PRIMARILY for U.S.*

GRADES 2-3

* Understanding Science

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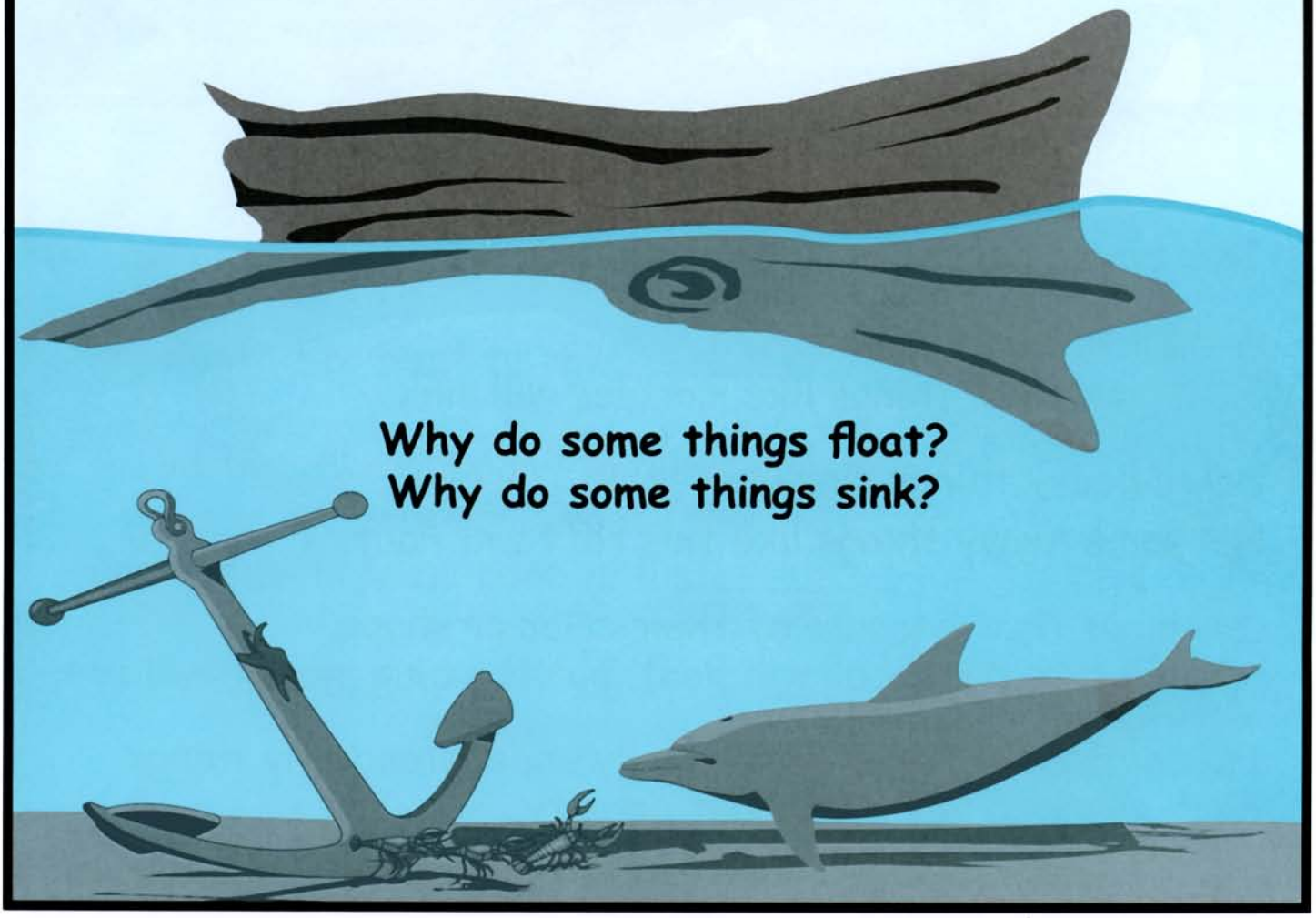
Things That Float and Things That Sink

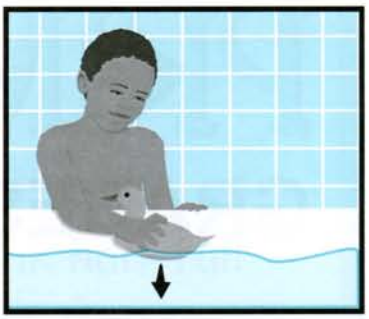
A big log floats.
An anchor sinks.



Why do some things float?
Why do some things sink?

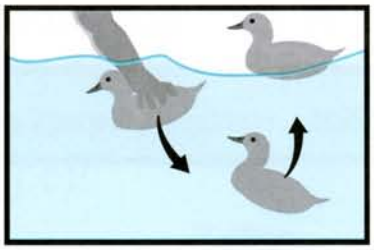
Why Do Things Float?

Things float because they are **buoyant**.



Have you ever taken a bath with a rubber duck? It bounces and bobs and **floats** at the surface.

If you push the duck down under the water, something pushes it right back up. This upward push keeps the duck at the top. It is **buoyant**!



This boy is playing marbles on a raft.

Are all small things buoyant?
No, some small things like marbles will sink.

Do all heavy things sink?
No, some heavy things like this raft will float.

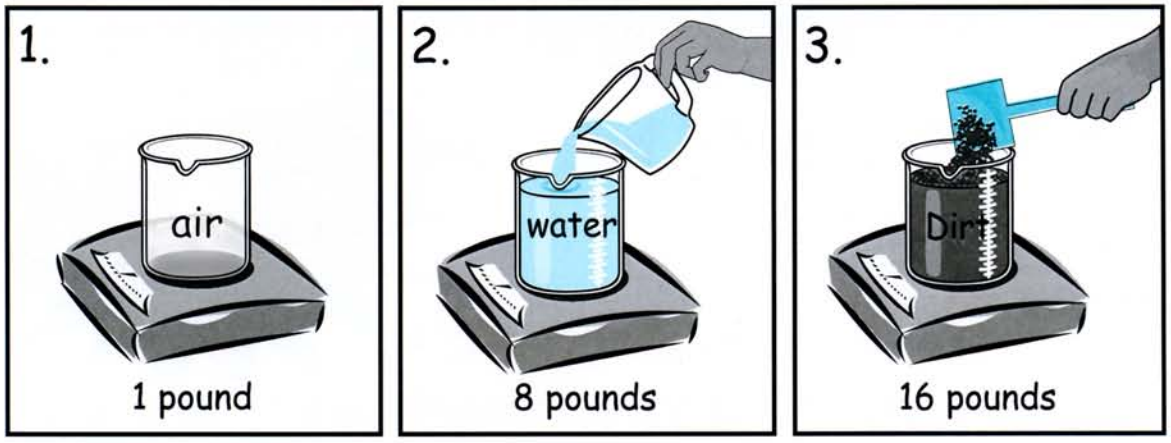
Do things float because of their color or shape?
No, the blue beachball will float, but the blue marble will sink.

It is not so simple, is it? To really understand why things float, we need to know about **density**.

Density

Density is a physical property of matter, like color or size or mass. Both the mass and size of an object affect the object's density.

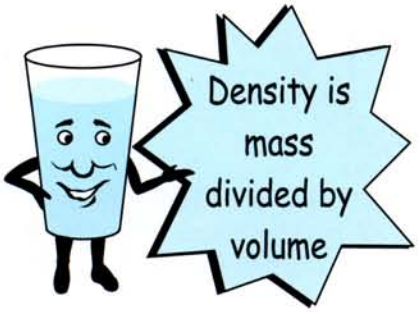
Imagine three beakers that are the same size. If you fill Beaker Number 1 with air, Beaker Number 2 with water, and Beaker Number 3 with dirt, they have different densities!



LOW density MEDIUM density HIGH density

Now imagine three objects that have the same weight, but different sizes. They also have different densities.

LOW density MEDIUM density HIGH density

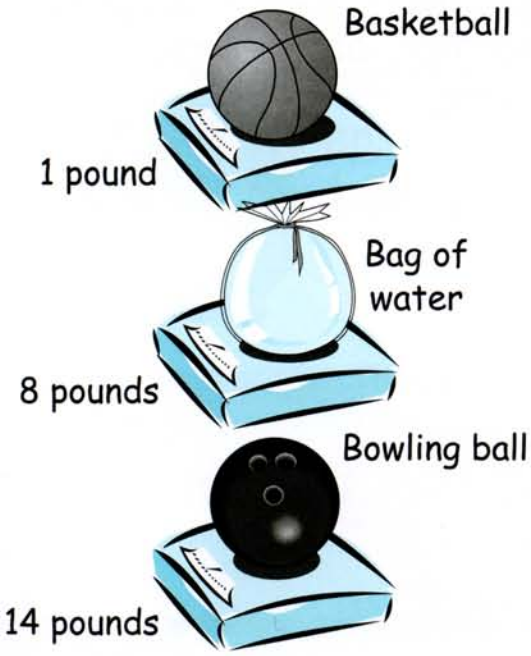


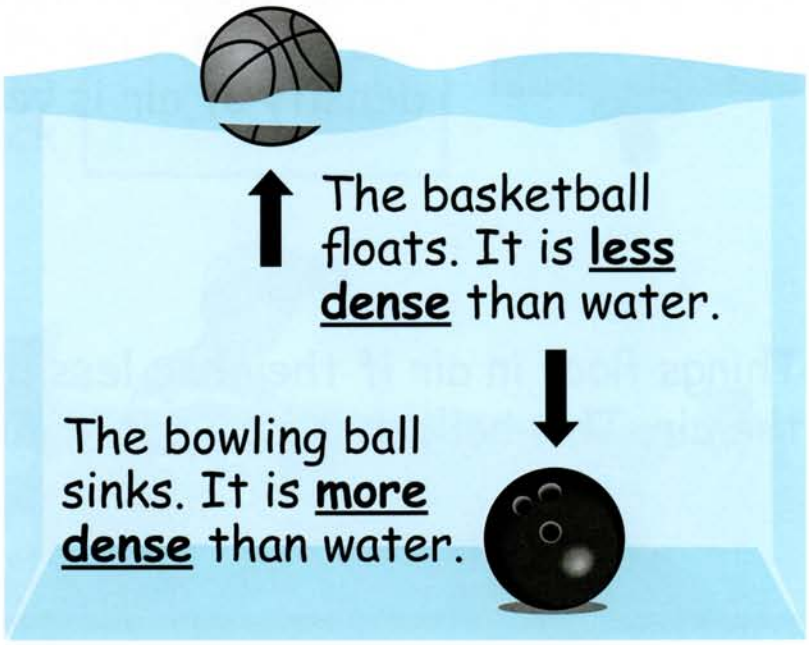
A thing floats in water when its **density** is less than the density of water.

Floating in Water

Imagine a basketball, a bag of water, and a bowling ball. The basketball weighs less than the water, but the bowling ball weighs more than the water.

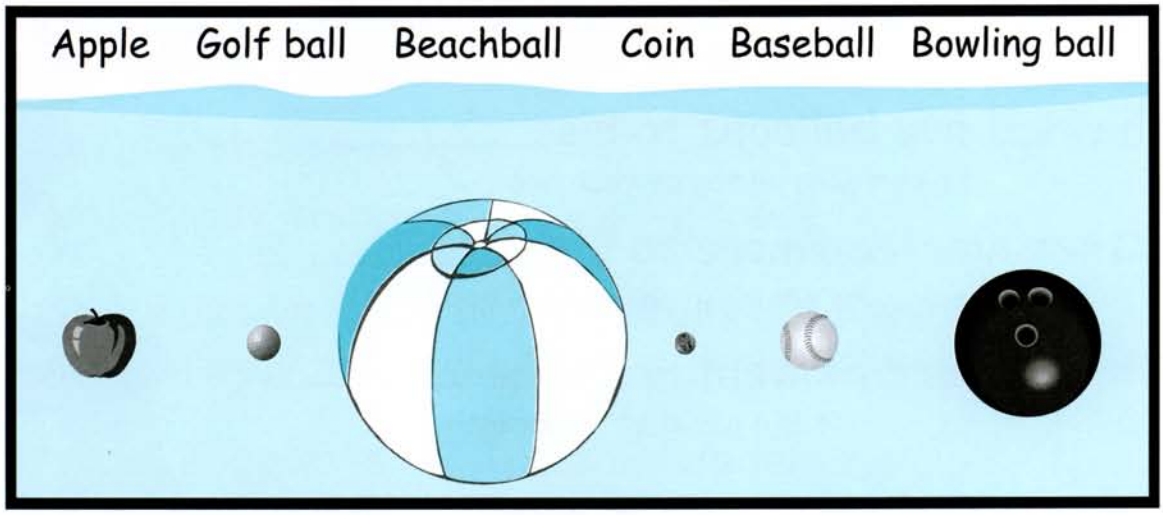
The objects are the same size, but they have different densities.





What Floats?

You can do this experiment in the bathtub. Look at the picture. Which objects will float? Which objects will sink?



Draw arrows to show which objects float (↑) and which objects sink (↓). Did everyone in your class get the same answers?

Floating in the Air

Air is a gas that is all around us. It is made up of real stuff. It is made of particles so small you cannot see them even with a magnifying glass or a microscope.

Air is a kind of matter, so it takes up space and has weight. Like all matter, air has density. The density of air is very low.

Things float in air if they are less dense than the air. This balloon is <u>buoyant</u> in air.

Count the Balloons!

There once was a boy named DeNair.

He wanted to float to the _____.
It is like a carnival.

So he tied five balloons to his _____
It's growing on top of your head.

and then nineteen more to his _____.
You may be sitting in one right now.

With two more he went up in the _____!
It is a gas that you breathe.

How many balloons were there?

Answers: fair, hair, chair,air, twenty-six balloons

Teacher's Page

EXPLORING DENSITY!

What you need...

1. Four empty plastic bottles with their caps
2. Four liquids: tap water, really salty water, corn syrup, and cooking oil
3. A sink half full of tap water

What you do...

1. Fill each bottle to the very top with one of your liquids. Put the cap on tight.
2. Put the bottles into the sink. Which bottles float? Do any bottles sink?
3. Which liquids are more dense than tap water? Which liquids are less dense than tap water? Does any liquid have the same density as tap water?

FERNBANK SCIENCE CENTER

This issue addresses the following standards:

	Science	Math	Lang Arts
	QCC	GPS	GPS
2	Phys 5-7	M2P1,3	ELA2R3,4
	GPS	QCC	GPS
3	SC3S1-3 S3P1	GEOM 7, 9	ELA3R2,3

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