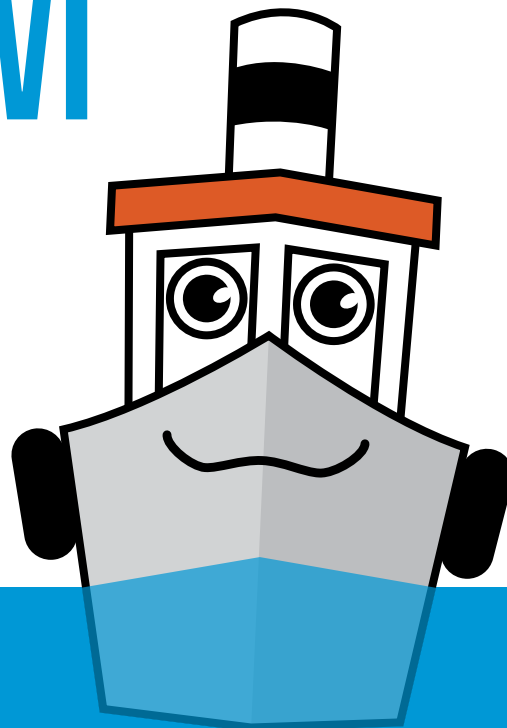
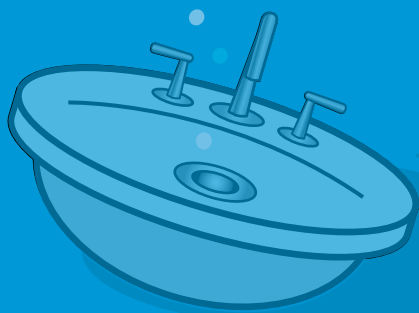


# STEM

kit



## Does It Sink or Float? GUIDE



Wisconsin Water Library  
UNIVERSITY OF WISCONSIN-MADISON

# STEM



## **Does It Sink or Float?**

Science, Technology, Engineering and Math (STEM) Storytime Kit

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Wisconsin Water Library is a service of the Wisconsin Sea Grant and University of Wisconsin Water Resources Institute.

UW Sea Grant supports scientific research, education and outreach to foster the wise use, conservation and sustainable development of Great Lakes and coastal resources.

The Water Resources Institute focuses on solutions to Wisconsin's present and emerging water resources issues.

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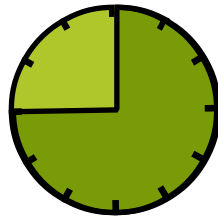
**[waterlibrary.aqua.wisc.edu](http://waterlibrary.aqua.wisc.edu)**



**Wisconsin Water Library**  
UNIVERSITY OF WISCONSIN-MADISON

# DOES IT SINK OR FLOAT? STORYTIME GUIDE

This storytime is designed for children in preschool through second grade and lasts between 45 and 60 minutes, based on the number of books read and the science-based activities presented.



Science is integrated into a traditional storytime beginning with a “science chat” and finishing up with a science experiment. Included in the experiment are essential parts of the scientific method including asking a question, making a hypothesis, running a test, observing and recording results.

*A small warning: excitement, a bit of a watery mess and a little chaos may ensue.*



# DOES IT SINK OR FLOAT? WHAT'S INSIDE?

This kit includes everything you need for storytime, including four read-aloud books, a couple of our favorite songs, a craft and most things you need to run a scientific experiment. Also included in this guide are an explanation of the scientific method and a reading list on boats and buoyancy for children ages three through ten.

## THIS STORYTIME GUIDE

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## THE STEM KIT

**Sink or Float Books** *to read and discuss*

**Sink or Float Objects** *for your experiment*

**Record Log** *to tally your experiment results*

# DOES IT SINK OR FLOAT?

## OUTLINE

This STEM kit integrates literacy and science in one storytime. You can begin with your favorite welcome song, introduce science in a “science chat,” read one or more books, sing a song and then put on your scientist hat and lead the experiment. A craft is included as part of the science experiment so the children will have something to take home.

### WELCOME SONG

Start with your favorite welcome song.

### SCIENCE CHAT

Introduce boats and buoyancy as the topic of the storytime. A good way to get the children engaged is to ask if anyone has ever been in a boat and, if so, what kind. You may hear them mention canoes, motor boats, sailboats and pontoon boats. It is fun to ask if anyone has ever been on a ferry. On a tugboat? A houseboat? You can finish up the chat by asking the children if they ever wonder how it is that heavy things like boats and ships are able to FLOAT on the water, not SINK.

A child in the group may know about buoyancy. In simplest terms, buoyancy is the ability or tendency to float in water (or some other fluid or in air). When you place an object in water, you shift the water to make room for the object. Gravity forces an object down in water. Buoyancy, a force that liquids possess to make objects of lower density rise to the surface, forces it back to the top.

Later in the storytime you will run an experiment with the children to see what sinks and what floats. It will surprise everyone that some very light things sink and some very heavy things float.

# DOES IT SINK OR FLOAT?

## READ

The following books are included in this kit and have worked well with this storytime.

If you have a favorite title about boats, please feel free to substitute.

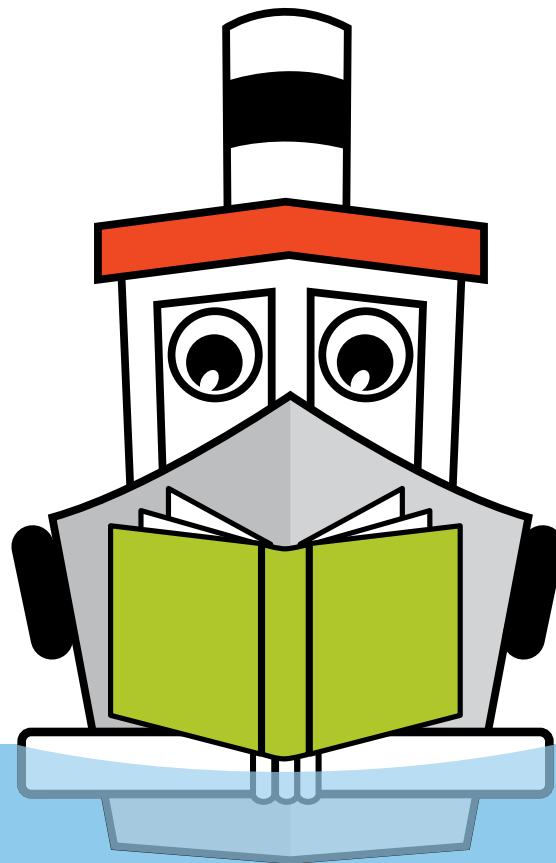
Read one, two or three books, depending on the group.

*Who Sank the Boat?* by Pamela Allen

*Toy Boat* by Randall De Sève; illustrated by Loren Long

*Arthur's Dream Boat* by Polly Dunbar

*Captain Small Pig* by Martin Waddell; illustrated by Susan Varley



# DOES IT SINK OR FLOAT? SING

We have used one or both of the following songs in this storytime, depending on the dynamics of the group. You can sing one or both of these or one of your own.

## IF A FROG JUMPS IN YOUR BOAT

*Tune: "Row, Row, Row Your Boat"*

Row, row, row your boat

Gently down the stream.

If a frog jumps in your boat,

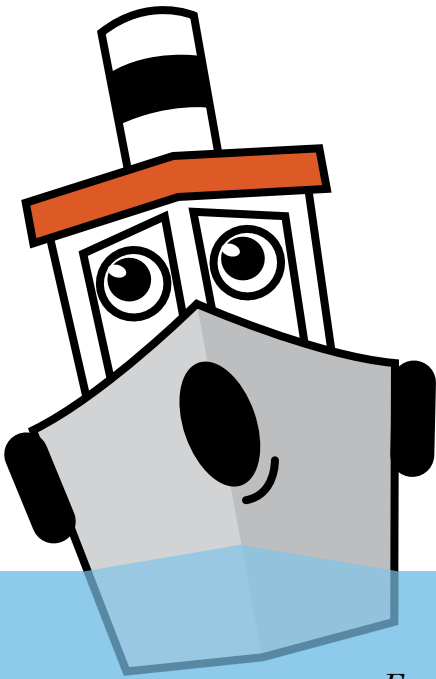
Don't forget to scream! **(Silent scream)**

Row, row, row your boat,

Gently down the stream.

If a snapping turtle jumps in your boat,

Don't forget to scream! **(Silent scream)**



*From there, feel free to ask the children for suggestions of what jumps in the boat, the sillier the better.*

*Just some fun songs about boats*



# DOES IT SINK OR FLOAT? SING

## RIDING ON A BOAT

*Tune: "Old MacDonald"*

Oh, let's go riding on a boat —

What do you think we'll see?

We might see a great big lamprey

Splashing all over me!

With a splish splash here, and a splish splash there,

Here a splish, there a splash, everywhere a splish, splash,

We might see a great big lamprey, splashing all over me!

Oh, let's go riding on a boat —

What do you think we'll see?

We might see a carp,

Jumping everywhere!

With a jump jump here, and a jump jump there,

Here a jump, there a jump, everywhere a jump jump,

We might see a carp, jumping on boats everywhere.

Oh, let's go riding on a boat —

What do you think we'll see?

We might see a lake sturgeon,

Swimming over there!

With a swim swim here, and a swim swim there,

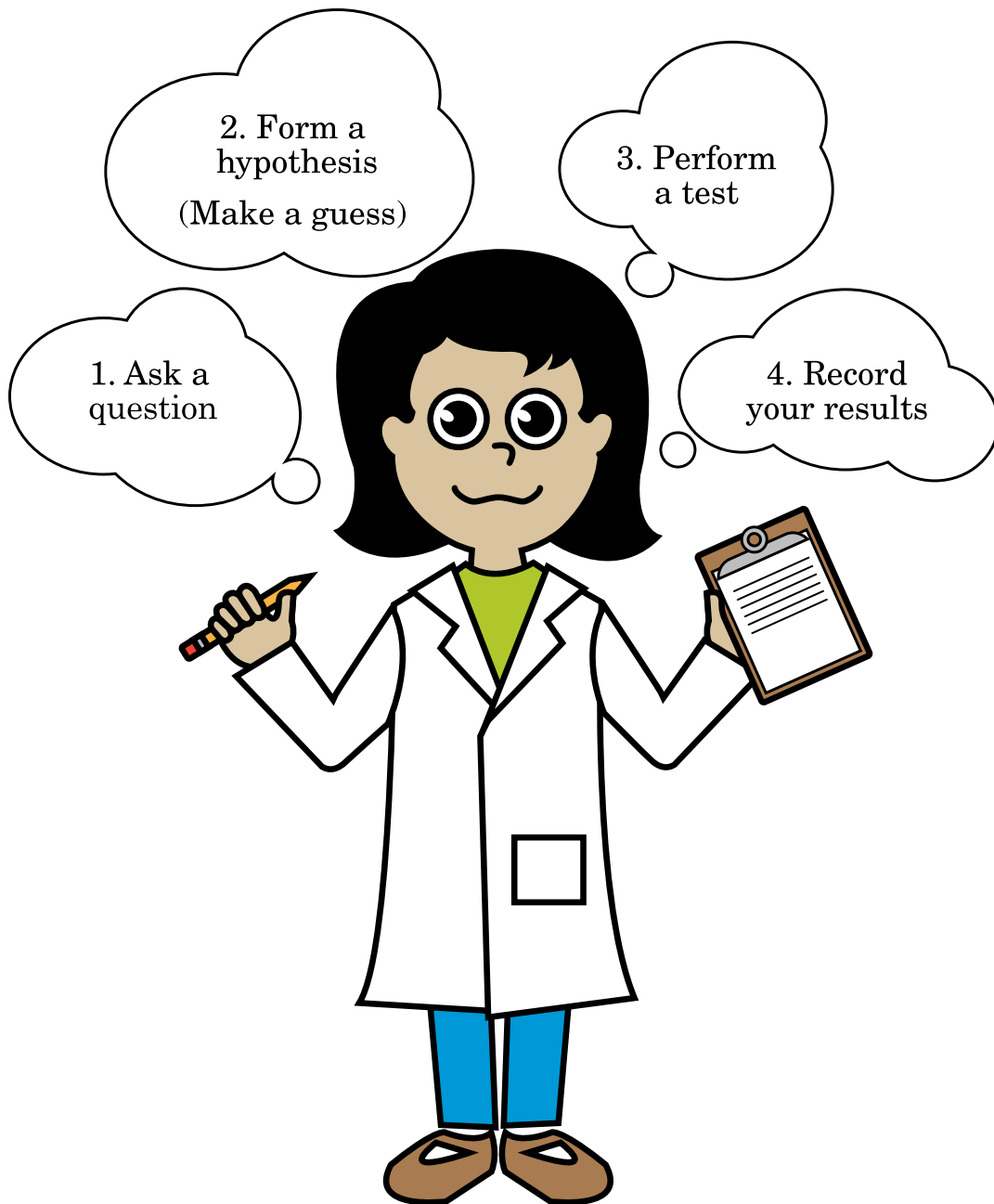
Here a swim, there a swim, everywhere a swim swim,

We might see a lake sturgeon, swimming over there.

*From then on, feel free to make up some more action verses or ask children for suggestions.*

# DOES IT SINK OR FLOAT? SCIENTIFIC METHOD

THINK LIKE A SCIENTIST





## A SCIENTIST IS SOMEONE WHO...

Observes and wonders

Asks questions

Listens to ideas of others

Conducts experiments

Shares their ideas and discoveries

Explores the world around them

Uses tools to solve problems

## A SCIENTIST SAYS...

I agree with you because...

I disagree with you because...

Why do you think that?

So, what you're saying is...

Can you tell me more?

Can you give me an example?

How could we test that?

That reminds me of...



# DOES IT SINK OR FLOAT?

## EXPERIMENT

Introduce the idea that the children are going to be scientists. What do scientists do? They ask questions, make hypotheses, perform tests, observe and write things down. These are some of the essential steps that are part of the scientific method.

Introduce the experiment by saying, “We are going to test for buoyancy, the scientific property that makes an object float in water.” The kit includes some pre-selected items for your use and corresponding recording sheets. Another great idea is to use objects (that you don’t mind putting in water) from around the library or classroom. We have also included blank sheets for your use.

### Process and Procedure

1. Choose a recorder. If you know someone in the group who is a little older, with writing and interpretation skills, go ahead and ask them to take on that role.
2. Give each child an object to hold. Have them decide (in their heads) if they think the object will sink or float.
3. Run the experiment:
  - a. Ask each child in turn, “*Will your object sink or float?*” If you frame it so that you can say, “*What is your guess/hypothesis?*” that gives the child some new vocabulary.
  - b. Run the test with each object, having the recorder write down the results.
4. Enjoy the chaos and expect a mess — that is what learning is all about!

What you’ll need:

**Objects for testing**

**Record log sheets and pencil**

**Large container with water** (*not included*)

# DOES IT SINK OR FLOAT? CRAFT

The great thing about this boat craft is that it can be used right away. It is not a craft that is wildly creative, but the kids are very excited to put their scientist credentials to work.

You may have a boat craft that works just as well. Please let us know your ideas! [askwater@aqua.wisc.edu](mailto:askwater@aqua.wisc.edu)

## SUPPLIES

Cellulose Sponges

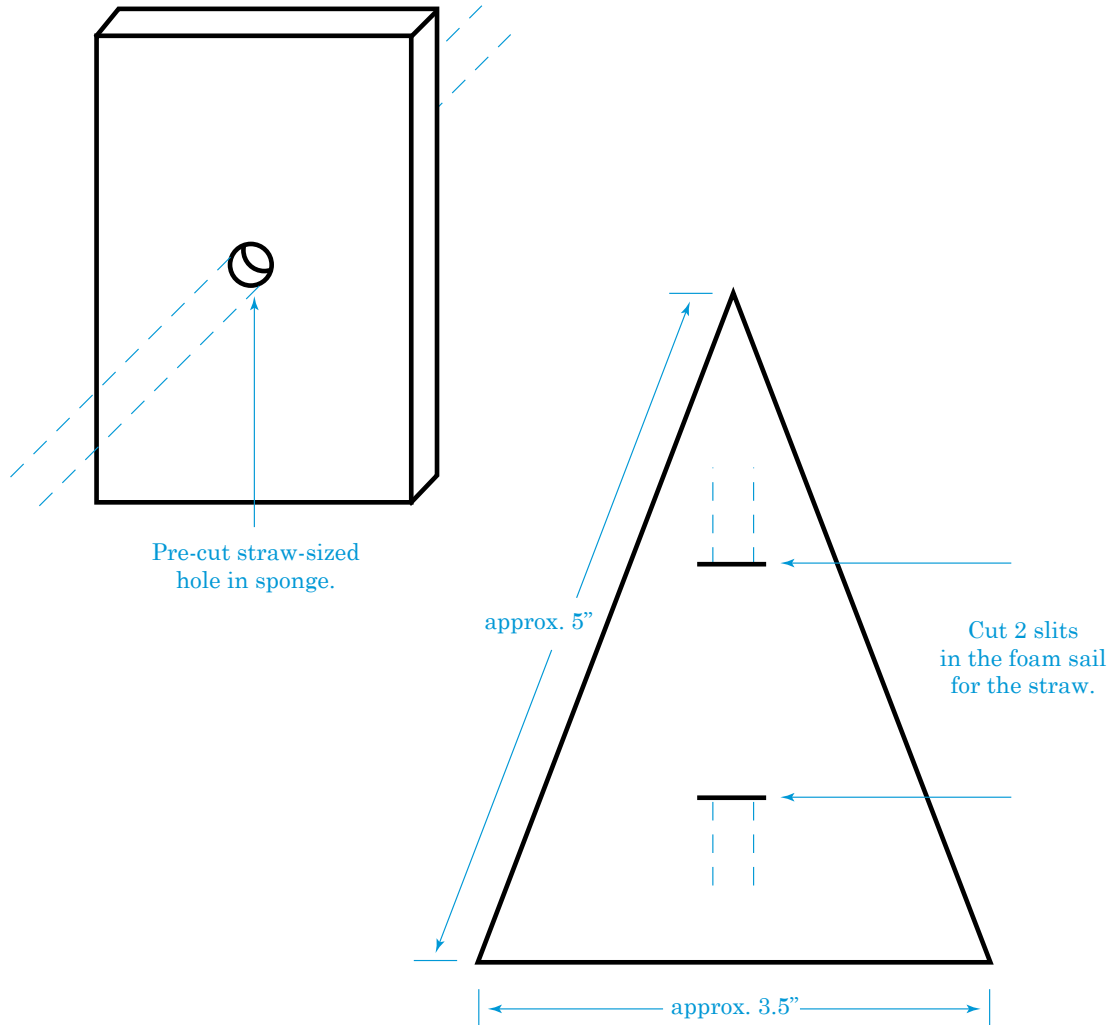
Straws — any shape or kind

Craft Foam Sheets

Scissors



# DOES IT SINK OR FLOAT? CRAFT



## INSTRUCTIONS

This is a very easily constructed boat, but sometimes children need a bit of adult help. We often pre-cut a hole in the sponge for the straw because it saves time, and it works better for adults to use very pointy scissors. We also pre-cut the sail and add the two slits so they are ready to go. We bring along a big box of foam letters and shapes for the kids to add to the sail. Adding names or initials to the sail is very popular.

# DOES IT SINK OR FLOAT? READING LIST

Wisconsin Water Library, UW-Madison, (608) 262-3069 or [askwater@aqua.wisc.edu](mailto:askwater@aqua.wisc.edu)

**Arthur's Dream Boat** By Polly Dunbar. Somerville, Mass: Candlewick Press, 2012

One night, Arthur has an amazing dream about a pink-and-green boat with a striped mast and beautiful figurehead. He tries to tell his family about it when he wakes up, but no one (not even the dog!) is interested.

**Boat Ride with Lillian Two Blossom** By Patricia Polacco. New York: Philomel Books, 1988

A mysterious Indian woman takes William and Mabel on a strange boat ride and answers their questions about the wind, the rain and the changing nature of the sky.

**Captain Small Pig** By Martin Waddell; illustrated by Susan Varley. Atlanta: Peachtree, 2010

Small Pig and his friends Old Goat and Turkey spend the day in a rowboat on a lake.

**Everything Goes by Sea** By Brian Biggs. New York: Balzer + Bray, HarperCollins, 2013

A young boy learns about all kinds of water vehicles as he and his parents take off on a seaborne journey.

**Experiments with Water: Water and Buoyancy** By Chris Oxlade. Chicago: Heinemann Library, 2008

Helps you conduct your own experiments on the property of water known as buoyancy.

**The Legend of the Loon** By Kathy-jo Wargin; illustrated by Gijsbert van Frankenhuyzen. Chelsea, Mich.: Sleeping Bear Press, 2000

After being shown the wonders of nature by Grandmother Lom, two children venture out in her boat alone, find themselves in danger and are rescued by a mysterious bird.

**Scholastic's The Magic School Bus Ups and Downs: A Book about Floating and Sinking** Adaptation by Jane B. Mason; illustrated by Nancy Stevenson. New York: Scholastic, 1997

Is there a monster living in Walker Lake? That's what Ms. Frizzle's class is trying to find out. The kids try to dive down under the water, but the bus won't go! The class has to figure out how to turn their floater into a sinker so they can solve the mystery of the underwater monster. Take a dive with the Magic School Bus, and learn why things float and sink!

**My Father's Boat** By Sherry Garland; illustrated by Ted Rand. New York: Scholastic, 1998

A Vietnamese-American boy spends a day with his father on his shrimp boat, listening as he describes how his own father fishes on the South China Sea.

# DOES IT SINK OR FLOAT?

## READING LIST

**On Sand Island** By Jacqueline Briggs Martin; illustrated by David Johnson. Boston: Houghton Mifflin, 2003

In 1916 on an island in Lake Superior, Carl builds himself a boat by bartering with the other islanders for parts and labor.

**Things That Float and Things That Don't** By David Adler; illustrated by Anna Raff. New York: Holiday House, 2013

An introduction to density that offers new vocabulary in a bold font with delightful soft-hued illustrations and clearly focused content on flotation.

**Three Bears in a Boat** By David Soman. New York: Dial Books for Young Readers, 2014

Afraid to face their mother after breaking her beautiful blue seashell, three bears set out on a high seas adventure to try to find a replacement.

**Toy Boat** By Randall de Sève; illustrated by Loren Long. New York: Philomel Books, 2007

A toy boat gets separated from its owner and has an adventure on the high seas.

**What Floats in A Moat?** By Lynne Berry; illustrated by Matthew Cordell. New York: Simon & Schuster Books for Young Readers, 2013

Archie the Goat has a delivery to make. He has several barrels of buttermilk that the queen needs, but in order to get them to her, he needs to cross the moat. Testing several different theories to find out what will float and what will sink, Archie and his friend Skinny the Hen don't succeed at first, but they do try, try, try again (and again). And with reason and persistence, they'll get that buttermilk where it needs to be!

**Who Sank the Boat?** by Pamela Allen. New York: Coward-McCann, 1983

A cow, a pig, a donkey, a sheep and a tiny mouse go for a row, but one of them sinks the boat. Children will love finding out who is the heaviest.





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**[waterlibrary.aqua.wisc.edu](http://waterlibrary.aqua.wisc.edu)**  
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