

Monster Sciences Making science fun!

HOW FAST CAN YOUR
FISH SWIM?



AN EXPERIMENT ABOUT LIQUIDS

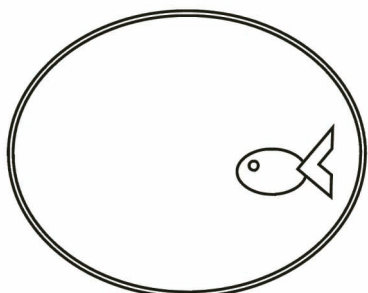
SURFACE TENSION: SUPER FAST FISH!

What you will need:

- A large bowl with water in it
- A piece of paper or cardboard
- Liquid soap

What you will do:

- 1 Put the bowl on a flat surface and fill it with water.
- 2 Cut out a fish from a piece of paper, or better yet cardboard. **MAKE SURE YOUR FISH HAS A NICE V IN ITS TAIL.**
- 3 Carefully lay the fish down on the surface of the water near one side of the bowl.
- 4 Now rub a little liquid soap onto your finger and then gently touch the water behind the fish. **JUST TOUCH IT ONCE AND TAKE YOUR FINGER AWAY, THEN WATCH WHAT HAPPENS.**



What is going on?

The water in the bowl has surface tension, which keeps the fish on top of the water.

Soap, however, breaks the surface tension by breaking the attraction between the water molecules, so the water behind the fish “relaxes”. The surface tension still exists in front of the fish, so the water molecules in front of the fish are still pulling towards each other, and they pull the fish too.

Monster Challenges

- Try floating a cork in the middle of a fresh bowl of water. What happens? Now add a drop of soap? Can you explain the change based on what you have learnt in this experiment?
- Can you use this idea to have paper boat races?
- Research how and why surface tension is broken to clean up oil spills at sea.

What an
amazing Fish
you have
made!



TEACHING NOTES:

Science Experiment: Liquid LQ05

Topic: Liquids

Suitable for Ages: 6 -12+

Key Concepts:

- ◆ Surface Tension

Resources:

- Investigation Record IR01– one copy per student
- Experiment Description Liquids LQ05– one copy per student
- A bowl, cardboard or paper, water

Lesson Notes:

Review previous learning about surface tension from earlier experiments in this series. Explain that this experiment shows how surface tension can be broken. Ask students to describe when this might be helpful.

Remind students to listen carefully to instructions, and to **OBSERVE** their experiment.

As a class discuss the experiment prior to undertaking it, and students should complete the sections of their Investigation Report IR01 from "Title to "Hypothesis".

What should happen in this experiment, and why?

When the soap is added to the water behind the fish it should move forward across the surface of the water. This happens because the surface tension of the water behind the fish has let go, but in front of the fish it is unchanged and continues to exert an attraction on surrounding water molecules, including the ones supporting the fish. As these molecules move toward the attracting force, they carry the fish with them, and it moves across the water.

Remember that the best way for students to learn is to try things for themselves, so pose the challenges and let them experiment. They may surprise you with their answers and observations!

Follow up discussion questions:

- Does the V shape in the tail make a difference? Try a different shape and see what happens.