

# The Ship That Wouldn't Sink

A story about buoyancy and why ships float



Lila, Ben, and their class were on a field trip to the harbor. A giant steel ship was tied up at the dock. Lila stared up at the tall sides. Ben pointed. 'It's so big and heavy,' he said. 'But it's not sinking! How can something this heavy stay on the water?' Ms. Gomez smiled. 'That's a great question, and today we're going to find the answer. It has to do with a very important idea called **buoyancy**.'



**Topic:** Buoyancy and Why Ships Float

# Sink or Float?

A story about buoyancy and why ships float



Later, Ms. Gomez gave Lila and Ben a pebble, a toy boat, and a lump of clay.

The pebble sank. The toy boat floated. When Ben dropped the clay lump into the water, it sank too.

‘So heavy things sink,’ Ben guessed.

‘Not always,’ said Ms. Gomez. ‘There is another force at work.’

Lila leaned closer. She wanted to know why the water seemed to help some things stay up.



**Topic:** Buoyancy and Why Ships Float

# The Push from Water



Ms. Gomez explained that water pushes up on objects.

That upward push is called **buoyancy**.

When Lila shaped the clay into a small boat, it spread out and pushed aside more water.

Now the water pushed up strongly enough to hold it afloat.

‘So the shape matters!’ Lila said.

‘Exactly,’ Ms. Gomez replied. ‘Floating depends on the upward push from the water and how much water an object displaces.’



**Topic:** Buoyancy and Why Ships Float

# Why Ships Float



‘A ship may be made of steel,’ Ms. Gomez said, ‘but it is shaped like a huge hollow bowl.’

Its wide hull traps a lot of air and spreads the ship’s mass over a big space.

That gives the whole ship a lower average density than solid steel alone.

As the ship settles into the water, it pushes aside a large amount of water.

If the buoyant force pushing up matches the ship’s weight pulling down, the ship floats.



**Topic:** Buoyancy and Why Ships Float

# Cargo, Balance, and Floating



The children watched as cargo was loaded onto the ship. 'When a ship gets heavier, it sinks a little deeper,' Ms. Gomez explained.

But as it sinks lower, it pushes aside more water, and the buoyant force grows.

That is why ships can carry heavy loads and still float safely. If a ship is overloaded, though, it can become dangerous. A floating ship is always balancing its weight with the upward push of the water.



**Topic:** Buoyancy and Why Ships Float

# Science Element



- ★ Buoyancy is the upward force that water exerts on an object.
- ★ An object floats when the buoyant force is strong enough to balance its weight.
- ★ Ships float because their wide, hollow shape lets them displace a lot of water.
- ★ Even though ships are made of steel, their overall design gives them a lower average density than the water they move aside.
- ★ That is why a huge ship can stay afloat while a small rock sinks.

Lila and Ben looked at the giant ship again. This time, they did not just see a boat. They saw science at work.



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