



Sailing Ships and Sinking Spoons

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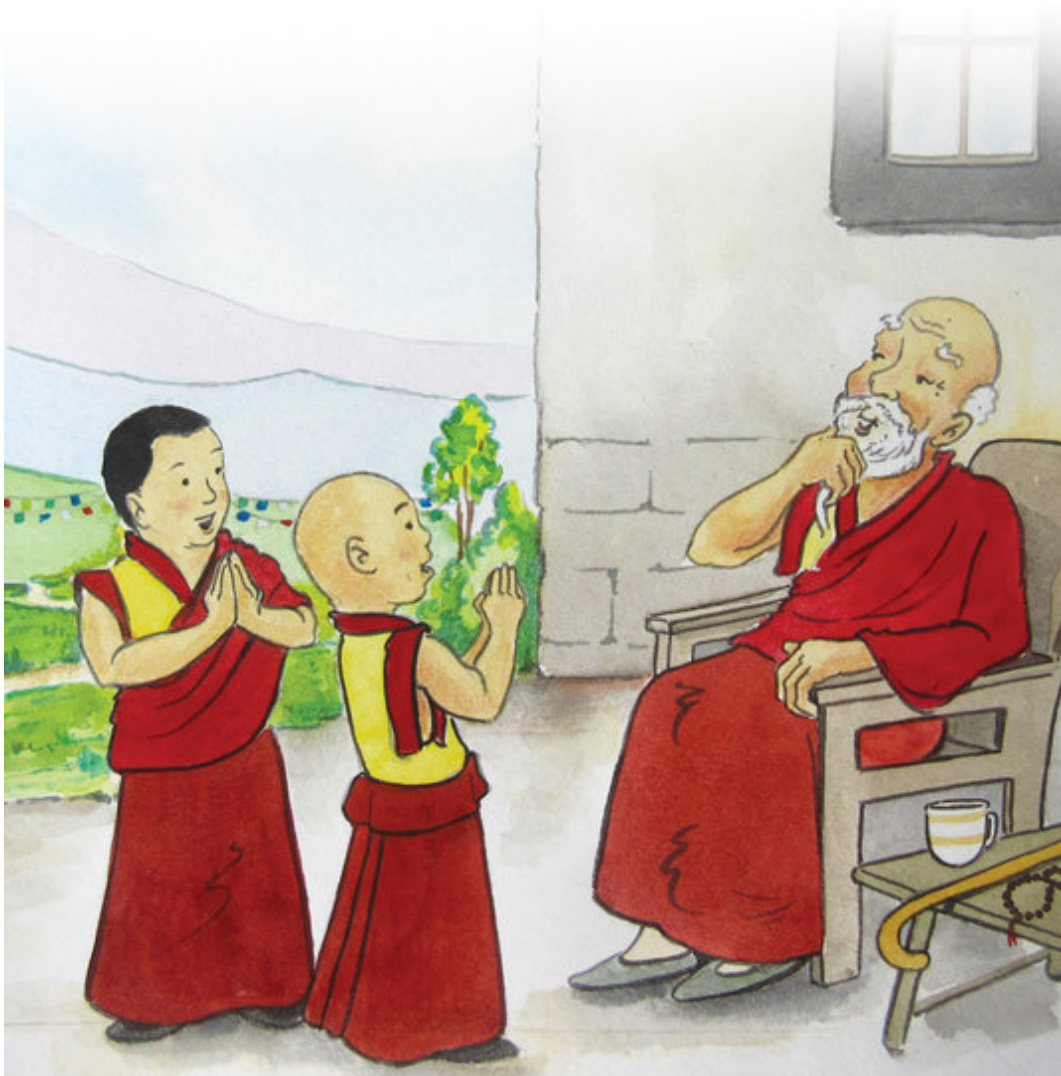
Tenzin and Tashi were two young Tibetan monks. They lived in a small monastery on a beautiful green hill. Here, it was lovely when it rained.

When Tashi looked out of the window late one morning, the rain was coming down hard. Rivulets were forming where the water had made paths on the muddy road. Tashi couldn't think of a better way to spend the afternoon than sailing paper boats.

Tashi and Tenzin set about making many paper boats. As soon as it stopped raining, the boys ran outside. They sailed the paper boats they had made – some big, some small. The boats floated nicely along the path. The two young monks were happy.







As they trotted back home, they saw Gen Lobsang. Genla lived in the monastery and told the children the most wonderful stories. "Genla," shouted Tenzin. "Can you tell us a story about why boats float?"

Gen Lobsang thought for a minute and said, "I don't know why boats – or ships, for that matter – float. But I am curious to find out."

Genla: A polite way of addressing the teacher in Tibetan



Genla and the children decided to go and ask Miss Sonam, the science teacher, if she knew why boats float. Tenzin and Tashi gently pulled Gen Lobsang from his chair. They held his hands to help him walk.

When they reached her room, Miss Sonam was reading a book.

“Tashi delek,” said Genla, Tashi and Tenzin.

“Tashi delek,” she replied.

“We have a question for you,” said Genla.

Tashi delek: A common Tibetan greeting; tashi means ‘good fortune’ and delek means ‘well being’.



"Yes, can you tell us what makes boats float on water, Miss?" Tenzin asked.

"I can," said Miss Sonam. "Or maybe we can find out together?"

Before they knew it, Miss Sonam was giving instructions.

"Tenzin, please bring a plastic basin from the kitchen."

"Tashi, please fetch a small bucket of water."

"Genla, hold this apple. Please don't eat it."

Miss Sonam asked Tashi to fill the tub to the brim.

"Now, Genla," she said, "dip the apple in the tub, please. Enough to cover it completely in water."





Genla gently dropped the fruit into the tub and pushed it down with his little finger. Some water spilled.

Tashi and Tenzin shrieked, "The water is overflowing!" Genla let go of the apple, and it rose up.

Miss Sonam was smiling. "What happened here?" she asked.



"Genla pushed the apple into the water," said Tenzin.

"Water spilled," said Tashi.

"The apple's floating," said Genla.

"Correct answers, all of you!" said Miss Sonam.
"Now, can you tell me how much water spilled, Tenzin? Was it about half a cup? One cup?"

Tenzin looked at the water on the table and on the floor.

He said, "Maybe one cup."

"That sounds right," said Miss Sonam. Genla and Tashi nodded in agreement.

"Now, take the apple out. Tashi, fill up the tub again. Here, Tenzin. Will you drop this spoon into the water?"

Tenzin did. The spoon sank to the bottom.

"Too heavy," said Genla.

"Not as heavy as a ship in the sea," said Tenzin.

"Very little water spilled this time, not even a quarter of a cup!" said Tashi, a little sad.

"Again, you're all correct," said Miss Sonam.



Then she asked: "Do you see? After Genla dropped the apple into the water, the apple pushed some water away before it could float."

"Is that the water that spilled?" asked Tenzin.

"Yes. So the apple could float because it pushed away more water than its own weight. That means, the apple is lighter than the water it pushed away."

"What about the spoon then?" Genla said.

"Well, the spoon also pushed some water away. But much less. Certainly less than its own weight. So it sank."



"What about large ships in the sea, on which there are many people?" asked Tenzin.

"...and many spoons that sink?" added Tashi.

"The spoons won't make a ship sink, Tashi. The ship is big enough to push away a lot of water. Again, like the apple, more water than its own weight. You don't notice it because in the ocean, there is so much water. The ship is still lighter than the amount of water that it pushes away."

They were all quiet for a bit. "I think I understand," said Tenzin, slowly.



"Can we sail some boats now?" asked Tashi.

"It's time for my tea," said Genla.

Miss Sonam smiled. "Yes, enjoy yourselves!" she said, and gave the boys colour paper to make boats.



Tenzin and Tashi made more colourful boats and set them down in the water.

“I don’t see any water spilling now,” said Tashi.

“No, silly. The water doesn’t always spill. It just gets pushed away,” replied Tenzin.

“I think the boats just make some space for themselves in the stream,” said Genla.

They watched the blue and yellow boats, red and green boats, and white boats sailing. Like prayer flags floating in the stream.





What is Gravity?

What would happen if Tenzin dropped a football from the top of a tree? Would it fall to the ground or rise towards the sky? That's right, it would fall because of a force called gravity. Did you know that everything gets pulled towards the earth by that force?



What is Buoyancy?

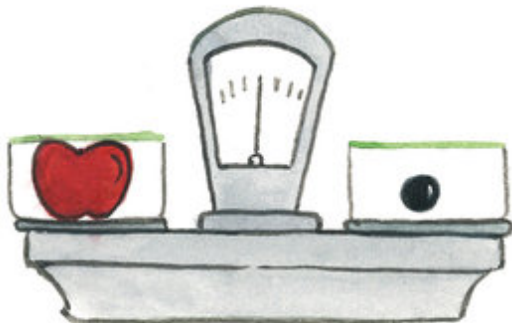
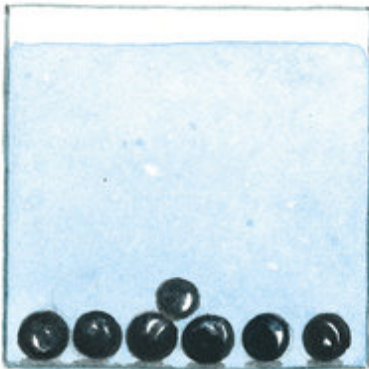
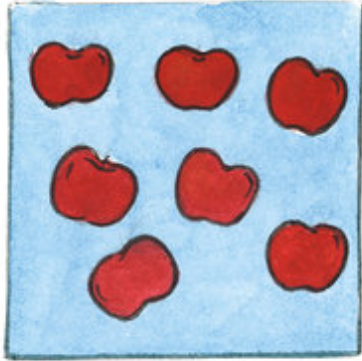
What would happen if Tashi dropped a football into a bucket of water? Would gravity pull the football to the bottom of the bucket? Yes, but in water, there is an upward force that opposes gravity. It is called buoyancy. As gravity tries to pull the football down, buoyancy tries to push it up. In the case of the football, buoyancy is stronger than gravity. So it floats. What would happen if he drops a brick into the bucket? Why?



What is Displacement?

When you drop an object into water, it tries to make space for itself by pushing some water aside. In other words, the object displaces water to make space for itself. Bigger objects, like a basketball, displace more water than smaller ones, like a cricket ball.

A long time ago, a Greek scientist named Archimedes discovered that when the weight of the water displaced by an object is more than the weight of the object, it floats. That is why apples float in water. Can you guess why other objects sink?



What is Density?

Every object around us is made of tiny particles that can't be seen with the naked eye. Density is how closely these particles are packed in an object. The weight of Tashi's small glass marble may be the same as Miss Sonam's apple. But why is the apple bigger? Because there is more space between the particles in the apple. In the marble, the particles are much closer to each other. An apple is less dense than a marble. Generally, dense objects sink in water.

Here's a game you can play with your friends: Pick four or five objects. Guess which ones will float and which will sink. Then drop them into a bucket or tub of water to check. Have fun!

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Sailing Ships and Sinking Spoons

(English)

Tenzin and Tashi, two young Tibetan monks, and Genla, the beloved storyteller of the monastery, wonder why a small steel spoon sinks in water but a huge ship floats. Their science teacher Miss Sonam helps them experiment with an apple, a spoon and a tub-full of water to learn more about objects that float.

This is a Level 3 book for children who are ready to read on their own.



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