
Splash!

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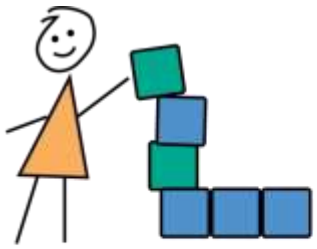

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One day Alice and her friend Luke were playing by the pool with Luke's toy metal boat. As they were playing, Alice accidentally dropped her metal bracelet into the water. The bracelet sank.

"Hey! Your bracelet is made of metal, just like my boat," said Luke. "How come your bracelet sank in the water but my metal boat floats?"

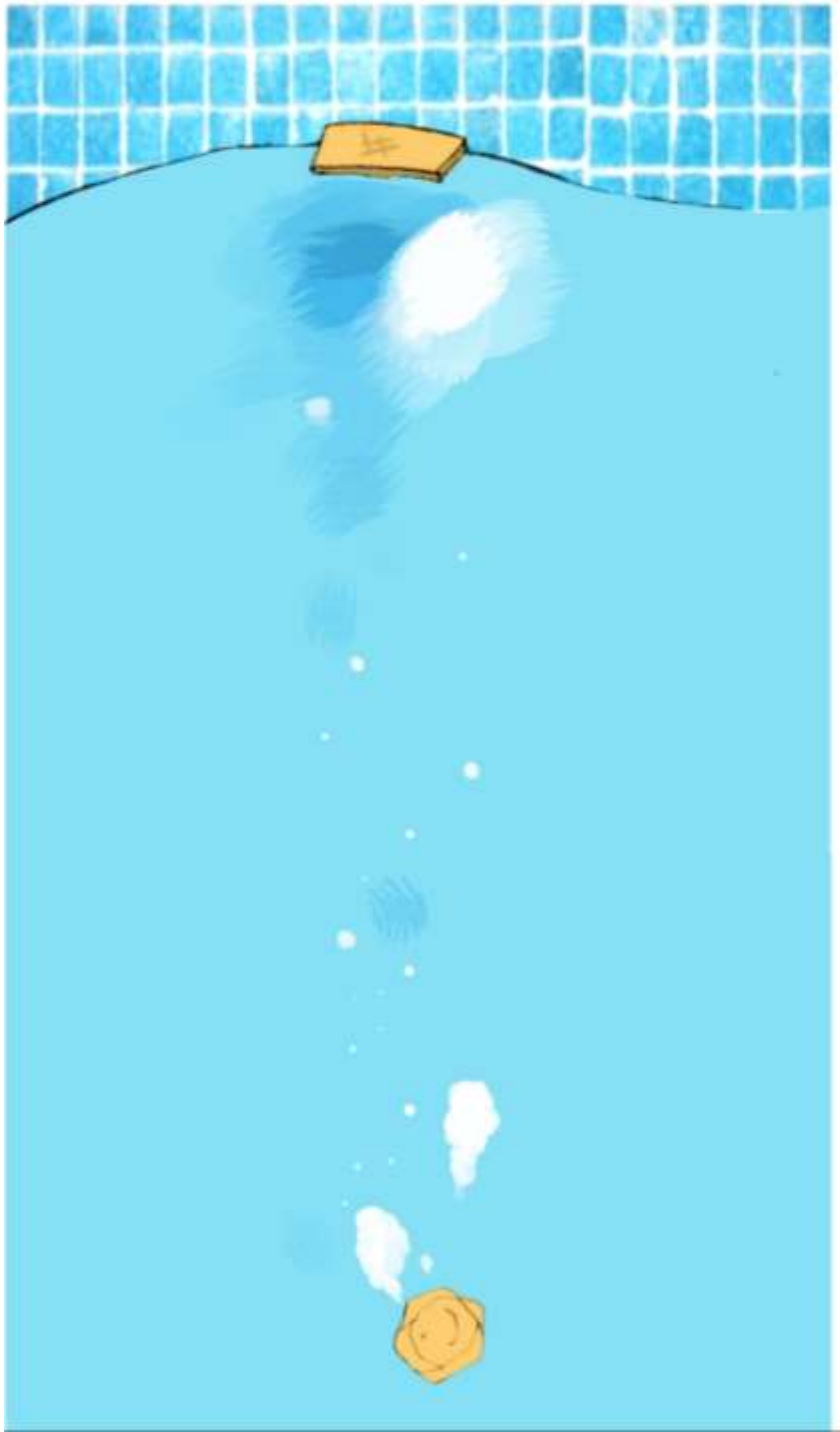
“I thought that bigger, heavy things sink and smaller, light things float, but my boat is heavier than your bracelet, so that can’t be right. Real boats are made of metal too. What makes metal boats float if they are heavy?” said Luke.

"I'll show you," declared Alice. "I have two pieces of bread that weigh the exact same. Let's see if the bread floats or sinks."

Alice put one of the pieces of bread into the water, laying it flat.

"Look," said Luke, "It floats!"

"Now let's see if we can make the other piece sink!" replied Alice.



Alice thought for a bit, and then she scrunched the bread up into a small ball-shape and put it in the water. It sank.

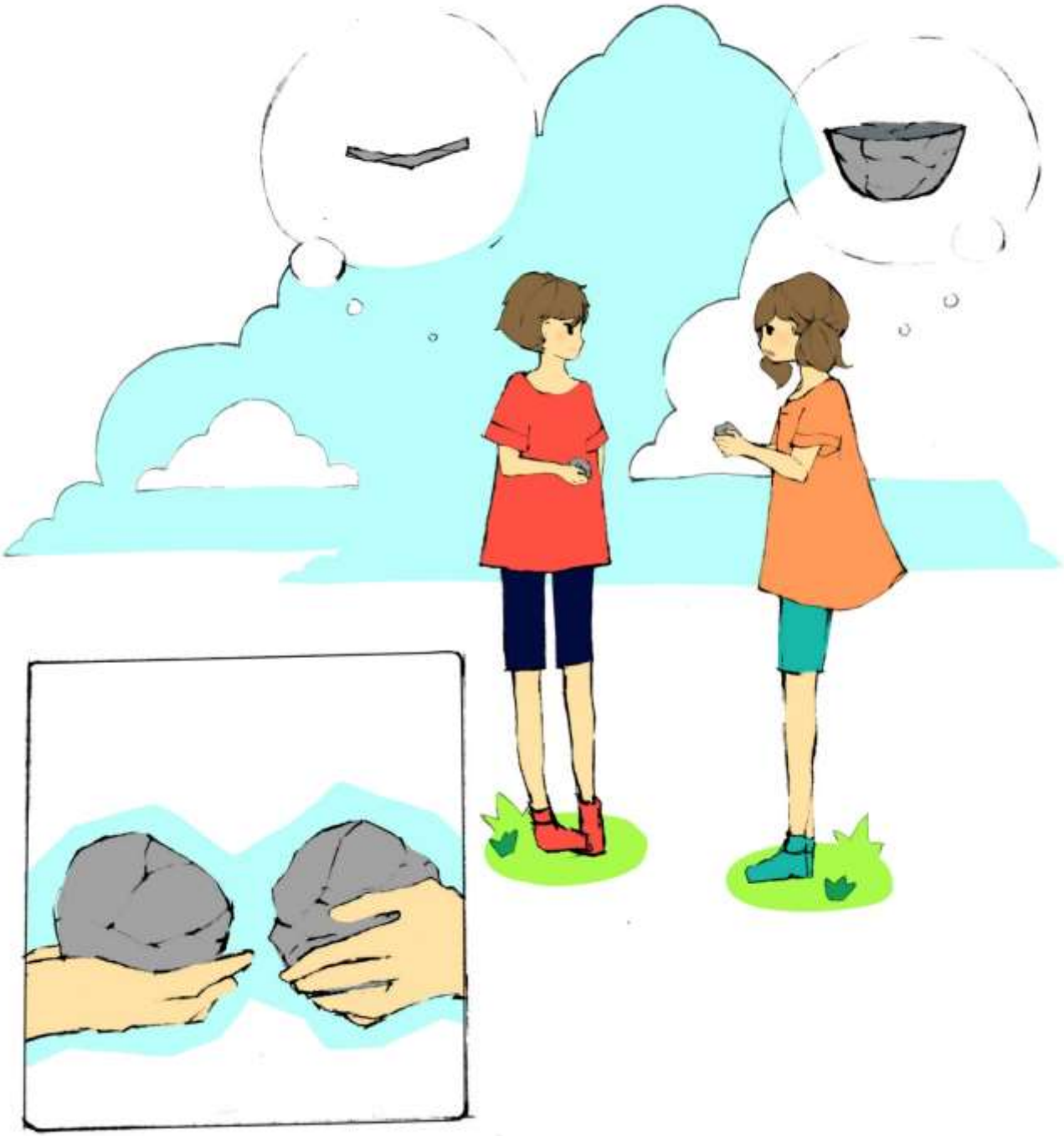
“Let’s see if the same thing happens with other objects!” said Alice.

“We can use aluminum foil,” said Luke.

Alice cut two pieces of foil the same size, “Our pieces of foil both weigh the same.”

“You try and make your piece of foil float, and I’ll try to make my piece sink!" Luke exclaimed.

Alice shaped her piece of foil into a cup, and Luke rolled his foil into a log. They dropped both foil shapes into the water!

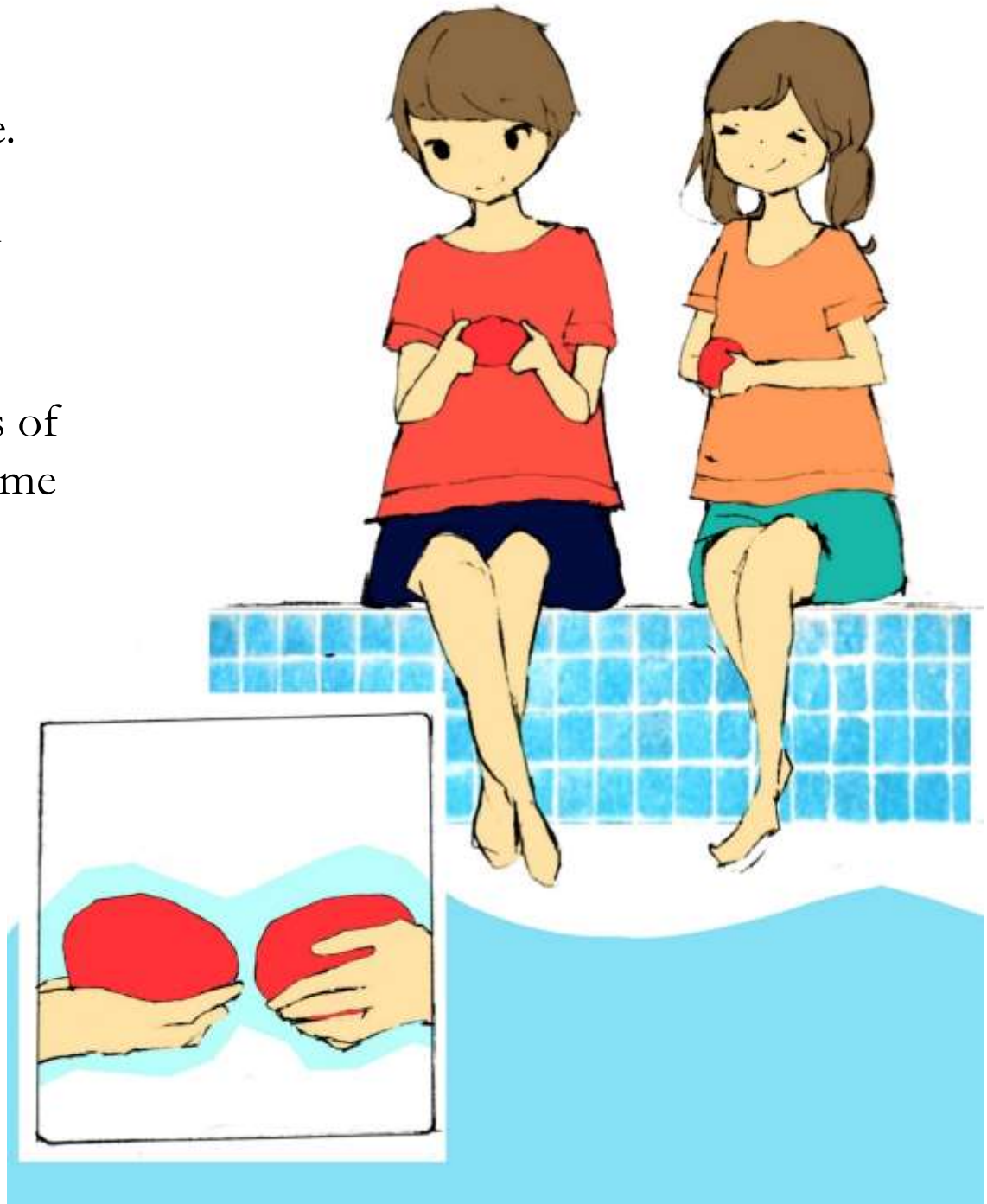


The objects weighed the same but the cup-shaped foil floated, while the log-shaped foil sank.

“This time I want to make something float.” said Luke.

“Why don’t we use my play dough?” replied Alice.

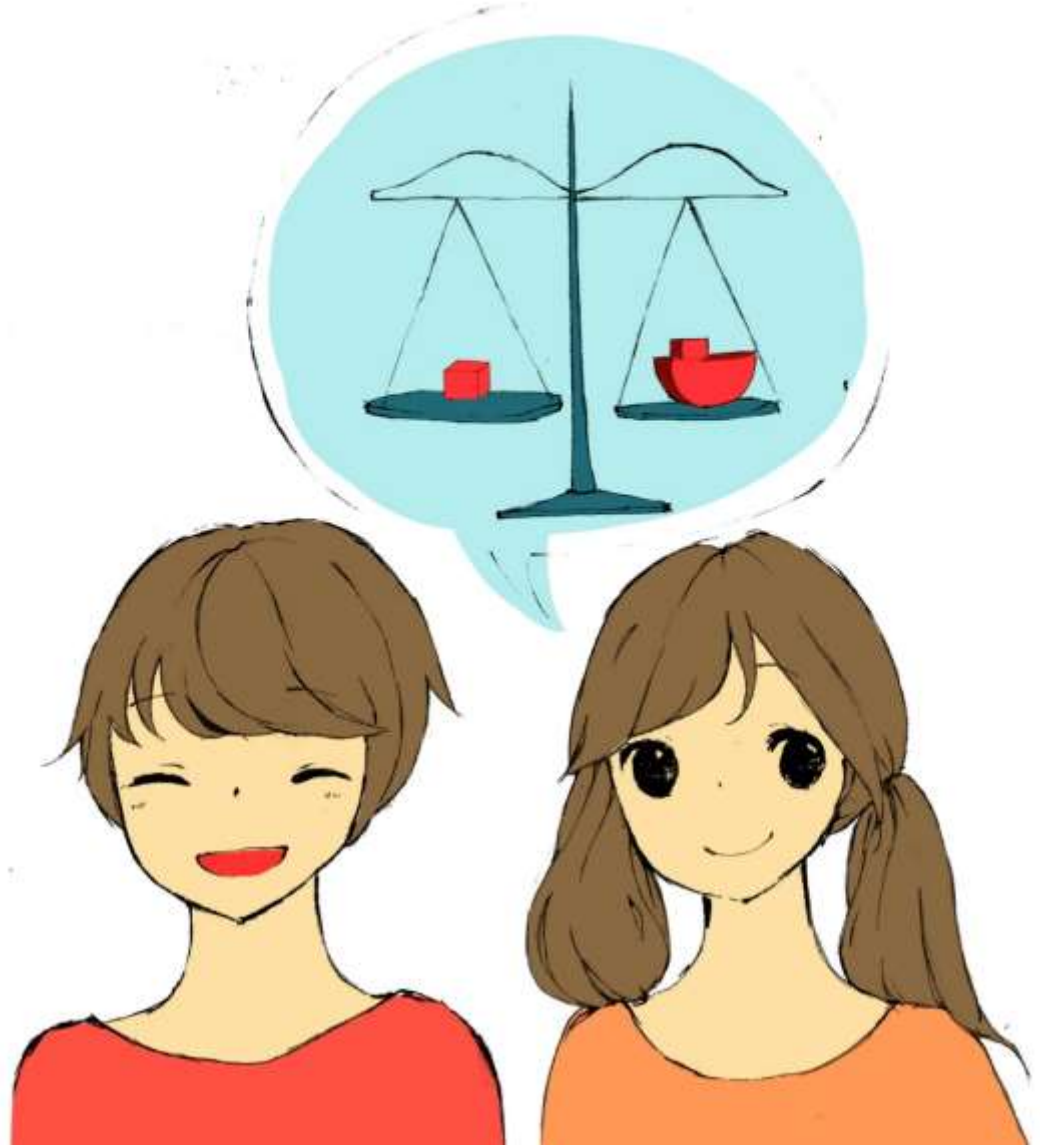
“We need to use two pieces of play dough that have the same weight.” said Luke.



Alice shaped her play-dough into a cube and Luke made his play-dough into a boat.

“I think that the cube is going to sink,” said Luke. “Because the cube has the play-dough pushed all close together. That means that the cube’s surface is smaller.”

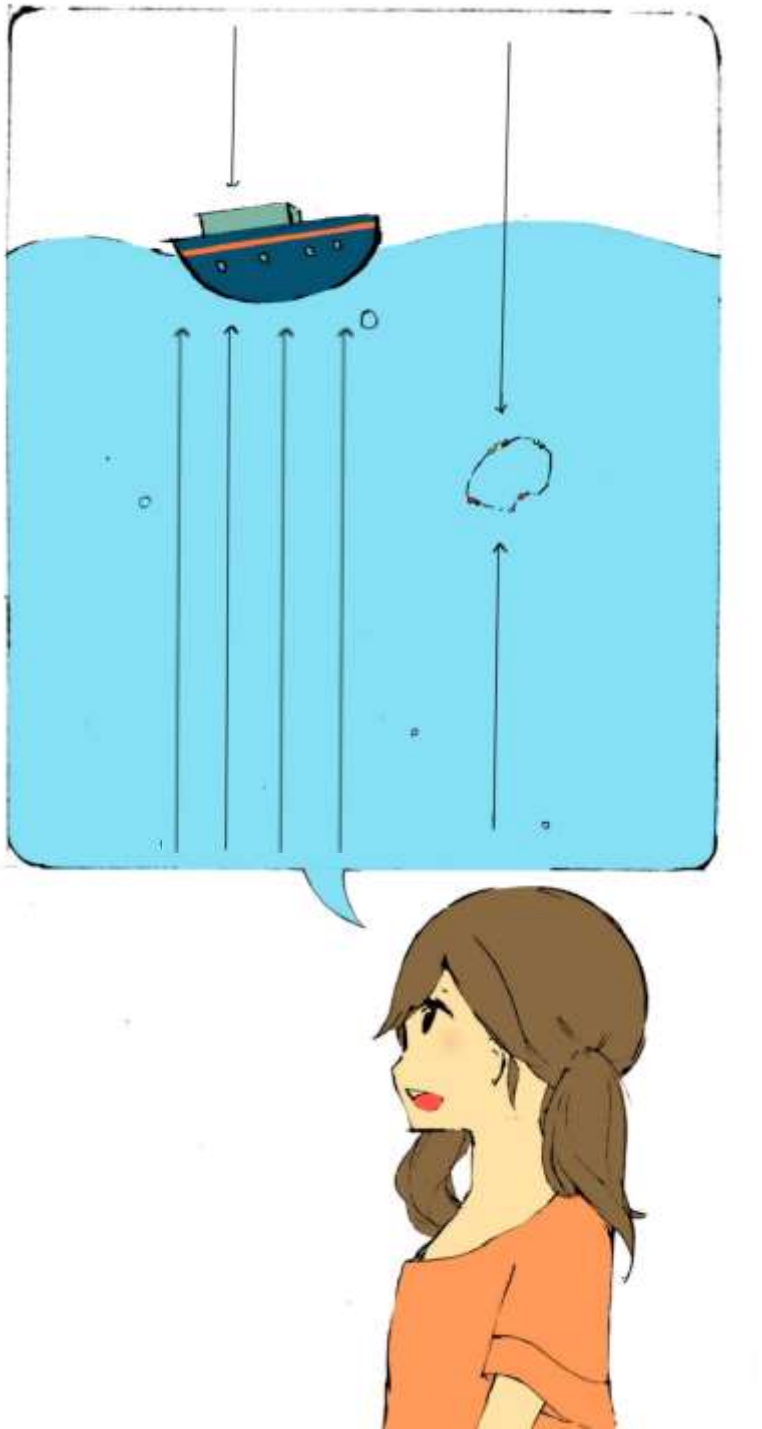
“Yes, and I think the boat will float because the play-dough is spread out and it has space inside. It’s not solid all the way through,” said Alice.



When they put these shapes in the water the play-dough boat floated and the cube sank.

“What did we learn today?” asked Luke.

“Objects don’t sink just because they are heavy. It depends on their shape too!” explained Alice.



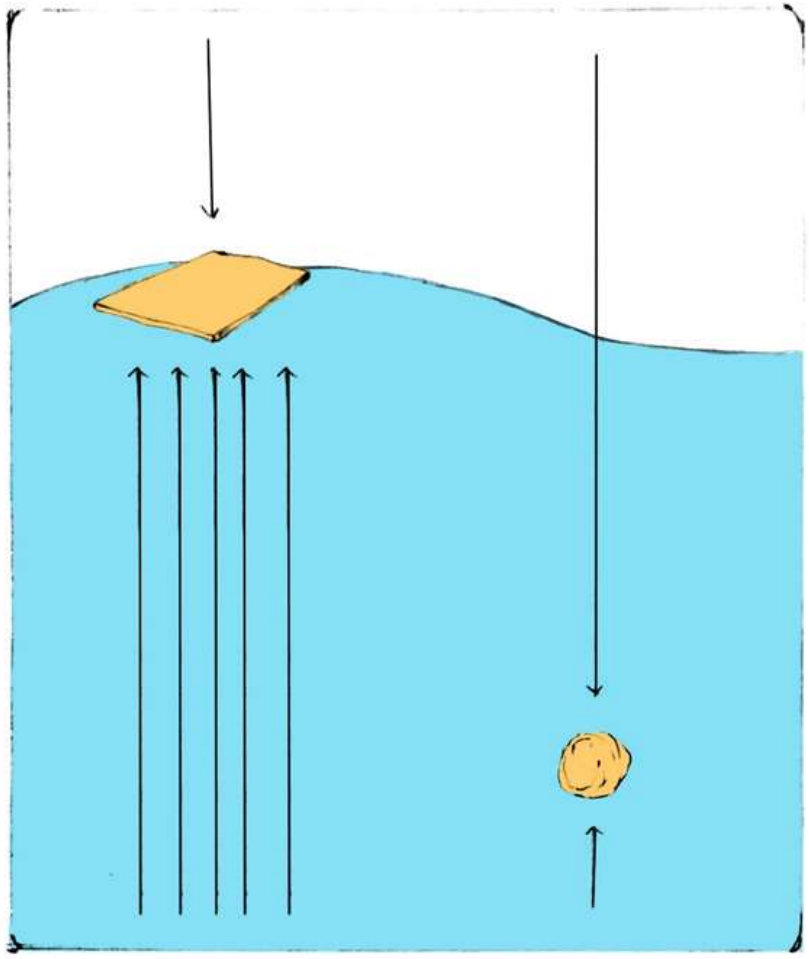
"Buoyancy is the force that pushes up on objects and causes them to float in water," Alice continued.

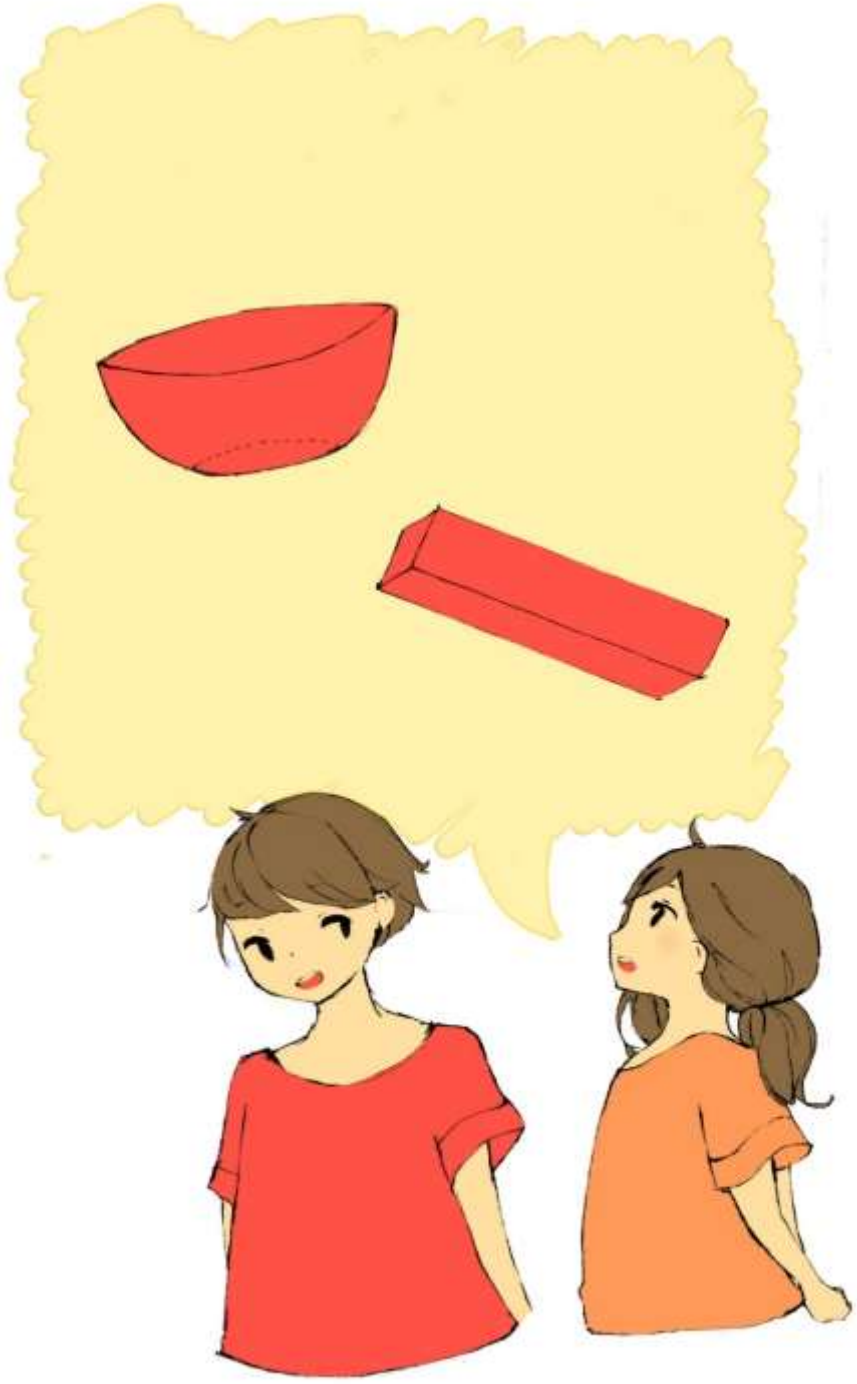
"Everything in water experiences the upward push of buoyancy. When the object is more spread out and has space inside, like your metal boat, the buoyant force has more space to push the object up and the object is more likely to float."

"So it's not just about how heavy or light things are." said Luke. "That's not the only reason things sink or float."

"Right," replied Alice. "If you put an object in water it will sink unless the weight is spread out."

"There are two ways to spread out the weight. One way is for objects to be spread into flatter shapes, like our flat bread. Flat shapes float because they have larger surfaces that spread out the weight more than our scrunched up shapes like the ball of bread," Alice explained.

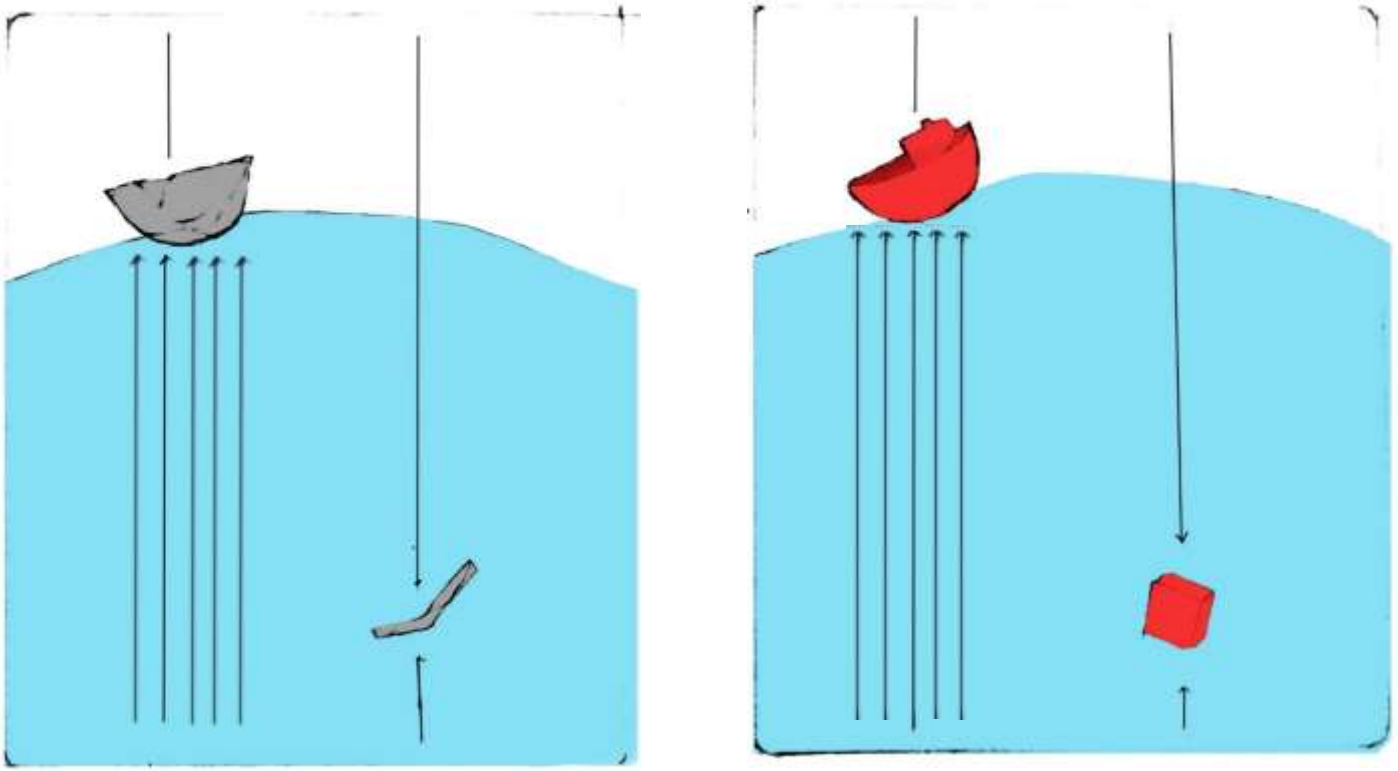




“The second way is for shapes to have empty space inside them, like our cup-shaped foil and our play dough boat. If these shapes were solid all the way through, they would sink,” Alice continued.

“These empty shapes float because their weight is spread out more than our scrunched up logs and cubes.”

“So you’re saying it’s not just about how big and small things are, shape is important too. When objects are flatter and more spread out or have empty space inside them, they float,” Luke said.



Luke grabbed an inflatable boat and jumped into the pool, “I sure am glad about that!” he laughed.

Suggested Discussion Questions

1. The book showed us some objects that sank, and some objects that floated. Which ones sank? Which ones floated?

2. Can you remember why some objects sink and others float?

3. Do heavy objects always sink? Do light objects always float? Why or why not?

4. If we had something that was spread out and had lots of space inside, would it be more likely to sink or float? Why? What are some objects in this room that might sink? What might float?

5. Can anyone think of big, heavy objects that can float? Why do you think they float?

6. The book told us about a force called buoyancy. Could someone tell me what “buoyancy” means?

Suggested Activity #1: Clay Shapes

Materials: Clay and Water!

- Give kids two equal pieces of clay.
- Ask them to make one piece into a shape that floats, the other into one that sinks. Prompt them to think of the book if they are stuck!
- Put the two objects on the water to test them out. Discuss your findings!

Suggested Activity #2: Shapes and Spaces!

Materials: Objects of different weights that sink and float, prediction sheet, water!

- Give children the activity sheets.
- Show them chosen objects and ask them to circle:
  - Which object they think will sink and which will float
- Test them out! Get kids to circle which floated and which sank. Discuss your findings!

Sink or Float?

Object	Prediction CIRCLE YOUR ANSWER	Result CIRCLE YOUR ANSWER
	sink / float	sink / float
	sink / float	sink / float
	sink / float	sink / float
	sink / float	sink / float