibility to start with, but it’s a nice decoration for the notebook,” the librarian said.

Leo drew a tiny dragon drinking through a straw. Ada laughed and then went back to the list. The page now also showed the limits of their notes: they hadn’t measured the puddle, they didn’t know how much water there had been at the beginning, and they hadn’t followed the path of every drop.

“That doesn’t mean you did anything wrong,” the librarian said, seeing their faces. “It means you’ve discovered what you’ll need to know better next time. A good investigation also begins by recognizing what’s missing.”

Samir circled the main question. “So our job isn’t to guess. It’s to find evidence that helps us understand.”

“Exactly,” she said. “And before choosing a test, let’s try to imagine more than one explanation.”

The librarian took a large sheet of paper and placed it in the middle of the table. “Let’s write the question at the top. Then, underneath, we’ll put the explanations that come to mind. For now, we won’t vote.”

Ada wrote: **Where did the puddle’s water go?**

“It might have gone down into the soil,” Samir said. “The soil near the edge was dark, even though we don’t know if it was wet.”

“Or the ground absorbed it,” Ada added. “Like a sponge, even though soil isn’t exactly a sponge.”

The librarian pointed to the comparison. “It’s useful for imagining water moving through the spaces between grains, but let’s remember that soil can be different from a sponge. Some soils let water pass through more easily than others.”

Samir leaned over the map. “We saw dark soil near the edge, but we didn’t dig, and we don’t know if it was wet on the surface or farther down.”

“And we shouldn’t dig in the courtyard without permission,” the librarian said. “For now, the dark color is an observation. The idea that the water entered the soil is a possible hypothesis, not something you saw happen.”

Ada added a small note beside the first idea: **possible clue: dark soil; not enough to prove absorption**.

Leo looked at the map. “What if it went toward the manhole? The courtyard isn’t perfectly flat.”

“That’s another possibility,” Ada said, writing **runoff**. “Water can flow toward a lower spot.”

“But we didn’t see the water flowing,” Samir observed. “We only marked the manhole and noticed that the courtyard has a slope.”

“Exactly,” the librarian said. “The slope can make it possible for water to move, but it doesn’t prove that the puddle reached that exact spot. If you didn’t follow its path, you can’t say you observed it.”

Ada wrote this down, too: **possible path; to check safely**.

Leo raised his hand as if he were at school. “And the sun might have drunk it.”

“The sun doesn’t drink,” Samir said.

“I know. It’s just a figure of speech.”

“We can write that some of the water might have evaporated,” the librarian suggested. “But we don’t yet know how much, or whether it was the main cause.”

Three lines appeared on the sheet: **evaporation**, **absorption into the soil**, **runoff toward a lower spot or a drain**.

“Three ideas,” Ada said. “And maybe more than one thing happened.”

“Excellent observation,” the librarian replied. “A puddle doesn’t have to have just one explanation. Some of the water can evaporate, some can enter the soil, and some can flow somewhere else.”

Leo stared at the sheet. “So there isn’t just one culprit?”

“There might not be,” Samir said. “Maybe it’s a team of causes.”

Ada drew three arrows starting from the same puddle she had drawn in one corner. One pointed upward, one went into the soil, and one followed the slope toward the manhole. She didn’t write percentages or make the arrows bigger or smaller: they didn’t know how much water had followed each path.

“This shows that the possibilities can coexist,” she said.

The librarian looked at the drawing. “And that your picture isn’t a result yet. It’s a map of the ideas you’ll want to check.”

Ada added three question marks beside the hypotheses. None of them was an answer yet: they were leads to check.

“Before deciding how to check the ideas,” the librarian said, “we can clarify a word you wrote.”

She pointed to **evaporation**. Ada had heard the word before, but she wasn’t sure she could explain it.

“Is it when water dries up?” she asked.

“It’s when liquid water changes into water vapor, which you can’t see. It can happen at the surface of the water without boiling it. Heat can make it happen faster, but it isn’t as if the sun sucks up the water through a straw.”

Leo looked at his drawing of the dragon. “Then the sun isn’t guilty. At most, it helps.”

“We can say that the Sun’s energy can contribute to evaporation,” the librarian clarified. “But other conditions are needed, too, such as the air and the temperature. And observing a sunny day isn’t enough to know how much water evaporated.”

Samir wrote beneath the new word: **liquid invisible vapor**.

“So the drops turn into a kind of air?” Leo asked.

“The water becomes a gas, but it isn’t air,” she replied. “Air is a mixture of different gases. Water vapor is water in gas form, and it mixes with the air even though we can’t see it. It doesn’t disappear from the world: it moves into the environment.”

Ada imagined the puddle’s drops becoming invisible and rising. “But if you can’t see it, how do we know it’s there?”

“We can observe liquid water decreasing under certain conditions and use suitable instruments to measure the humidity in the air. But a measurement taken here, today, wouldn’t by itself tell us how much water evaporated from the courtyard yesterday.”

The librarian took an empty glass and set it on the table. “Think of a small drop left on a plate after it’s been washed. If the plate stays out in the open, the drop can get smaller over time and then no longer be visible. Nobody drank it: some of the water changed into vapor and mixed with the air.”

“And if the plate were in a cold room?” Samir asked.

“Evaporation can be slower. Temperature matters, but it isn’t the only thing: the amount of water surface exposed and how humid the air already is also matter. That’s why the sun can contribute, but it isn’t a complete explanation by itself.”

“But when vapor comes out of a pot, you can see a cloud,” Ada said.

“What looks like a white cloud is made mostly of tiny liquid droplets that have cooled in the air. Actual water vapor is invisible. And it isn’t smoke: smoke contains particles produced by burning, while evaporation is a change in the water.”

Leo erased the smoke he had drawn above the dragon. “No chimney, then.”

The librarian let the children look at the note. She didn’t add an answer about the puddle. “This explanation tells us that evaporation is possible. It doesn’t prove that it happened just like this in the courtyard, let alone that all the water disappeared.”

Ada underlined **possible**. “So we need a prediction we can compare with something.”

“Yes,” the librarian said. “Let’s see what we would expect to find if each idea were at least partly correct.”

Ada divided another sheet into three columns and wrote the names of the hypotheses at the top.

“If the water evaporated, what would we expect?” she asked.

Leo thought of the dry puddle and then the pot. “That the water would decrease even if there wasn’t a hole underneath.”

“That’s one possible prediction,” the librarian said. “In an open container, some of the water can pass into the air. To notice that, you’ll need to compare similar situations and observe for a while.”

Samir pointed to the second column. “If the soil absorbed it, then the water should enter the soil. We might see wet soil.”

“We might find clues like damp soil,” Ada said. “But that wouldn’t be enough by itself: it might have stayed wet from the rain.”

“Right,” the librarian replied. “A useful prediction doesn’t promise that you’ll definitely see a sign. It says precisely what to look for and what that sign might mean.”

Leo drew an arrow from the third column toward the drawing of the manhole. “If it ran off, the water might have flowed toward a lower area. Maybe a wet trace would have remained nearby.”

“And if it were already dry?” Samir asked.

“Then we wouldn’t see it anymore,” Leo replied with a sigh. “Clues don’t always wait for the detectives to show up.”

Ada noted that the absence of a trace didn’t prove that runoff hadn’t happened. Rain, sun, wind, and people passing by could change what remained visible.

Samir took the pencil and added a question to the table. “If we don’t see the sign we expected, can we say the hypothesis is wrong?”

“Not always,” the librarian replied. “First you have to ask yourselves whether the test could really have shown that sign. Maybe you observed too late, or the change was too small to see. A result can cast doubt on an idea, but you need to know how the test was done.”

“So it’s not enough to write ‘yes’ or ‘no,’” Ada said. “We have to describe what we did and what we were able to see.”

“Exactly. That way, anyone who reads your notes can understand where the conclusion came from.”

The librarian reread the three predictions. “You’ve turned general ideas into more precise questions. Now we need to choose a safe test and understand what it will really be able to tell you.”

Leo straightened his pencil. “A test that doesn’t involve chasing water all over the courtyard.”

“Excellent criterion,” the librarian said. “And you mustn’t go into places where you don’t have permission, either.”

The librarian moved the sheet with the three columns aside and pulled a stack of books toward her. “What test had you imagined?”

“We could draw a line around the puddle,” Ada said. “And come back to see if the water level has gone down.”

“But we wouldn’t know how much had evaporated and how much had entered the soil,” Samir observed. “And if it rains again, the comparison is ruined.”

“We could look at the manhole,” Leo suggested. “But we’re not climbing inside. I don’t intend to become a detective with boots full of mud.”

“You shouldn’t go near drains or slippery areas without an adult,” the librarian said. “And you don’t need to take risks to do science. We can study a simpler version of the question using safe materials.”

Ada went back to the page with the question. “A test that tells us something about water and soil, but without touching the real puddle?”

“We can build a model,” the librarian said. “It’s a reduced, simplified version of something. It helps you study some aspects, but it isn’t identical to reality.”

Leo drew a small puddle inside a huge box. “So not a miniature puddle with a tiny dragon?”

“The dragon isn’t essential,” Samir said.

The librarian brought over two clear trays and set them on the table. They were identical in shape

and size. “Imagine putting a little soil in one and leaving the other with a waterproof bottom. We would pour the same amount of water into both and keep them in the same place. What could we compare?”

Ada looked at the edges. “We could check how much water remains visible above the bottom. If we see less in the tray with soil, some might have seeped between the grains.”

“But we wouldn’t know for sure how much seeped in and how much evaporated,” Samir added. “And the test wouldn’t prove everything.”

The librarian nodded. “Exactly. In a well-designed comparison, you change one condition at a time and try to keep the others similar. Here, the difference we want to study is whether soil is present; the trays, the location, and the initial amount of water should be the same or as similar as possible. Even so, the model will give us clues, not a complete answer about the puddle.”

Leo leaned over the table. “And the test with the manhole?”

“This model doesn’t check that,” Ada said. “For that, we’d need other safe observations of the courtyard.”

A new heading appeared in the notebook: **A model, not a copy of the courtyard**.

Samir wrote beside the drawing: **same amount of water**. Then he stopped.

“How can we know it really is the same?”

The librarian pointed to two small measuring cups on the activity shelf. “An adult can prepare equal amounts using a container with markings. We can also use the same little cup, filled each time to the same line. But reaching the same level in the trays won’t work: the soil takes up space and the water enters between the grains. We’ll mark the two initial levels separately.”

“And the soil?” Ada asked. “If we put a whole lot in one tray and none in the other, that wouldn’t be a fair comparison.”

“For this test, there’s soil in only one tray because we’re looking specifically at the difference between a bottom with soil and a waterproof one. But it’s best to use a low, even layer and note how it was prepared. We shouldn’t also change the shape, the amount of water, and the location.”

Leo drew a tray with a hat and the other without one. “Is the hat the sun?”

“No, it’s something we shouldn’t add,” Samir said. “If we cover one and not the other, we’d also

change how much sun and air reach the water."

The librarian nodded approvingly. "Exactly. If one tray were covered, you wouldn't know whether the difference was caused by the soil or the cover."

Ada noted some other details: identical trays, same place, same initial amount, no cover. "And what about the time? If we look at one in the morning and the other in the evening, that won't work."

"It's better to observe them together at the same intervals," the librarian replied. "You can note when you set them up and come back to check them later. But it's important for an adult to prepare the materials and choose a stable place."

Samir added a line in bold: **Do not move the trays during the comparison.**

"And don't taste the water," Leo said. "Even if one tray looks like a very sad soup."

"Nothing in the experiment should be tasted," the librarian confirmed. "And you shouldn't use dangerous substances or equipment. Here, all you need is water, soil, two trays, and an adult to prepare what's needed."

Ada looked at the list. "We've found a safe way to make a comparison. But we still don't know what it will tell us."

"That's a good thing to know before you begin," the librarian said.

"For now, we have a possible test," Samir said. "But the courtyard is made of real soil, not soil in a tray prepared on purpose."

"And we don't know if the soil under the puddle is like the soil we'd use in the model," Ada added. "It might be more compact, sandier, or have roots."

"Good point," the librarian said. "The model helps us study part of the question, but it simplifies many things. The courtyard has slopes, cracks, wind, changing sunlight, and maybe a drain. A tray can't represent all of that."

Leo put his finger on the third hypothesis. "So our experiment doesn't tell us whether the water went into the manhole."

"No," Ada replied. "To study runoff, we'd need to observe the courtyard with an adult's help and without going into restricted or dangerous areas. And even then, after the water has disappeared,

we might not find a clear trace."

The librarian let them think. "A test doesn't have to answer every question. It should help you understand one part of the problem better. Then you can decide whether you need more observations."

Samir added this to the sheet: **The comparison between trays can give clues about how much water remains visible with and without soil; it cannot precisely separate evaporation from absorption, reconstruct the puddle, or test runoff.**

"That's a very long sentence," Leo said.

"We can draw it," Ada suggested. She drew two trays. In one, she put a brown line for the soil; in the other, she left the bottom empty. Above both, she drew an arrow pointing upward to remind them that water can evaporate from an exposed surface. Beside the first, she added arrows going between the grains. Beside the second, she wrote: **no soil here**.

"And the manhole?" Leo asked.

Ada drew it outside the trays, in a small box labeled **not tested**.

Samir laughed. "The manhole is outside the experiment."

"Not outside the investigation," Ada said. "Just outside this test."

The librarian pointed to the sentence in the notebook. "That difference matters. You aren't saying the runoff hypothesis is false. You're saying your comparison doesn't test it."

"If you come back to look later, what will you write down?" the librarian asked.

"How much water there was at the beginning and how much we can see afterward," Ada said. "And when we looked."

Samir pointed at the drawing. "Also where the trays were. If one is in the sun and the other in the shade, it isn't a fair comparison."

"Right," the librarian said. "That's why it's better to put them close together, in the same place, without moving them. The conditions will never be perfect, but you can reduce some differences."

Leo leaned toward the sheet with a focused look. "Can we use a ruler to measure the level?"

"If an adult checks that it's suitable and the trays are transparent enough," she replied. "Or you

can mark the level on the outside. But try to look from the same side and at the same height each time. If you look at a container from above once and from the side another time, the water level might seem different."

Ada added a little outline with an eye drawn in front of it. "Same place for the trays, same spot for looking."

"And the same intervals," Samir said. "For example, once in the morning and once later, not whenever we happen to."

The librarian reminded them that they didn't need to check every minute. "You can decide with the adult when to observe. A simple table is enough: time, the level you see, what the soil looks like, and any changes. If you can't measure precisely, write that down. Don't make up a number."

Leo took the pencil and drew a table. "First column: time. Second: water. Third: soil. Fourth: dragon?"

"The fourth can be 'other observations,'" Ada said. "That way, if a dragon appears, we don't have to redo the whole table."

"And if it doesn't appear?"

"We'll note that, too."

The librarian laughed softly. "A table is for recording what happens, not for filling every box with something interesting. If you don't see a change, you can write exactly that."

Samir reread the plan. "That way, we know what we did and can compare the observations. But we can't promise the result will be clear."

"Exactly," the librarian said. "You find out afterward whether it's clear; you don't decide in advance."

Ada turned the page and wrote **Predictions**. She left space under each hypothesis.

"For evaporation: in both open trays, we might see the water level go down," she dictated. "For absorption: in the tray with soil, some of the water might no longer be visible above the bottom."

"And for runoff?" Samir asked.

Ada looked at the drawing of the manhole outside the box. "This comparison doesn't test it. We can write that we need other observations of the courtyard."

“Let’s also write that predictions aren’t results,” Samir said. “They’re what we think we might observe.”

Leo drew two boxes, **before** and **after**, but didn’t fill in the one for after. “We don’t know what we’ll see yet.”

“Exactly,” the librarian said. “If you drew the result already, you might end up remembering only what you expected. Leave the box empty until you’ve observed.”

Ada put down the pencil. “And what if something different happens?”

“You write that down anyway. An unexpected result is information, too. First you record it carefully, then you try to understand what it means.”

Samir checked the materials list: two identical trays, soil, water, a container with markings or a little cup with a mark for measuring the water, a pencil, and the notebook. “No difficult objects, no substances, and no electricity.”

Ada added three blank rows to the table for the later checks. Beside the first, she wrote **time and initial level**; the others would be for the time and what they saw. “That way, we don’t have to rely on our memory,” she said. “And if nothing changes, we’ll write that instead of making up a difference.”

“An adult can prepare the trays and choose a safe place,” the librarian said. “You can observe, draw, and take notes. If anything doesn’t seem right, stop and ask for help.”

“Can we set them up at school?” Ada asked.

“You need to ask your teacher and your parents or guardians first. The test can only be done if the adults agree and can supervise it.”

Leo drew an adult beside the two trays. He gave them an attentive face and a huge hat.

“Is that the safety hat?” Samir asked.

“It’s the hat that stops the water from escaping.”

Ada erased the hat from the drawing of the trays, but left it on the adult’s head. “That way, we won’t confuse the model with reality.”

Samir reread the plan from beginning to end. “We have two identical trays, one with a little soil and one without. The same amount of water, the same place, and we look at them at the same

time. We record our observations and don't move anything."

"And an adult prepares the materials," Ada added. "We don't taste the water and we don't touch anything unsafe."

Leo checked the drawing. "We're missing the dragon."

"The dragon isn't a necessary material," Samir said.

"But it could be an unexpected observation."

The librarian leaned on the table. "If you really did see something unexpected, you would describe it precisely first. Then you'd ask yourselves what might explain it. You wouldn't immediately call it a dragon just because you liked the idea."

Leo looked disappointed. "And what if it were a very small dragon?"

"We'd ask an adult to check, too," Ada said.

They laughed, but then Samir pointed to the last line on the sheet: **What will the result tell us?**

"We don't know yet whether the water will decrease more in the tray with soil or in the one without it," he said. "And if we see a difference, we won't automatically know what happened in the puddle."

"So we haven't solved the mystery," Leo said.

"Not yet," Ada replied. "But we know how to start checking some of our ideas."

"And what if the result doesn't clearly tell us what happened?" Samir asked.

"Then we write it down as it is," Ada replied. "We can review the plan and look for other clues instead of pretending we have an answer."

The librarian didn't add a conclusion for them. "You have a plan, three hypotheses, and a list of things the test won't be able to establish. That's enough to get started. After you've observed, you'll go back to your notes and ask yourselves whether the data really support an explanation."

Ada carefully closed the notebook. Before putting it in her backpack, she added this beneath the first question: **The test is ready. We don't know the result yet.**

"Tomorrow we'll ask the adults for permission," Samir said.

“And then we’ll check the trays,” Leo said. “Without a dragon, at least to begin with.”

They left the library with the mystery still open. But now they didn’t just have three ideas: they had a way to compare part of them, observe carefully, and let the result do the talking.

The Result No One Expected

The next morning, Ada arrived at the library with her notebook tucked under her arm. Leo and Samir were already waiting for her by the big table. The librarian had cleared part of the tabletop and set two transparent trays on it, along with a bag of clean soil, a measuring cup, and some sheets of paper.

“Before we begin, did we ask permission?” she asked.

“Yes,” Samir replied. “Our teacher said we can do the test here, with you present. And we won’t use anything hot or sharp.”

The librarian nodded. “Good. I’ll help you with the materials and make sure the table stays steady. But the observations and decisions are yours.”

Ada opened her notebook to the page with the plan. Beneath the question about the puddle were three hypotheses: the water could evaporate, it could soak into the soil, or it could flow away from one part of the courtyard. Farther down, the kids had written that the trays would let them compare only a small part of the problem.

Leo put a finger on the drawing. “This one has soil. And this one doesn’t.”

“If we put them next to each other, they’ll have similar conditions,” Ada said. “But we have to make sure they start with the same amount of water.”

Samir read the list aloud: “Same kind of tray, same starting amount, same place, and same length of time.”

“And no moving them halfway through,” Ada added. “Otherwise we’d change more than one thing at once.”

The librarian poured the soil into the first tray, using the agreed amount. She didn’t press it down or make the surface perfectly smooth; the kids noted that the courtyard soil might be different. Then they helped pour water into the two trays, one at a time, using the measuring cup.

“The level looks the same,” Leo said, tilting his head to one side.

“Looks,” Samir repeated. “Do we write it like that, or check it against the mark?”

Ada looked at the mark on the cup and the edge of the trays. “Let’s write down the amount we poured and draw the starting level. We shouldn’t pretend to know more than we do.”

The librarian put the trays side by side, away from the edge of the table. “They’ll stay here for now. I’ll make sure nobody knocks them over. You decide when to look at them again and write down the time.”

Ada wrote: *Test prepared under supervision. Two identical trays. One contains soil; the other doesn’t. Starting amount of water measured with the same cup. The level has been drawn, but an estimate by eye may be inaccurate.*

Leo looked at the blank sheet beside the trays. “What if nothing happens?”

“That’s a result we can describe, too,” Samir said. “It doesn’t mean the test is useless.”

Ada left the page open. The mystery was no longer just a question about the puddle: now there was a small test, with clear rules and limitations written down in black and white.

Before moving away from the table, Ada copied the predictions into a separate column. If the water level went down in both trays, that would be consistent with evaporation, but wouldn’t prove it on its own. If the level in the soil changed differently, they’d have a clue about how water and soil interacted, without being able to say that the courtyard would behave the same way.

“And runoff?” Leo asked.

“This test doesn’t check for that,” Samir replied. “The trays aren’t sloped like the courtyard, and the water can’t run away through a crack.”

Ada drew a line beneath the predictions. “That way, when we look, we won’t change our minds just to make the results fit.”

The librarian pointed to the clock. “We’ll wait for the agreed length of time. In the meantime, don’t touch the trays. When you come back, observe first and interpret afterward.”

The three kids exchanged glances. No one knew yet which tray would change more. For once, the notebook contained a question ready to be answered and a completely empty results box.

The wait felt longer than the time shown on the clock. Leo walked past the table twice, but the librarian reminded him that the trays had to remain undisturbed. The third time, he stopped at a distance and put his hands behind his back.

“I’m not touching them,” he said.

“I can see that,” she replied. “But if you look at them every thirty seconds, it won’t be easy to

notice a small change."

Ada leafed through the notebook. She had drawn the two trays and left space for the time, what the water looked like, and any unexpected details. Samir checked that the page didn't already contain an answer disguised as an observation. "Here we wrote that the water would disappear faster in the soil. That's a prediction, not a fact," he said.

When the time came, the librarian accompanied the kids to the table. She didn't move the containers; she only helped them get down to the same height as the edge. First, they looked at the trays without consulting the predictions.

"In the first one, the water doesn't cover all the soil anymore," Ada said.

"In the second one, the level looks lower than before," Leo said. "But I don't know by how much."

Samir bent down to look from the side. "I see a different line near the edge. I can't say it's gone down much, because the starting drawing was made by eye."

Ada wrote down the time and recorded each person's words, without turning "looks like" into "has gone down by one centimeter." She also added a drawing: in the tray with soil, part of the surface looked dark and damp; in the empty one, a thin film of water remained on the bottom.

"Can I write that the soil drank the water?" Leo asked.

"You can write that the soil looks wet and that the visible water has changed," Ada said. "'Drank' is a fun way to say it, but it's not what we observed."

Leo smiled. "Then I'll put it under the hypotheses, with a drawing of a tiny straw."

Samir laughed, but reminded him to label the drawing as a joke. The notebook needed to make sense even to someone who hadn't been there.

The first observation hadn't produced a precise measurement. But it had established a useful piece of data: after the interval, both trays looked different from how they had at the start, and the comparison with the soil didn't simply match the prediction.

Ada turned the notebook toward the others. One column held the predictions; the other held the observations. The two pages didn't match perfectly, and for a few seconds no one spoke.

"We thought the visible water would decrease more in the tray with soil," Samir said. "Instead, we can't even tell which one changed more."

“But the one without soil seems to have less water on the bottom,” Leo said. “That’s the opposite of what I expected.”

Ada didn’t cross out the prediction. “We’ll keep it. And next to it, we’ll write that the result still doesn’t let us make a precise comparison.”

The librarian didn’t try to resolve the doubt for them. “What did you observe? And what are you interpreting?”

“We saw that the surface of the soil is damp and that the visible water in both trays seems different from before,” Ada replied. “We think some of it may have soaked into the soil or evaporated, but we don’t know how much.”

“With the same amount poured in, the starting levels could have been different,” Samir added. “The soil takes up space, and some of the water gets between the grains. We need to compare each tray with its own starting level, without confusing height with amount.”

Leo looked at his drawing. “So we can’t say my hypothesis won just because the tray without soil looks emptier.”

“Exactly,” the librarian said. “An idea doesn’t win because we like it or because a drawing looks convincing. First we check how reliable the observations are and what other explanations are possible.”

Ada drew a line between the columns and wrote: *Data: the visible water changed in both. Comparison: not precise enough to say which lost more.* Then she added a question mark next to the word *soil*.

“It’s frustrating,” Leo said. “I wanted a result that would immediately tell us, ‘Here’s where the water went.’”

“A simple test can answer a small question,” Samir said. “Not necessarily the whole puddle question.”

Ada nodded. The surprise wasn’t an answer, but it wasn’t a disaster either. It had made them stop and take a closer look at how they had set up the comparison.

Samir checked the drawings side by side. “Here the edge of the tray looks tilted, but maybe that’s because I drew it crooked.”

“We can write that the drawing is a sketch,” Ada said. “It’s not a photograph and it’s not a

measurement."

The librarian shifted a chair slightly, but not the trays. "When you observed, were you all at the same height?"

Leo thought about it. "I was standing up. Ada had bent down. Samir was looking from the side."

"Then the point of view could have changed how it looked to us, too," Ada said. "Not what was in the tray, but what we thought we saw."

Samir added a note: *Observers in different positions; level compared by eye. We don't know whether the apparent difference corresponds to a real difference.*

"That's not a mistake to hide," the librarian said. "It's a detail about the method. If you write it down, anyone who reads your notes will know how much they can trust the comparison."

Leo went over the word *seems* in his report. "It's a useful word. I used to think it meant I wasn't sure. But it says exactly what I know."

"And what you still don't know," Samir said.

Ada looked at the two trays. The test had produced observations, but the way they had collected them wasn't enough to compare the changes precisely. Before deciding what they meant, they needed to check the plan and see whether they could repeat at least part of the comparison more clearly.

The kids went through the plan line by line. The trays were the same kind and had spent the interval in the same place. No one had moved them. The water had been poured using the same cup, but the drawing of the starting levels didn't let them compare the tray with soil and the one without very well.

"The soil has an uneven surface," Samir observed. "And some of the water may have gone into the spaces between the grains. We don't know how much, because we didn't weigh anything, and we don't have an easy way to see inside the soil."

"What if the water evaporated?" Leo asked.

"That could have happened, too," Ada said. "But as it is, the test doesn't clearly separate the two processes."

The librarian nodded. "It's important not to ask a model to do more than it can. A tray can help

you observe some changes, but the soil in the courtyard, the shape of the puddle, the wind, and the sun are all different. Also, water that soaks into the soil doesn't disappear from the world: you just can't see it on the surface anymore."

Leo looked at the sheet with the original question. "Then 'Where did it go?' can also mean 'Where can't we see it anymore?'"

"Exactly," Samir said. "But we need more clues to answer the courtyard question for real."

Ada wrote two lines: *The test doesn't recreate the courtyard. It can't distinguish evaporation, absorption, and other causes on its own.* Then she circled the words *on its own*.

"That doesn't mean it's useless," she said. "It means we have to describe exactly what it showed us."

The three turned their attention back to the problem of the level. They could repeat the comparison with a fixed mark on the outside of the trays and always observe from an agreed position. They wouldn't have a laboratory instrument, but they would reduce some of the uncertainty. First, though, they would ask the librarian to check that the trays were still stable and that the new test was safe.

Samir went back to the list of conditions and looked for a place to add the fixed reference. The margin was already full of notes.

"There's not even room for a drop here," Leo said.

Ada turned the page. "Then the new plan goes here. We'll refer back to the first one, so we don't lose track."

Leo held the page steady while Samir copied down the conditions to check. Then he looked at the drawing of the puddle, with the bench and the drain on either side.

"The trays are a model," the librarian said. "A simplified version that lets us study some aspects of the problem."

"Then I'll draw them next to the courtyard, but not in it," Leo decided.

Ada handed him the pencil. Samir moved the notebook to the middle of the table so all three of them could reach it without bumping into the containers.

Leo drew two tiny trays next to a large puddle. Between the two pictures, he drew a dashed arrow, not a solid line. "That way, it's clear that one thing can help us think about the other, but they're

not identical."

Ada smiled. The drawing didn't answer the original question, but it made the boundary between what they had tested and what they still needed to find out clearer.

The librarian checked the table and said they could continue. With her help, the kids prepared small removable markers for the outside of the trays. They would put them on after renewing the materials, at the level of each new starting point. They wouldn't put anything in the water or the soil.

"To compare the level, we'll all stand here," Ada said, pointing to the place in front of the table. "With our eyes at the same height as the mark."

Samir drew the point they would observe from. Leo added an arrow and wrote: *Look from the side, not from above.*

"Can you use the same trays?" the librarian asked.

"It's better to redo the test with fresh water and equal starting amounts," Ada replied. "But the soil might already be damp, so the conditions wouldn't be exactly the same."

Samir suggested using fresh soil, but stopped before touching the bag. "Only if you say it's okay and help us prepare it."

The librarian agreed. "I'll prepare it. You can tell me the amounts and check that we follow the plan."

They wrote down the conditions they would keep the same: identical trays, an amount of water measured with the same cup, soil from the same bag, and the same waiting period. The difference they wanted to compare was whether soil was present; however, they knew that the two trays had different surfaces, and that this would limit the comparison. They also recorded what they couldn't make identical: the soil surface wouldn't be perfectly even, and the room temperature might change a little.

"Changing one thing at a time doesn't mean the world stops changing," Samir said. "It means we try to control the important things."

Ada added the sentence to the notebook, then made a box for each condition. When the librarian had prepared the new samples and marked their respective starting levels, the three of them checked the list together, without looking only for what each of them expected to find.

So they wouldn't have to rely on their memories, Ada suggested writing next to each box who would check that step. Samir would write down the time; Leo would make sure the trays stayed in the same place; Ada would describe the levels from the point shown in the drawing. The librarian would take care of the preparation and safety, without suggesting which tray ought to change more.

"What if one of us sees something different from the others?" Leo asked.

"We'll write it down and check it together," Ada replied. "We won't decide which observation is right by a show of hands. We'll look again, always from here."

Samir added a line: *If we disagree, we describe the difference and don't hide it.* That, too, was part of the plan. A comparison didn't become more precise because everyone agreed; it became more transparent if differences were recorded.

Repeating the test wouldn't erase the first result. It would give them a second comparison, collected using a clearer reference. If the data were different, they would have to record that difference, too.

After the agreed interval, the kids returned to the table. This time, they stood behind the mark Ada had drawn. The librarian stayed beside them without moving the containers.

"Let's start with what we see," Samir reminded them.

The tray without soil still showed water on the bottom, but the level looked lower than the starting mark. In the tray with soil, the surface was damp, and the free water wasn't visible in the same way. Ada described both scenes; Leo checked the time; Samir drew a picture beside them, marking the outside reference.

"This time the comparison is clearer," Ada said. "It's not a perfect measurement, but we know where we looked from."

Leo compared the new page with the one from the first attempt. "The first time, we wrote that the tray without soil seemed to have changed more. Now we have a better reference, but the tray with soil is different to look at: some of the water may have soaked into the soil."

"We can't just compare the visible water above the soil with the water on the smooth bottom," Samir added. "They're not the same kind of surface."

Ada wrote: *In the second comparison, the apparent level in the tray without soil has gone down compared with the reference. The surface of the soil is damp, and not all the water is visible. The*

comparison doesn't measure how much water has soaked into the soil.

The librarian asked, "What can we say without going beyond the data?"

"We can say that our way of observing has improved," Leo replied. "And that the result doesn't tell us on its own which process made the puddle water decrease."

"We can also say that some of the water may change place or form, and that our model doesn't show us everything," Ada said. "But we don't know how much happened in either tray."

The repeat had made the visual comparison more orderly, but it hadn't measured how much water had evaporated or soaked into the soil. The kids kept both pages: the first showed the limits of the original method, and the second showed an attempt to improve it, not definitive proof about the puddle.

Ada laid the two pages on the table, with the list of hypotheses between them. She didn't put a cross next to any of them.

"Evaporation may have happened in both trays," she said. "But we didn't measure the vapor, and we can't say how much water passed into the air."

"The soil was damp," Leo observed. "That's consistent with the idea that some of the water we poured in went between the grains. But we didn't measure how much remained in the soil, and that doesn't tell us how much the courtyard absorbed."

Samir pointed to the third hypothesis. "Runoff remains unchecked. There were no cracks in the trays and no slope leading to a drain."

The librarian listened. "Have you changed your original idea?"

Ada hesitated. "Yes and no. I thought the soil would explain almost everything. Now I think it could be part of the explanation, along with other processes. But I don't know if that's really what happened in the courtyard."

"And we don't have to choose just one cause," Samir added. "More than one thing can happen at the same time."

Leo rolled the pencil between his fingers. "I liked it better when there was just one answer. It was easier to draw."

"We can draw more arrows," Ada said. "One toward the soil, one toward the air, and one toward

the edge of the courtyard. But we'll label them as possibilities, not facts."

Leo made a small diagram. Next to each arrow, he left a box: *observed?*, *tested?*, *still to understand?*. The librarian suggested they not fill the boxes in with a simple yes or no when the information was incomplete.

"You can write 'partial clue,'" she said. "Science doesn't need to pretend every answer is complete."

Ada wrote "partial clue" next to the damp soil and "not tested" next to runoff. For evaporation, she noted that it was possible, but hadn't been measured directly. Then she read each line aloud, asking her friends whether it described data or an explanation.

The surprise from the first comparison hadn't disappeared. It had become a reason to revise the question: not just "Where did the water go?" but also "Which parts can we observe, and what evidence would we need to find out more?"

"So what do we take to our classmates?" Leo asked.

"All the pages, not just the prettiest drawing," Ada replied. "That way they'll also see how we realized the method was imprecise."

Samir added that they would show the predictions they had written before the test. He found the sheet under the drawings and put it first, then arranged the two observations beside it.

"If we keep them in this order, it'll be clear what happened," he said.

Leo tried to pick up all the sheets at once. One slipped under the notebook.

"First discovery of the day: we need a folder."

The librarian took one from the shelf. "You can use this one. But let the marker dry before you close it."

Ada retrieved the sheet and carefully set it on top of the others.

Ada closed the notebook for a moment, then opened it again to the first page. The question about the puddle was still there, with the big question mark Leo had drawn. It was no longer a question without any clues: now it had observations, limitations, and new things to check beside it.

"We haven't found a definite answer," Ada said. "But we know what we can't say yet."

"That's something," Leo said. "And next time I could draw a dragon only in the hypotheses

section."

"As long as you don't put it in the results table," Samir said.

The three of them laughed. Then Ada added a simple sentence to the notebook: *An unexpected result isn't erased. It's checked, described, and used to ask better questions.*

Samir suggested adding a table, but Ada wanted it to be easy to read. She drew three rows—evaporation, water soaking into the soil, runoff—and three columns: *what we observed*, *what it suggests*, *what we still don't know*.

For the soil, they wrote that the surface was damp and that the free water was no longer visible in the same way. This suggested that the water might have soaked between the grains, but it didn't say how much had gone in. They hadn't measured the soil before and after, and they couldn't see into every hidden space.

For evaporation, they recorded that the visible water had changed in the tray without soil, too. That change was consistent with evaporation, but they hadn't observed it directly: they hadn't collected or measured the vapor. Samir explained that water vapor is invisible. The droplets that sometimes form on the outside of a cold glass are liquid water: they form when some of the vapor in the air cools down. "But we didn't observe or measure the vapor," Ada reminded them. "The drop in the tray without soil is a clue in favor of evaporation, if there haven't been any leaks or spills. We don't have to see the vapor. But we haven't measured how much water evaporated, or how much this process matters in the courtyard."

"And runoff?" Leo asked.

"Not tested," Ada said. "We'd have to observe the courtyard and look for a path the water could have taken. But we can't go digging or go near the drain without permission and an adult."

The librarian agreed. "For now, you can make observations from a safe place. If an investigation requires moving things, entering a closed area, or using tools, always ask for help."

Leo looked at the table. "It feels strange to write 'we don't know.'"

"I think it's useful," Samir said. "That way we don't confuse an answer with a hope."

Ada ran her pencil beneath the three rows. "And if we find another clue tomorrow, we can add it without throwing away what we've already done."

For a moment, they thought about how the puddle might change over the course of a day. The

sun could warm the water; the soil could absorb some of it; a slight slope could guide some of it toward a crack. But the courtyard wasn't a tray: it had different surfaces, higher and lower spots, shade and sun. None of them knew how much each factor mattered.

"So there isn't just one arrow," Leo said.

"There might be more than one," Ada replied. "But for now, we'll draw them dashed."

Samir added a key: a solid line for an observation, a dashed line for a possibility, and a question mark for an open question. The drawing was beginning to look like a map of their thinking, not a map of the water's path.

"This is something we can explain well," Ada said. "We haven't solved the mystery, but we're better at telling the pieces apart."

Ada copied the table neatly into the notebook. She didn't erase the first observations, even though they were less precise. Beside them, she wrote that the group had repeated part of the comparison using an agreed point of view and a clearer reference. Below that, she added that the repeat had not measured how much water had gone into the soil and had not checked for runoff in the courtyard.

"Should we also write that the water disappeared?" Leo asked.

"Better to say that we can't see it on the surface anymore," Samir replied. "'Disappeared' makes it sound as if it doesn't exist anymore."

Ada corrected the sentence. She wrote: *In the tray with soil, we couldn't see the same amount of free water anymore. We don't know where all the water went or how much remained in the soil.*

The librarian read the note without touching the notebook. "That's a cautious and clear sentence. You've written what you observed, and left room for what you still don't know."

"It doesn't sound like a very spectacular conclusion," Leo said.

"It's more interesting than a made-up answer," Samir said. "Now we know what questions to ask next."

Ada also wrote down the date, the time, and the names of everyone who had taken part. Then she checked that the prediction was still legible next to the result, so anyone could compare them. The first hypothesis hadn't been erased; it had been scaled back. The soil might play a role, evaporation was possible, and runoff still needed to be investigated.

“When we tell the others, someone might say the result is wrong,” Leo observed.

“We can show them how we did the test,” Ada said. “And listen in case they notice a limitation we missed.”

Samir nodded. “If a criticism is useful, we’ll write it down. If someone has a different idea, we’ll ask what observations support it.”

The librarian closed the container of soil and set the materials aside while the kids gathered the sheets. “Remember: a test isn’t meant to produce the result you prefer. It’s meant to help you better understand how much you can trust what you observed.”

Ada closed the notebook with the bookmark between the pages and put it in her backpack. The mystery of the puddle wasn’t solved. But for the first time, the kids had an unexpected result to discuss, an improved method, and an honest list of what the test couldn’t show.

“Tomorrow we’ll tell the class,” Samir said.

“With the dashed arrows?” Leo asked.

“Especially those,” Ada replied. “That way, they can see where what we observed ends and where the questions begin.”

They left the library without a definite answer, but not empty-handed. The notebook held data, doubts, and a conclusion small enough to be accurate: the test had taught them something, but not everything. And when a result surprises you, the most scientific thing to do is look at it once more, carefully.

A Team of Questions

The next morning, Ada arrived in class with her notebook held tightly to her chest and a folder that kept slipping under her arm. Inside were the drawings of the courtyard, the map, the observations she and Leo had collected, the predictions written before the test, and the results from the trays. Samir had brought large sheets of paper, markers, and a pencil for every classmate who needed one.

“Did you include the dashed arrows too?” Leo asked, looking at the edge of the folder.

“All the ones we need,” Ada replied. “The dashed ones show things we think might have happened, but didn’t see directly.”

Samir set the sheets on the desk. “And here are the solid arrows for what we observed or measured.”

Leo ran a finger over one of the pages. “Then we have to be careful: if I draw a solid arrow from the puddle to the soil, it looks as though we saw the water disappear underneath it.”

“Exactly,” Ada said. “We can say that in the courtyard the soil looked dark in some places. We don’t know if it was wet, and we didn’t follow every drop.”

Before they began, they sat together to check the order of their presentation. Ada suggested starting with the question that had begun the investigation, then showing the map and notes, and only after that talking about their hypotheses and the test. Leo wanted to highlight the unexpected result right away, because he thought it was the most surprising part. Samir suggested they not choose between the two ideas.

“First we’ll show what made us ask the question,” he said. “Then we’ll tell them how we tried to answer it. That way the unexpected result will make more sense.”

Ada nodded and wrote on the first sheet: **The question: where does the puddle water go?** Underneath, she added a smaller line: **We don’t know the complete answer yet.**

“Should we leave it like that?” Leo asked.

“Yes,” Ada said. “This isn’t a magic show. We shouldn’t make an answer appear just because we’re standing in front of the class.”

Samir laughed. “Too bad. I brought a magician’s hat.”

“You can use it to pull out the notebook,” Leo said. “That would already be an experiment: let’s see if a page about puddles comes out of the hat.”

The joke eased the tension a little. Ada was happy to talk about their work, but she worried that someone might mistake hypotheses for facts or ask a question she didn’t know how to answer. When they had prepared the test, the librarian had told her that you didn’t need to already know every answer to do science. You needed to be honest about what you knew and what was missing.

The teacher came over to their desks. “Do you have everything you need?”

“I think so,” Ada replied. “We’d also like to show the limitations of the experiment.”

“Excellent idea. And remember that the class can ask questions. This isn’t a contest to see who knows the most.”

“Good,” Leo said. “I’ve only studied the magician’s hat for five minutes.”

Once their classmates were seated, Ada carried the first sheet to the blackboard. Her hands trembled slightly as she pinned it up. She looked at her notebook, then at Leo and Samir. She wasn’t alone facing a difficult answer: the three of them had worked together, and now they would listen to everyone else too.

Ada pointed to the title on the board. “The puddle was here in the courtyard after the storm. The next day it was much smaller. The question we asked ourselves was: where did the water go?”

“Down the drain!” Tommaso called immediately from the back of the classroom.

“That’s one possibility,” Ada replied. “But when we arrived, we didn’t see the water go down the drain.”

Leo showed them the map. “We drew this part by observing the courtyard. Here’s the puddle, here’s the drain, and here’s the edge next to the soil. We also marked the patches of soil that looked dark.”

“And what did you see change?” the teacher asked.

Ada opened her notebook. “We observed that the puddle was smaller at different times. We wrote down the time and the weather. In some places the soil looked dark, but we didn’t know if it was wet. We didn’t follow the water the whole time, so we can’t say for sure what happened to every part of it.”

Samir showed them a page with two columns. “Here are the observations. And here we’ve put the things we remembered but hadn’t written down right away.”

“Why separate them?” a classmate asked.

“Because a memory can be useful, but it isn’t as precise as a note taken at the time,” Ada explained. “Maybe we remember that the puddle was big, but we don’t know how big. That’s why we put a question mark next to anything we weren’t sure we’d seen clearly.”

Leo added, “At first we thought we remembered it disappearing overnight. Then we looked at our notes again and realized we hadn’t observed it every hour. So we don’t know exactly when it got smaller.”

Tommaso raised his hand. “But if it was smaller the next day, that means it evaporated.”

“Some of it may have evaporated,” Samir said. “But we didn’t measure the vapor, and we didn’t observe all the water. Saying it’s possible isn’t the same as saying we proved it.”

The teacher wrote three words on the board: **observation**, **memory**, **hypothesis**.

“Which sentence belongs under observation?” she asked.

“The puddle was smaller when we saw it the next day,” Leo replied. “We wrote that down.”

“And ‘it all evaporated’?”

“That’s a hypothesis, and it’s much too certain,” Ada said. “We don’t know if it all evaporated.”

The classmate who had asked the question pointed to the map. “And the dark soil?”

“We saw that, but we don’t know if it was wet,” Samir said. “But the soil absorbing some of the water is a possible explanation. We’d need more evidence to understand it better.”

Ada felt the tension ease. Talking about their doubts didn’t make the work seem useless; instead, it helped their classmates understand how they had arrived at the next questions. She wrote on the sheet: **Seen: smaller puddle; soil dark in some places, without knowing if it was wet. Not seen: the path of every drop.**

Ada pinned a second sheet to the blackboard. She had written down three possible explanations, without putting a cross beside any of them.

“The first is that some of the water evaporated,” she said. “The second is that some of it went into

the soil. The third is that some of it flowed toward the drain or downhill."

"How did you choose those three in particular?" Giulia asked.

Leo scratched his head. "We looked at the courtyard and asked ourselves what could happen to the water. The sun and the air can make water evaporate. Soil can absorb some of it. And if there's a path or a slope, the water can flow away."

"So are they all true?" Tommaso asked.

"We don't know," Samir replied. "Several things might have contributed at the same time. And maybe we missed another possibility."

The teacher moved aside to give the students room. "What observations might help you figure out if an explanation is plausible?"

A girl pointed to the first hypothesis. "If it was very sunny, maybe the water evaporated faster."

"That's a useful question," Ada said. "We wrote down the weather, but we didn't measure how much water evaporated."

"And what about the soil?" Giulia asked.

"We could see if there are wet patches near the puddle," Leo replied. "But seeing them isn't enough to know how much water went into the ground."

Tommaso stood up to get a better look at the map. "The drain is nearby. So the water went there."

"Maybe," Samir said. "But to show that, we would have had to observe water flowing toward the drain, or collect other evidence. We didn't see it."

"Why didn't you keep watch all night?" a classmate asked.

"Because we couldn't stay in the courtyard every hour," Ada replied. "And it wouldn't have been safe or practical to do it on our own. We recorded what we could observe during the day."

The teacher wrote beneath the three hypotheses: **What did we see? What do we expect to see? What could disprove the idea?**

Leo read the last question twice. "We hadn't thought of it that way. If we only look for things that prove us right, we can convince ourselves of anything."

"Right," Ada said. "We also have to ask what would make us change our minds."

Giulia suggested adding a fourth hypothesis: “What if someone moved the water with a bucket?”

For a moment, everyone looked at the drawn puddle. Then Samir smiled. “We don’t have evidence that happened. But we can write it among the questions to keep in mind, without turning it into an explanation.”

Ada noted the suggestion in the margin, with a question mark. It wasn’t a new certainty: it was a reminder not to confuse possible ideas with what they had actually observed.

Leo picked up the sheet with the drawing of the two trays. “To test some of our ideas, we set up a simple comparison. The librarian helped us and supervised us while we worked. We used ordinary materials, without dangerous substances or complicated tools.”

“What did you change?” Giulia asked.

Ada pointed to the drawings. “We put some water in one tray with soil and in the other tray, the comparison tray. We tried to keep the location, the waiting time, and the initial amount of water the same. That way, the main thing that changed was whether there was soil.”

“Main thing?” a classmate asked.

“We couldn’t control every detail,” Ada said. “The trays weren’t identical to the courtyard. And it was hard to compare the water level just by looking down from above.”

Samir showed them the page of predictions. “Before looking at the results, we wrote down what we expected. If the visible water had decreased more in the tray with soil, that would have been a clue consistent with absorption. But it wouldn’t have been complete proof: evaporation could have contributed too.”

“And did you put the trays in the sun?” Tommaso asked.

“We set them up in the same place, with the librarian,” Leo replied. “We didn’t want to change lots of things at once. If one tray had been in the sun and the other in the shade, we wouldn’t have known whether the difference was due to the soil or the light.”

The teacher drew two arrows on the board. “This is the idea of changing one thing at a time, as far as possible. You try to keep the other important conditions the same. But this comparison was a model, not a perfect copy of the courtyard.”

Giulia came up to the sheet. “Can I mark the conditions you kept the same?”

Ada handed her the marker. Giulia circled the location, the waiting time, and the initial amount of water. Then she hesitated over the soil.

“This is the difference you wanted to study.”

“Yes,” Samir replied. “But it also makes it harder to see where the water is.”

Leo followed the drawn edge with his finger. From his desk, Tommaso craned his neck to look.

“Wait, I can’t see from here!” he protested.

Leo lifted the sheet and held it beside the blackboard. Ada moved her notebook to the edge of the teacher’s desk, open to the corresponding page. Now their classmates could compare the large diagram with the original notes.

Giulia went back to her seat without returning the marker.

“That wasn’t one of the materials to take home,” Leo reminded her.

Tommaso pointed to the notebook. “And did the librarian tell you which hypothesis was right?”

“No,” Leo replied. “She helped us get organized and work safely. We made the observations and decisions ourselves.”

Ada realized she was speaking more calmly. The test hadn’t become stronger because an adult was there; it had been safer and more organized. The data, not the authority of the person who had helped them, had to determine what they could conclude.

Ada turned the page and showed them the result. “When we looked at the trays, the visible water had changed in both. Looking at them didn’t let us say for sure how much water was left or where the water we couldn’t see had gone.”

“But hadn’t you predicted that more would disappear in the soil tray?” Giulia asked.

“Yes,” Leo said. “We expected a clearer difference. The result didn’t fully confirm our prediction.”

“So did the experiment go wrong?” Tommaso asked.

“Not necessarily,” Samir replied. “It made us notice that the prediction and the result didn’t match the way we thought they would. We had to ask ourselves whether the comparison was precise enough and what other explanations were possible.”

The teacher pinned the page with the second observation next to the drawing. “What did you do

next?"

"We checked the starting conditions and repeated part of the test with a more stable reference," Ada explained. "We tried to look at the trays from the same spot and to keep the conditions as similar as possible. The librarian was with us this time too."

"And did the second attempt solve the problem?" Giulia asked.

"It made the comparison more orderly," Ada said. "But it didn't directly measure how much water evaporated or went into the soil."

Leo drew a line under the word "results" on the sheet. "A better measurement can help us, but it doesn't answer every question. If we want to know how much water went into the soil, we have to find a suitable way to observe exactly that."

Tommaso leaned forward. "Then maybe the first observation was wrong."

"It might have been imprecise," Samir said. "But we don't know that it was wrong. That's why we left it in the notebook alongside the second one, instead of erasing it."

Ada showed her classmates the two lines: **First comparison: hard to estimate the level by eye. Partial repetition: more stable reference, but no direct measurement of the water in the soil or in the air.**

"Why write down the less precise attempt too?" a girl asked.

"Because it's part of what happened," Ada replied. "If we remove it, it looks as though we had a perfect method from the beginning. Instead, we noticed a limitation and tried to improve one part."

"And why didn't you repeat everything from the beginning?"

"We redid the comparison with the trays, not the whole investigation in the courtyard," Leo clarified. "We used new water and more soil from the same bag. We call it a partial repetition because we mostly checked how we observed the levels."

The teacher nodded. "Being precise doesn't mean sounding certain. It means clearly saying how you worked and where the result might be uncertain."

Ada wrote on the sheet: **The unexpected result made us check the method. The repetition improved the comparison, but didn't solve the mystery.** Then she left some space underneath,

ready to add her classmates' questions.

Giulia kept looking at the two drawn trays. "What if the soil acted like a sponge only at first, then stopped absorbing? Maybe that's why the water stayed visible at more or less the same level as in the other one."

"That's an idea," Ada said. "But we didn't observe every moment, so we don't know how the level changed between the beginning and the end."

"And we didn't measure how wet the soil already was," Leo added. "The amount of water it could absorb might also depend on what the soil was like beforehand."

Tommaso raised his hand. "My idea is that someone moved the water with a bucket. If nobody saw it, that doesn't mean it didn't happen."

"You're right about one thing," Samir said. "Not seeing an event doesn't always prove it didn't happen. But we don't have any clue that someone used a bucket. We can keep it as a possibility, but not present it as an explanation."

The teacher wrote two sentences: **We didn't observe it** and **We know it didn't happen**. "Are they the same thing?"

"No," Ada replied. "The first is about our notes. The second would be a stronger conclusion, and we don't have evidence for it."

"So can we never say something didn't happen?" Giulia asked.

"It depends on how much we looked and what we were able to observe," the teacher replied. "Sometimes the evidence makes an idea very unlikely. But in this case our observation time was limited."

Samir looked at Tommaso. "Your suggestion reminds us that we didn't check the courtyard every moment. That's a useful limitation to write down. But to say someone moved the water, we'd need an observation or other evidence."

Tommaso nodded. "So I can say, 'Maybe it happened,' but not, 'It happened.'"

"Yes," Ada said. "And we can also ask what would help us tell the possibilities apart."

The class began suggesting different checks. A classmate proposed observing the puddle at regular times. Someone else suggested taking a photo from the same spot each time, without

going near the wet edge. Giulia thought of recording the rain and the weather, so they wouldn't have to rely only on memory.

"Those are ideas for new observations," Leo said. "We haven't done them yet, so for now they aren't results."

Ada added the suggestions to a new section of the notebook titled **Class questions**. Next to the bucket idea she wrote: **possibility without evidence; observe more before reaching a conclusion**. Next to the photos and times she put a small mark as a reminder for possible future investigations.

The group didn't dismiss Tommaso's suggestion because it seemed strange, or accept it just because it was possible. They treated it as an idea to compare with the clues, just as they had done with the others.

Ada reread the first version of the explanation, written at the back of the notebook: **The soil absorbed the puddle water.**

"This sentence sounds more certain than what we know," she said.

Leo moved his pencil closer. "We could write: 'The soil may have absorbed some of the water.'"

"And add that we saw dark soil near the puddle, without knowing if it was wet," Samir suggested. "That way the observation is on one side and the idea on the other."

Ada crossed out the previous sentence with a single line, leaving it legible, and wrote underneath: **We observed dark soil in some places, without knowing if it was wet. Some of the water may have been absorbed, but the test doesn't tell us how much.**

"What about evaporation?" Giulia asked.

Leo thought for a moment. "We know water can evaporate, but we didn't measure it directly. We can say it remains a possible explanation."

"And the drain?" Tommaso asked.

"We didn't observe the water flowing to the drain," Ada said. "So the runoff still needs to be checked. We can't say it didn't happen, but we don't have evidence to claim it was the cause."

The teacher pointed to the sheets full of words. "What did you change, then?"

"Not the data," Samir replied. "We changed how we told the story. The explanation is more

cautious now."

Giulia came up to the blackboard. "Maybe you can say that several things contributed together. Some evaporated, some went into the soil, and some flowed toward the drain."

"That's possible," Ada said, "but we don't know how much each one contributed. We can't turn a possibility into a result just because it sounds complete."

"But we can keep all three hypotheses," Leo said. "The test didn't choose just one explanation."

The class compared the words one by one. **Dark soil in the courtyard** and **damp soil in the trays** went in the observations column, on two separate lines. **Absorption** went in the hypotheses column. **Evaporation** remained an explanation supported by a clue from the trays, but without a measurement of how much water evaporated or any check of its role in the courtyard. **Runoff** was marked as an open question, because no one had seen the water reach the drain.

Samir drew a line between the columns. "We need this line so a word doesn't slip from one side to the other without us noticing."

"Like a fence for ideas," Tommaso said.

"A fence with a little gate," Ada added. "If new evidence comes along, an idea can move to the other side."

The teacher smiled. "That's a good image. Hypotheses aren't prisons: you can revise them when you learn something new."

Ada left the first sentence crossed out but legible. She didn't want to pretend she had never written it. The change was part of the work: they had started with an answer that was too certain and, thanks to the questions, had made it match the evidence.

When the discussion calmed down, Ada went back to her desk and opened the notebook to a new page. "Can we sum up what we've learned from today's questions?"

Leo took the marker and wrote three headings: **We observed**, **We think is possible**, **We don't know yet**.

Under the first heading, Ada listed the shrinking of the puddle among the observations and the presence of dark soil in some places, without knowing if it was wet. She added that the level in the trays had changed, but that the visual comparison hadn't given them a reliable measurement. She also specified that they had observed the courtyard at separate times, not continuously:

things they hadn't seen might have happened between visits.

Samir completed the second column. "Some of the water may have been absorbed. Some may have evaporated. The change in the trays gives us clues, but doesn't measure how much each process contributed to the puddle disappearing."

"And in the third?" Giulia asked.

Leo wrote: **How much water evaporated? How much went into the soil? Did it flow toward the drain? When did it happen?**

Tommaso suggested adding: **Did someone move it?**

"Yes, but let's write that we don't have any clues to support that idea," Ada said. "Otherwise it sounds like an explanation just like the others."

The teacher looked at the table. "Do you think the discussion made your work more confusing or clearer?"

"Both," Leo said. "More questions came up, so we know less than we'd hoped. But now we know better what we actually saw."

"It seems clearer to me," Samir said. "At first we used 'it happened' even when we meant 'maybe it happened.' Now we're careful."

Ada added a note: **Our classmates' questions helped us find sentences that were too certain and better distinguish evidence from explanations.**

"Not every question has an answer right away," Giulia said.

"That's true," Ada replied. "But a precise question can suggest what to observe next time."

The class proposed looking at the puddle at set times, noting whether it had rained, and taking a photo from the same position each time. The teacher reminded them that any new observations in the courtyard would have to be organized with the school, and that they must stay away from slippery areas and the drain.

"And what if we can't check it often enough?" Tommaso asked.

"We write that down as a limitation," Samir said. "We shouldn't promise to do a check we can't carry out."

“We could also write down the time of each photo,” Giulia said, “so we don’t confuse a photo taken in the morning with one taken after lunch.”

Ada added the suggestion, but didn’t turn it into data. It was one possible way to organize a future observation, not something they had already done. Then she drew a small box next to each question, to leave empty until they had collected new evidence.

The teacher pointed to the box next to the bucket idea. “Do we check this one off?”

“No,” Tommaso said. “We haven’t found anything to support it. We’ll leave it as a possibility, but we won’t use it to explain the puddle.”

Ada looked at the page: it didn’t contain a final answer, but a more precise map of what they knew and what was missing. There were more dashed arrows now, but no one would mistake them for solid ones.

The teacher asked the children to prepare a concluding sentence. Leo suggested: “Our test proved that soil absorbs water.”

Ada shook her head. “That’s too strong. We didn’t measure how much water went into the soil.”

Samir suggested: “Our test showed that we need to check the comparison more carefully.”

“That’s true,” Giulia said. “And you learned that an unexpected result can help you improve the method.”

Ada wrote a new sentence on the sheet: **We gathered clues and revised our explanation thanks to the class’s questions. We know some things, we have hypotheses, and we still have questions to check.**

“That doesn’t sound like a very definite conclusion,” Tommaso observed.

“Because it isn’t definite,” Leo replied. “It’s the conclusion we can support with what we did.”

The teacher looked at the class. “When you tell people about an investigation, it isn’t enough to say what you think. It’s important to show how you got there, what observations you have, and where certainty ends.”

“And listen to objections,” Samir added. “If someone notices a limitation, we can check whether they’re right.”

“Even if the question makes us struggle?” Giulia asked.

“Especially then,” Ada said. “A difficult question can make us notice something we hadn’t seen.”

The class decided to leave the sheet on the wall for a few days, so anyone could add a question. Tommaso passed Ada a piece of tape, but it stuck to his finger. Giulia held the corner of the poster still while he tried to free himself without crumpling it.

Ada updated the notebook with the date and the names of the classmates who had taken part. Next to the hypotheses she wrote who had suggested each question and which objections had helped her revise them. She didn’t want to credit just one person with an idea they had built together.

“So the team isn’t just the people who do the experiment,” Leo said. “It also includes the people who listen, ask questions, and help explain things better.”

“And the person who says ‘we don’t know yet’ when that’s true,” Samir added.

Ada closed the notebook. The puddle remained a mystery, but the presentation had changed the way the three children looked at it. Their ideas were no longer three competing answers: they were hypotheses to compare, with different clues and stated limitations.

Before the bell rang, the teacher reread the conclusion Ada had written. “You’ve also described what you still don’t know,” she said. “That’s an important part of your work.” Ada looked at her notebook: for that day, it was enough to have sorted out the observations, hypotheses, and questions from the class.

Ada looked at the sentence at the top of the notebook: **Where does the puddle water go?** Beneath it, among the new questions, she wrote another one: **What should we observe more carefully next time?**

“We can’t solve this one with the trays,” Leo said.

“No,” Ada replied. “But we can listen and ask more questions.”

The bell rang. The children gathered up the sheets and markers, leaving the report on the wall, open to questions from the class. Their explanation had changed, not because someone had chosen the right answer for them, but because they had listened to objections and checked what the evidence really supported.

The Next Experiment

The classroom wall was still covered with sheets of paper. There were arrows, drawings of the schoolyard, questions written in capital letters, and a few question marks bigger than the words they belonged to. In the middle, Ada's report left a blank space for new observations.

When the teacher came in carrying a stack of cards, Leo was still staring at a dashed arrow.

"Does this mean the water went underground?" he asked.

"It means that's a possibility," Ada replied. "Not that we saw it go there."

Samir opened his notebook and looked for the page with the list of the class's questions. "Here it says: 'How do people study water when they can't follow all of it?'"

"That's a question that will be useful to us," said the teacher. "Today the school is hosting some people who work in different scientific fields. You'll be able to ask them how they begin an investigation, what they observe, and what they do when they don't know the answer yet."

She handed out the cards. Each one had the schedule for the meeting written in large letters. Ada read the guests' names: a plant and soil researcher, a laboratory technician who tested materials, and someone who studied water and the environment using maps and measurements.

"Three different jobs," said Leo. "But none of them knows where our puddle went."

"Maybe not," Ada replied. "But they might help us figure out what questions to ask."

Samir turned the card over. There was space on the back to write a question to bring to the meeting. He wrote: "How can you tell if a clue is enough?" Leo wrote: "How do you avoid confusing an assumption with a discovery?" Ada paused for a moment, her pencil suspended.

Then she wrote: "If a test doesn't answer the question, how do you choose the next one?"

The teacher read the three questions. "They're different, but they go hand in hand. Bring your notebook too: not as an assignment to hand in, but as a record of your thinking."

Ada ran her thumb along the edge of the cover. Those pages held the first observation, the hypotheses, the trays, the unexpected results, and her classmates' objections. They also held crossed-out lines and rewritten sentences. For a moment it seemed messy to her. Then she realized that the mess told the story of the work better than a neat answer that had appeared out of nowhere.

“So are we going as a team?” Samir asked.

“As a team of questions,” said Leo.

Ada closed the notebook, taking care not to bend the slips of paper sticking out of its pages. The puddle had not become any less mysterious. But now they had somewhere to take the mystery, and three questions ready to walk alongside it.

The large classroom had been set up for the meeting. In front of the blackboard there was a table with pots of soil, some clear boxes, and a large map of the area. It didn’t look like an ordinary lesson, and Leo liked that right away.

The teacher introduced the guests: Dr. Riva studied plants and soil; Omar worked in a laboratory where materials were tested; Ms. Conti collected information about water and the environment to help understand how places changed.

“So you’re all scientists?” a child asked.

“Some are called researchers, others technicians or experts,” the teacher replied. “The names of the jobs vary. And not everyone who uses science has the same kind of day or the same career path.”

Dr. Riva smiled. “I spend a lot of time observing plants, but I don’t always work outdoors. Sometimes I read studies, compare notes, or discuss things with other people. Omar uses measuring instruments and checks that they work properly. Ms. Conti works with data and maps, but she also meets people who know the places.”

Omar picked up one of the clear boxes and turned it over in his hands. “I might spend a morning checking that an instrument gives reliable measurements. It’s not a flashy job, but if the instrument is wrong, the result can confuse whoever uses it.”

“And I might compare two maps from different seasons,” said Ms. Conti. “But first I need to know when they were made and what they show. A map without a date is like a page in a notebook without the day written on it: an important piece might be missing.”

Dr. Riva pointed to the pots. “I might observe a plant every week, noting which leaves have changed. A single day wouldn’t tell me how it had grown. That’s why some kinds of work require patience and organized notes, even when nothing spectacular happens.”

Leo whispered to Ada, “So even writing ‘today the leaf is still there’ can be useful?”

“If that’s what you wanted to check, yes,” Ada replied. “At least you know the leaf was still there that day. For other changes, you’d have to look at other details.”

“And do you all have to follow the same path to become scientists?” Samir asked.

“No,” said Omar. “Some jobs require specific studies and a long period of training. For other roles, different technical skills matter too. But nobody learns everything on their own, and there isn’t one path that works for everyone.”

Ms. Conti pointed to the map. “The questions change too. One person might ask how water moves through the ground; another might check whether a material absorbs or repels a drop; yet another might compare rainfall in different places.”

“And sometimes people with different jobs work together on the same question,” the teacher added. “Not because they all do the same thing, but because each person brings a different way of observing or measuring.”

Ada looked at her notebook. Their question about the puddle could involve more than one field, but that didn’t mean the answers were already there, waiting to be picked up. Maybe they needed observations of the schoolyard, a more accurate measurement, and someone who could explain what the ground was like. No single person had to know everything.

The teacher invited the children to ask questions without being afraid of getting something wrong. “If a word isn’t clear, ask. If an idea seems strange to you, ask how it could be checked.”

Leo held up his card. “Even if it’s a small question?”

“Questions don’t become important because they’re complicated,” said Dr. Riva. “They become useful when they help us look more carefully.”

Dr. Riva picked up a small pot from the table. Inside was dark soil, with thin roots that looked like threads. She set a young plant beside it, still very small.

“When I study soil, I don’t just look at its color,” she explained. “I might ask how much water it can hold, whether there are roots, or how it changes after rain. But each question requires the right observations.”

“How can you see water going into the soil?” Ada asked.

“It depends on what I want to know. Sometimes I use instruments; other times I compare samples prepared under controlled conditions. But a sample in a pot isn’t identical to a piece of the

schoolyard. The soil might be different, roots can change the path the water takes, and outdoors there's sun, wind, and slope."

Dr. Riva showed them two similar pots. "When I compare these samples, I try to find out where they came from and how they were prepared. If one holds more water than the other, I record the difference. But to explain why it happened, I have to check the other conditions too."

"Like when we compared the trays," said Leo. "It's not enough to say that one changed more: we have to know if we prepared them in the same way."

"Exactly," Dr. Riva replied. "And if a difference is small, the instrument or the way we observe might not let us distinguish it with confidence."

Ada turned to Leo and pointed to their card. He nodded: the question they had prepared in class had found its place between two pots full of roots. Samir searched his notebook for a blank line to take notes.

"If a plant has wilted, does that always mean it needs water?" a girl in the front row asked.

"It's one possibility," said Dr. Riva. "But there could be other causes too. To understand better, I gather clues: what the plant was like before, how much light it gets, what the soil is like, and what has changed. A single sign rarely tells the whole story."

Samir opened his notebook and wrote: "One clue can have more than one explanation." Below it he added a little leaf, then erased it because it had come out crooked.

"Don't erase it," Leo whispered. "It's a leaf with a difficult story."

Samir left it there.

Dr. Riva explained that sometimes she spent days checking the same plants, noting what changed and what stayed the same. Other times she worked with people who knew how to use different instruments or knew a place well.

"And what if you don't find the answer after a long time?" Ada asked.

"Then we carefully describe how far we've gotten and what still needs to be checked. Not knowing yet isn't a failure. It's an honest part of the work."

Ada looked at the first page of her notebook, where she had written the question about the puddle. She didn't feel any closer to a solution. She felt more able to understand what kinds of

tests would be needed, and which ones wouldn't be enough.

Omar opened one of the clear boxes. Inside were small samples of materials: a piece of cloth, a sponge, a tile, and a strip of absorbent paper. There was also a plastic graduated cylinder and a scale on the table.

"What happens if we put a drop on each material?" he asked.

"The sponge drinks it," said Leo.

"Materials don't really drink," Ada pointed out. "But water can enter some of them."

Omar nodded. "That's a useful distinction. We can say that a material absorbs water, but first we need to decide what to observe: the stain, how long it takes to disappear, or how much is left on the surface."

"Can we try?" Samir asked.

"Yes, with safe materials and adult supervision. In a laboratory we follow precise procedures, use the right instruments, and don't taste or touch unknown samples. Here we'll just do a simple demonstration."

Omar put a small square of cloth on a tray. Dr. Riva used a dropper to pour a little water onto it. The children watched the stain spread.

"Can we say now that the cloth has absorbed some water?" Omar asked.

"We saw the stain spread across the cloth: that's a clue that the water is being absorbed, not a measurement of how much went in," Ada replied.

"And can we say how much water went in?" he asked.

Leo pointed to the cylinder. "Only if we measured before and after, and we know it didn't end up somewhere else."

"Exactly. A measurement is useful when we know how it was collected and what its limits are."

Omar explained that in a laboratory every sample must be identified and that instruments can have a margin of error. A scale, for example, doesn't show some kind of magic truth: it gives a measurement that depends on the instrument, how it's used, and what's placed on it. That's why the person using it checks that it's ready and writes down the conditions of the measurement.

“If we repeat the test, does it have to be identical?” a boy asked.

“We try to keep the conditions that matter the same and change one thing at a time when we want to understand the effect of that thing,” said Omar. “But repeating doesn’t mean getting exactly the same numbers every time. If the results differ, we ask why.”

Ada looked at the samples left in the box. The cloth, the tile, and the sponge each had their own place. In her notebook, though, the descriptions of the trays were far from the drawings, so she linked them with two small numbers.

“So writing down how we did the test is almost as important as writing down the result,” said Samir.

“Very important,” Omar replied. “That way another person can understand what you did and judge whether the conclusion is in proportion.”

Samir added to his notebook: “Describe the method. Don’t just say what happened.”

Ms. Conti spread the map out on the table. It wasn’t a road map: it showed a stretch of river, some green areas, and lines marking differences in the height of the land.

“These lines help us understand where the ground rises and where it falls,” she explained. “If we want to study water, the place matters. The rain, the type of soil, the slopes, and the drains can be different even a short distance apart.”

Leo looked at the drawing. “So the water from our puddle could go in more than one direction?”

“It could. But first we’d have to observe the schoolyard and find out what’s really there: a drain, a slope, soil that absorbs water, or something else. A map can suggest where to look, but it can’t replace observation.”

Ms. Conti showed them a photograph of a drain beside a sidewalk. “When we collect data, we write down where and when we collected it. Two measurements taken in different places might not be comparable if the conditions have changed.”

Ada flipped through her notebook to the map of the schoolyard that she and Leo had drawn. They had marked the location of the puddle and some landmarks. But they hadn’t followed the water as the puddle shrank, and they hadn’t checked every possible way out.

“We observed at intervals,” she said. “So we don’t know what happened in between.”

“Exactly,” Ms. Conti replied. “It’s important to say when you weren’t watching too. It doesn’t mean you did anything wrong: it means you know where the limits of your data are.”

Samir wrote: “We didn’t observe the whole time.” Then he added: “An adult is needed to check the schoolyard and see if there are drains or dangerous areas.”

“And how do you collect information about a long river?” a girl asked.

“We can’t be everywhere at the same time,” Ms. Conti replied. “We choose observation points, use suitable instruments, and compare the data. Sometimes we work with people who live near the river and know how the place changes. Even then, we have to check how the information was collected.”

Ada understood that working together didn’t mean accepting every statement without thinking. It meant listening, asking how someone had reached a conclusion, and bringing different kinds of knowledge together.

“The map is a bit like our little map of the schoolyard,” said Leo. “It helps us remember where to look. But it can’t tell the whole story by itself.”

“Exactly,” said Ms. Conti. “It’s a tool, not an answer.”

Ada made a small mark beside the map in her notebook: “review with an adult.” She didn’t want to go near the drain alone, or open it or touch it. If one day they observed that area, they would do it safely, with the teacher or a family member.

The teacher invited Ada, Leo, and Samir to tell everyone about their work. Ada stood up with her notebook open, Leo held the drawing of the schoolyard, and Samir brought the sheet with the table of hypotheses.

“After the storm, we saw that the puddle was smaller,” Ada began. “That’s what we observed. We didn’t see the water disappear.”

Leo showed them the map. “Then we wrote down what changed and what we didn’t know. We wondered whether the water had evaporated, soaked into the ground, or flowed somewhere else.”

Samir held up the table. “We did a test with two trays, one with soil and one without. The idea was to compare what happened, but it wasn’t a copy of the schoolyard.”

“And the result?” asked Dr. Riva.

Ada flipped to the right page. “By eye, it seemed like the level had changed in both. We didn’t have a precise enough way to measure every difference. We repeated part of the test using a more stable reference, but we didn’t directly measure how much water evaporated or how much went into the soil.”

Omar nodded. “You also wrote down what you can’t conclude. That’s an important part of the report.”

“So which hypothesis is right?” a child in the audience asked.

Ada looked at the pages. It was the same question she had asked herself on the first day, but now she knew she didn’t have to choose an answer just to fill the silence.

“We don’t know yet,” she said. “We have some clues, but they aren’t enough to decide which process made the puddle get smaller.”

Ms. Conti asked, “What observation would help you distinguish the possibilities better?”

Leo thought about the question. “We could observe the edge at set times and look for any little streams, while staying on the path. That would mainly help us check the idea that the water flowed away, not measure all the causes.”

“And with an adult,” Samir added. “We wouldn’t touch any drains or grates.”

Dr. Riva asked if the soil in the schoolyard was the same as the soil in the trays. Ada shook her head. Omar asked how they would measure the water without confusing a measurement with an estimate by eye. The children looked at one another: these were precise questions, not riddles with a hidden answer.

“Maybe we should first figure out what we can observe without special instruments,” said Ada. “And ask for help with what we can’t check on our own.”

The teacher wrote two columns on the blackboard: “We can observe” and “We need help or an instrument.” The first column included the time, the shape of the edge, and the presence of water in nearby spots, always from a safe place. The second included more accurate measurements and checks for any drains.

“We haven’t solved the mystery,” said Leo, looking at the list.

“But now we know how to describe it without making up an answer,” said Ada.

Samir wrote: “Other people’s questions showed us the limits and the next steps.” Then he added the guests’ names beside the questions they had suggested. The notebook, he thought, didn’t just keep the answers. It also kept the names of the people who had helped them look more carefully.

During the break, Ada reopened her notebook on the table. The teacher had left paper and pencils for anyone who wanted to add questions. Two classmates stopped beside them, curious about the map.

“We could go and look at the schoolyard again after it rains,” said Leo. “Write down the time and draw the edge, without making up how deep the water is.”

“And take a photo from the same spot,” Samir suggested. “That would make it easier to compare.”

Ada wrote both ideas in the column of possibilities, then added: “With an adult. Don’t go near drains or manholes.”

A classmate pointed to the page. “Can I see where you wrote down the time?”

Ada turned the notebook toward her and looked for the notes about the trays. Her thumb was hiding the very margin with the times.

“Here they are. We wrote them down here.”

The classmate leaned over to read; Leo made room for her beside the table.

“And what if it rains while you’re observing?”

“We write it down,” said Leo. “We don’t pretend the weather stayed the same.”

Samir smiled. “The notebook could have a section called ‘things that messed up our plan.’”

“That would be good,” said Ada. “But adding a line isn’t enough: we have to understand whether that change makes the comparison less useful.”

Dr. Riva, who was putting the pots away, came over. “Exactly. When something unexpected happens, you write it down and consider how it changes what you can conclude. There’s no need to hide a result just because it wasn’t what you expected.”

Leo added a little drawing of a cloud beside the note about the rain. “That way we’ll remember that the sky can join the experiment without being invited.”

“The sky didn’t sign the consent form,” said Samir.

Ada laughed, then turned serious again. She was eager to repeat the test, but she didn't want to rush into doing something unsafe. She wrote a short list: observe from the path with an adult; choose a fixed spot; write down the time and weather conditions; don't touch grates, manholes, or dirty water; ask the teacher what measurements are suitable.

"These are ideas for the future, not results," she said, rereading the page. "Before we do it, we'll talk it over with the teacher."

"And what if we can't do all the tests?" the classmate asked.

"We can still learn from what we observe," Ada replied. "We just have to say clearly how much we did and what remains to be done."

Samir drew a line under the list and wrote: "Next experiment: plan first, then ask for help, then observe."

When the meeting resumed, the teacher asked the guests to tell them how they had chosen their jobs. Dr. Riva explained that as a child she had liked observing the plants behind her house, but for a long time she hadn't imagined that her curiosity could become a profession.

"I studied biology and then learned to work with other tools and other people," she said. "It wasn't a straight line. Sometimes I changed my mind, and every step taught me something."

Omar said he liked building things and figuring out why certain objects broke. He had completed technical training and then worked with research groups, learning to check instruments and samples.

"I don't ask the same questions Dr. Riva does," he said. "But my work helps people get reliable measurements. Without people who prepare and check the instruments, many results would be harder to interpret."

Ms. Conti said she had studied geography and the environment. She liked connecting maps to real places and working with people who observed rivers and landscapes up close.

"A map is useful," she said, "but it doesn't replace people who know the place. And one person's experience doesn't replace every measurement. We learn by bringing different sources together and checking what each one can tell us."

"So do you have to know which subject to choose when you're little?" a child asked.

"No," Dr. Riva replied. "You can be curious about lots of things. You try them out, you study, you

discover what you like, and you change direction when you need to. There isn't one decision you have to make all at once."

Omar added that scientists kept learning too: they read, took courses, asked colleagues for help, and learned to use new instruments. Ms. Conti said that collaboration was necessary in many jobs because nobody could know every place, every measurement, and every method.

Ada listened. She didn't need to imagine herself as an adult with a specific title already. It was enough to know that she could keep asking questions and learn the things she needed, one at a time.

"And what if someone loves science but doesn't want to do experiments?" Leo asked.

"There are many ways to contribute," said Omar. "Some people collect data, some build instruments, some explain discoveries, and some organize information. Every role is different, and it depends on the field and the job."

"Those activities aren't all the same profession," the teacher clarified. "But many of them can come together when a group tackles a question."

Samir wrote in his notebook: "There isn't just one path. There are things to learn, people to listen to, and questions that change." Below it he added: "You don't have to decide everything today."

Leo read the sentence and nodded. "Good. I haven't even decided what I want for a snack today."

Before the guests left, the teacher asked the children to choose one thing they wanted to remember. Their answers were different. Someone mentioned the maps, someone else the instruments, and someone else the fact that adults asked questions too, without already knowing the answer.

Ada opened her notebook to the last blank page. She drew three columns: "We observed," "We think this might have happened," and "We don't know yet."

In the first she wrote that, after the storm, the puddle had shrunk; that they had observed it at certain times; and that the comparison of the trays had given results that were hard to measure accurately. In the second she wrote evaporation, absorption, and outflow as possibilities that still needed to be checked. In the third she wrote: "What happened when we weren't watching?" and "What safe observations would help us distinguish the possibilities?"

Leo looked at the columns. "More questions keep popping up in the third one."

“For now,” said Ada.

Samir added a little star beside the question about the schoolyard. “We could start by observing after the next rain, from the path and with an adult. Always from the same spot.”

“And write down the time,” said Leo. “And the weather. Whether it’s sunny, cloudy, or windy.”

Ada wrote the idea under “next steps,” not in the results column. Then she added: “First ask the teacher what we can do safely.”

Dr. Riva stopped beside the table. “You already have a question and a plan to discuss. When you’re ready, you can decide whether the observation is useful enough or whether you need a different approach.”

“And what if we don’t find an answer?” Samir asked.

“You’ll still have learned something about what you observed and about the limits of the method,” she replied. “And you’ll be able to describe it precisely.”

The bell announced the end of the meeting. The children gathered their cards and said goodbye. Ada slipped the notebook into her backpack without closing it all the way: a pencil stuck out between the pages, ready for the next note.

In the hallway, Leo stopped in front of the window. The schoolyard was dry, but a dark strip of soil remained along the edge of the lawn.

“Do you think it’s water from the puddle?” he asked.

Ada looked at the patch. The answer came to her right away, but she didn’t say it as if it were a fact.

“It could be connected. But we don’t even know if that soil is damp or just darker. We should observe more carefully before choosing an explanation.”

“So we still have a question,” said Samir.

“Yes,” Ada replied. “And now we also know how to treat it: as a question, until we have enough evidence.”

Leo smiled. “The puddle managed to give us homework.”

“Not homework,” said Ada, opening her notebook. “A next experiment.”

She wrote down the date, the place, and what they could see from the window: “Dark strip near the lawn. We don’t know if it’s connected to the puddle.” Then, below it, she added: “To observe calmly and with an adult.”

This time she didn’t try to fill the page with an answer. She left room for the next observation, for her classmates’ ideas, and for what they still didn’t know. They hadn’t turned every doubt into certainty. They had learned to ask more precise questions, listen to people who knew more, and check together what the evidence could really tell them.

Ada closed the notebook. The puddle was no longer just a patch of water that had disappeared. It had become the beginning of many questions, and they could explore them together, without having to choose a profession already or follow the same path.