

ICE EXPERIMENTS

LAB BOOK



scientist name:

[Blank white box for writing the scientist's name]

Time to
experiment!



**You don't need fancy equipment
to be a scientist — you just need
your curiosity.**

How to be a SCIENTIST

1 Keep your eyes open.



2 Ask lots of questions.



3 Try it for yourself!



Let's go!



SALT TUNNELS

?

What happens when you sprinkle ice with salt?



you'll need



ice cubes



salt



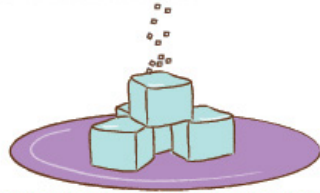
food coloring



plate
or bowl

Tip: You can also use liquid watercolor instead of food coloring.

experiment!



STEP 1

Set some ice cubes on a plate and sprinkle on a few grains of salt.
What happens?



STEP 2

Add a few drops of food coloring.
What happens?



STEP 3

Try adding more salt and more food coloring.
What happens?

go big!

This experiment is even more fun with a big chunk of ice. To try it, just freeze water in a metal bowl. (Plastic or glass bowls may crack.)



SINK OR FLOAT

?

What floats in salt water? What floats in fresh water?



you'll need



2 cups of water



salt



spoon



baby carrots and other small items

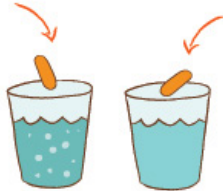
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experiment!



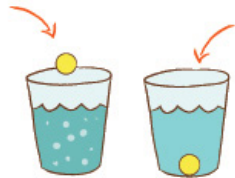
STEP 1

Add salt to one of the cups and stir. Keep adding salt until you can't get any more to mix in.



STEP 2

Place a baby carrot in each cup. What happens?



STEP 3

Try it again with other small items. What sinks and what floats?

results

Draw the cup with salt.

Draw the cup with without salt.

FLOATING WATER



What happens when ice melts in salt water?



you'll need



2 cups of water



salt



ice cubes



food coloring

Tip: You can also use liquid watercolor instead of food coloring.

experiment!



STEP 1

Add salt to one of the cups and stir. Keep adding salt until you can't get any more to mix in.



STEP 2

Drop several ice cubes into each cup. Wait for one minute to let the ice melt. Don't stir it!



STEP 3

Drip food coloring into the cup without salt.
What happens?



STEP 4

Now try adding food coloring to the cup with salt.
What happens?

results

Draw the cup with salt.

Draw the cup with without salt.

STICKY STRING



Can you pick up an ice cube with a string?



you'll need



ice cubes



bowl of water



salt

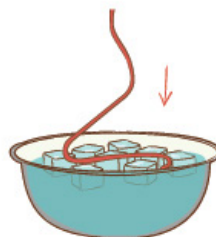


yarn

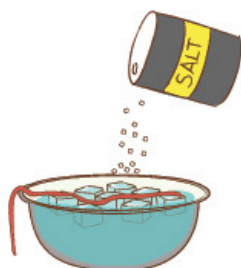
experiment!



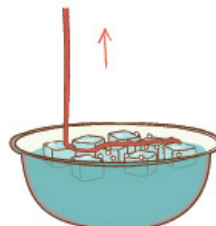
STEP 1
Drop some ice cubes
into a bowl of water.



STEP 2
Lay the yarn over the ice cubes.
Press it down gently to make sure
the yarn is completely soaked.



STEP 3
Sprinkle salt over the
wet yarn. Wait for
one minute.



STEP 4
Lift the string up slowly.
What happens?

I'm stuck.



notice!

Touch the yarn after you
sprinkle the salt over it.
What does it feel like?

MELTING RACE



Will ice melt faster in warm water or in cold water?

you'll need



ice cube tray



2 small toys

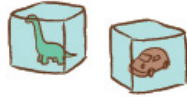


water



2 cups

experiment!



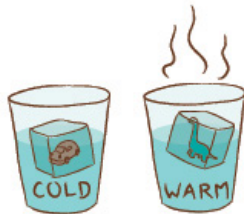
STEP 1

Freeze two small toys inside ice cubes.



STEP 2

Fill one cup with ice cold water and another cup with warm water.

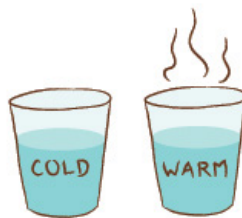


STEP 3

Drop one ice cube into each cup.
Which toy escapes first?

results

Circle which toy wins.



I win!



HEAVY BUBBLES



What happens when an ice cube melts in oil?

Tip: For a colorful ice cube, add some food coloring or liquid watercolor before you freeze it.

you'll need



ice cube



cup



vegetable oil

12

experiment!



STEP 1
Fill the cup halfway with vegetable oil.



STEP 2
Drop the ice cube in the oil.
What happens?



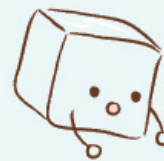
STEP 3
Watch the ice cube as it melts.
What happens?

notice!

Observe the water dripping off the ice cube.
How does it move?

results

Draw what you see.



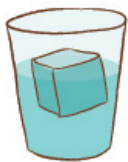
Where are you going!?

I like it down here.



FLOATING ...

Let's take a closer look at some of the things you discovered with your experiments!



Ice floats in water.

See for yourself: Just drop an ice cube into a cup of water! In the Melting Race experiment, you discovered that even ice cubes with toys in them will float. But ice doesn't just float in water. In the Heavy Bubbles experiment, you discovered that ice will also float in oil.



Oil floats in water, too.

See for yourself: Slowly pour some oil into a cup of water — it floats! This is the same thing you saw in the Heavy Bubbles experiment. Since oil floats in water, the drops of water sink down to the bottom of the cup.



And lots of things float in salt water.

See for yourself: In the Sink or Float experiment, you found that more things float in salt water than in fresh water. In fact, even fresh water floats in salt water! That's exactly what you saw in the Floating Water experiment — the water melting off the ice cubes floats on top of the salt water below it.

Science alert!

Why is it easier to float in salty ocean water than it is in a swimming pool? **Buoyancy!** Buoyancy is what we call the upwards push that makes things float. Salt water gives more of a push than fresh water, which is why some things (like carrots) will sink in fresh water but float in salt water.

AND FREEZING



Heat makes ice melt faster.

See for yourself: In the Melting Race experiment, you discovered that ice cubes in a cup of warm water will melt faster than ice cubes in a cup of cold water. The heat from the water transfers to the ice, so more heat means faster melting.



Salt also makes ice melt faster.

See for yourself: The Salt Tunnels experiment showed that grains of salt will melt ice faster than ice melts without salt. The Sticky String experiment used the exact same trick to melt the ice under the string. The water then refreezes, sticking the string onto the ice.

science alert!

Why do cities pour salt on the roads in winter to keep them clear? It's because salt lowers the **freezing point** of water. The freezing point is the temperature where something liquid (like water) will turn into a solid (like ice). Salt on the road makes the ice melt away just like the salt on your ice cubes.

Ice rocks!



Is that all there is to discover about ice? No way!
**There are always more questions
to ask and more experiments to try.**

So don't stop with these experiments — get out
there and make your own discoveries!



NOTES:

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“I have no special talents. I am only passionately curious.”

—Albert Einstein





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