

3.6 Pour Me Some Air

Thinking they are finally ready to tackle the “puring air” idea, Klye announces that he can show Kailey an experiment using an upside down glass in a sink full of water, so to better understand how to “pour air.”

Kailey: Are you ready?

Kyle: Yeah. Bring it on!

Kailey: Pour me exactly $\frac{1}{2}$ cup of air. No more, no less. And do it so we can see the air being poured.

Kyle: You know, when you first asked me to do this, it seemed impossible. But now I think I can do it.

Kailey: What changed?

Kyle: My brain. Or at least the way I've been using my brain. I was looking at why I couldn't do this instead of thinking about how it could be done.

Kailey: That's very Zen of you.

Kyle: Zen? Whatever. You were right, of course. Not thinking about it and doing something else like the hot and cold dropper diver thing helped.

Kailey: How so?

Kyle: It was what you said about thinking upside down. Not literally, of course, but as in direction. I switched the way I was thinking about up and down. Water always pours down through air. And then I started thinking about density while I was at my little brother's birthday party.

Kailey: And you say my mind is a strange place!

Kyle: It's your fault, you know. Both you and Sam. You've got me thinking differently.

Kailey: A mind stretched by a new idea never returns to its original shape.

Kyle: This is scary. Is your mind linked to Sam's somehow? Because that's the second time I've been told that!

Kailey: As much as I hate to say it when it comes to Sam's mind, but brilliant minds think alike. Anyway, what happened at the birthday party?

Kyle: I was pretty bored with all those little kids around. So I was playing with a helium balloon, letting it float up to the ceiling, and it got me thinking. Why does a helium balloon go up?

Kailey: But you already know the answer.

Kyle: Yeah, but I thought by starting with what I already know might help me get to what I don't know. You know?

Kailey: No.

Kyle: Ha-ha, very funny. It makes sense though. I was thinking that less dense helium gets pushed up by more dense air. Maybe that's it. Instead of pouring down, I need to think about pouring up, like helium through air.

Kailey: Kyle? Kyle? Is that you? Or has an alien taken over your body...or at least your mind? Wow! I'm impressed!

Kyle: Yeah, yeah, whatever! It all started to click. What would air pour up through? Water, of course!

Kailey: I take it you're ready to show me how it's done.

Kyle: Yep! First, we need to fill the sink half full of water. Then, we need two clear glasses. Put one on the bottom of the sink and let it fill with water. Then flip it upside down. Next, take the second glass, flip it upside down and then put it into the water. That way, air is trapped inside the glass. Hold the air-filled glass under the upside down glass that's full of water. Tip the air-filled glass so the air "pours" up into the water-filled glass above it.

Kailey: Exactly! That way the air going into the glass full of water moves the water out of the way to make room for the air.

Kyle: Yeah, because it's not possible for two things to be in the same place at the same time. So the air moves the water out of the way and I can stop "pouring" air when the glass is half full of air.

Kailey: I'm proud of you, Kyle! Most people would have given up quickly. You stuck with it and gave your brain time to work it out.

Kyle: I must admit, I'm kind of proud of myself too. But, without my little brother's birthday balloon, I wouldn't have thought of a solution.

Kailey: Don't be so hard on yourself. You were open to the possibilities. You didn't close your mind by saying you couldn't do it. The birthday balloon gave your brain a little nudge, but it was you who made the connection and put it all together. Serendipity, that's what it was, an accidental discovery. But you were ready for it when it happened. Louis Pasteur said "chance favors the prepared mind". Kyle, it may be hard to believe, but that's you!

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