EXPERIMENT MANUAL

little labs

WATER

THAMES & KOSMOS

WARNING — Science Education Set. This set contains chemicals and parts that may be harmful if misused. Read cautions on individual containers and in manual carefully. Not to be used by children except under adult supervision.

DEAR PARENTS,

With this experiment kit, children as young as five years old will be able to perform their first exciting experiments.

Experiments, astonishment, and play are all closely related, so it's good to offer plenty of fun if you want kids to learn. But even though the experiments here are easy, they won't necessarily come off without some help. So please do help your little researchers, particularly since the curiosity and powers of comprehension of children are more advanced than their manual abilities. And please make sure to assist your children in getting any materials they may need in addition to the ones contained in the kit.

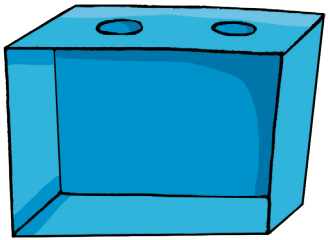
Because the experiment kit was designed with young researchers in mind, the read-aloud explanations have been kept as simple as possible.

Have fun with the experiments!

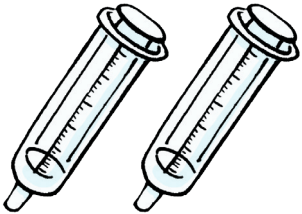
NOTE!

Not suitable for children under 3 years of age, due to small parts that might be swallowed or inhaled. There is a risk of strangulation if the hose becomes wrapped around the throat.

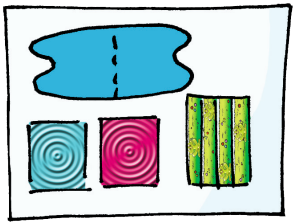
CONTENTS



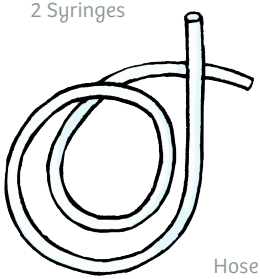
Experiment box



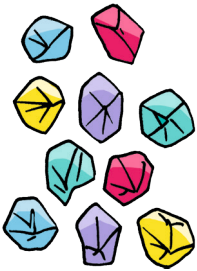
2 Syringes



Cutout sheet



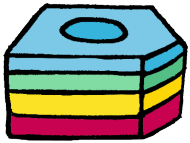
Hose



Magic rocks

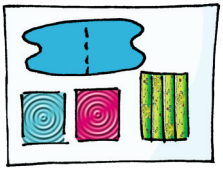
2 Rubber bands

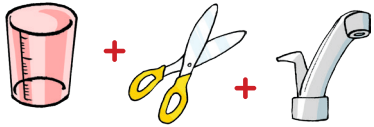
Measuring cup



Boat

EXPERIMENT 1





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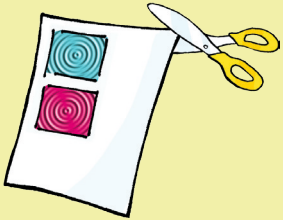

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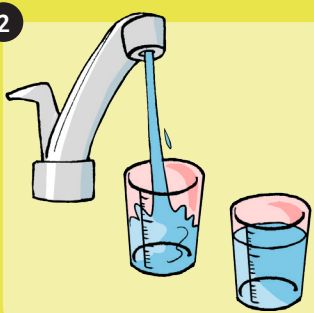

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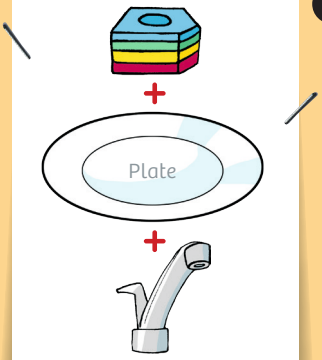
HERE'S HOW

The air all around us exerts strong pressure on everything. This pressure pushes on the card, too. Turn the covered cup over — don't let any air get inside! — and carefully remove your bottom hand. The card doesn't fall!

5

EXPERIMENT 2



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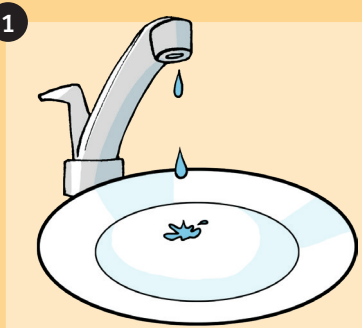

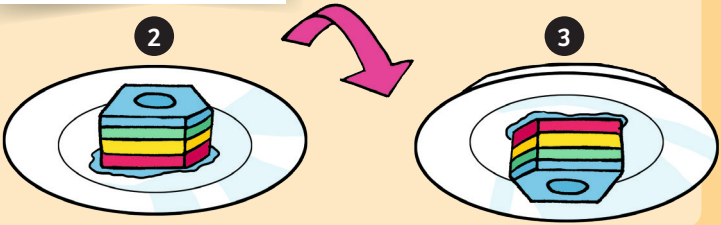

HERE'S HOW

Water is made of lots of tiny particles, or water molecules. They always stay stuck together, but can also stick to other things. That is how the boat gets glued to the plate with the help of water droplets. This is known as **adhesion**.

EXPERIMENT 3

YOU WILL NEED ↑

1

Tip: Tap on the floating magic rocks with your finger to help them sink.

HERE'S HOW

A kind of skin forms on top of the filled measuring cup. The skin is made of lots of water particles that latch onto one another and onto the rim of the cup. This property of water is known as **surface tension**.

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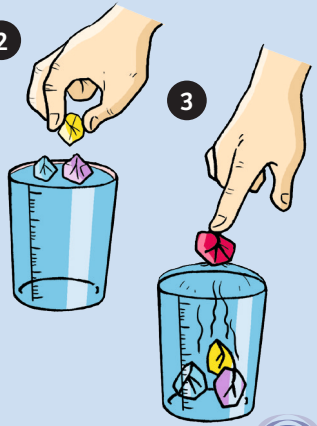

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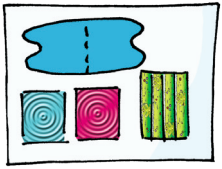

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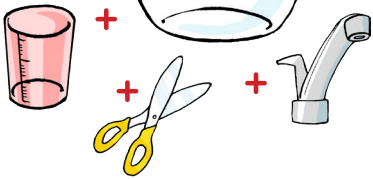
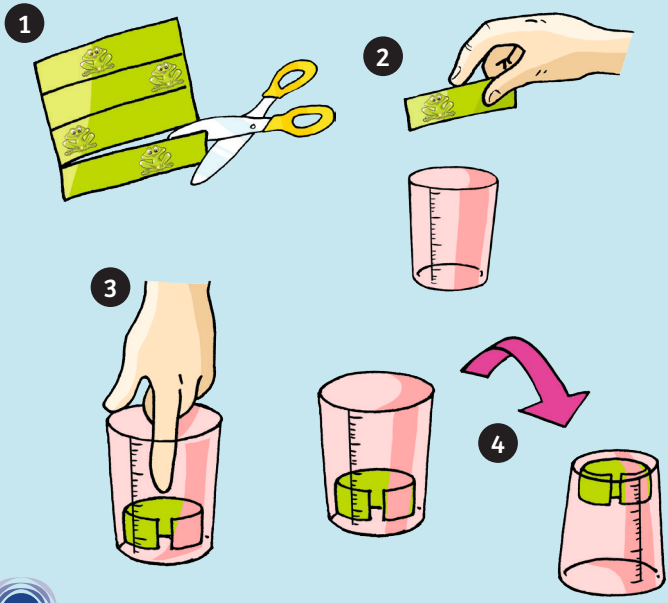
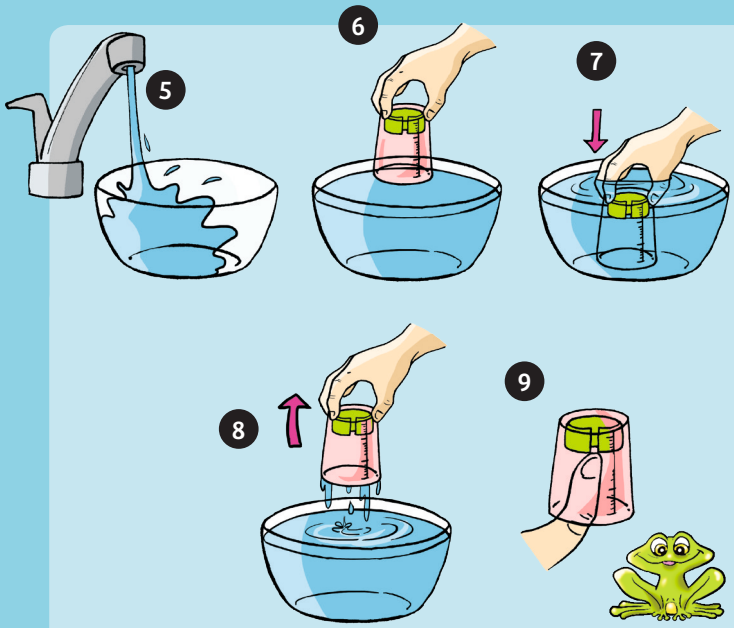


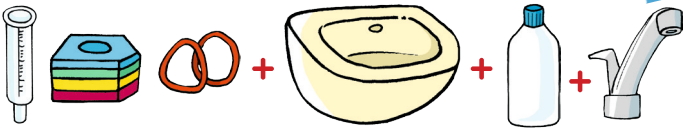




HERE'S HOW

If the cup's opening is pointing down into the water, the air cannot escape out of it. It just gets compressed a little by the pressure of the water. Wherever there's air, there's no room for water — and the frog stays dry!

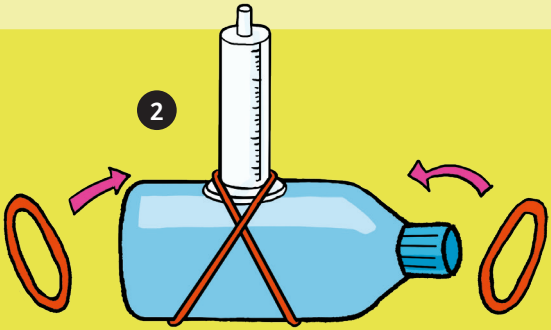
EXPERIMENT 5.1



Sink

16-ounce plastic bottle

YOU WILL NEED

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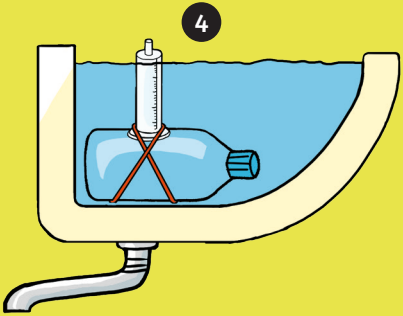
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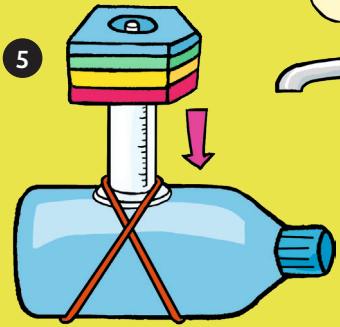
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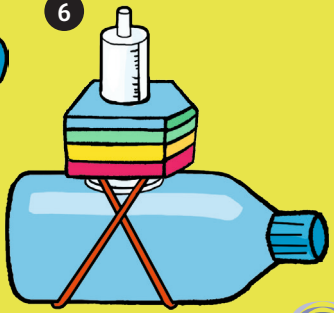
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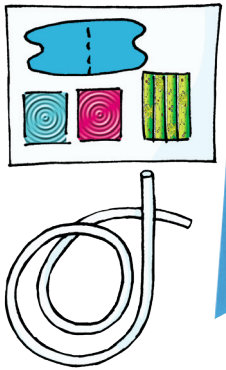
EXPERIMENT 5.2



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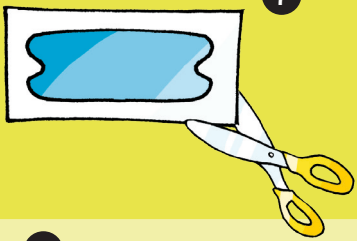

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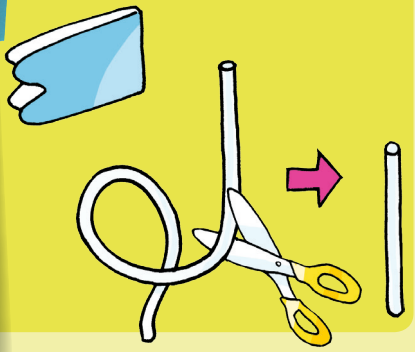

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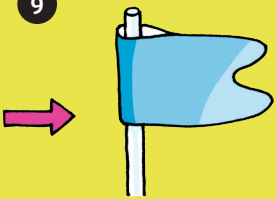

HERE'S HOW

At first, the submarine sinks to the bottom: It is heavier than water, so down it goes. The little boat, on the other hand, is made of a material that contains lots of air bubbles. It is lighter than water, so it floats on top. And that is how your submarine can float, with the help of the little boat!

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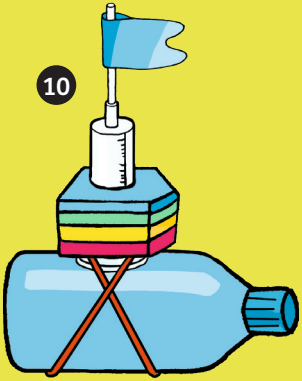

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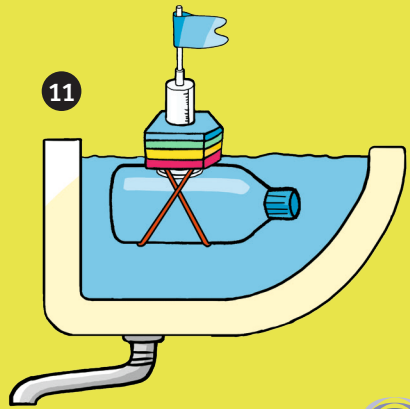
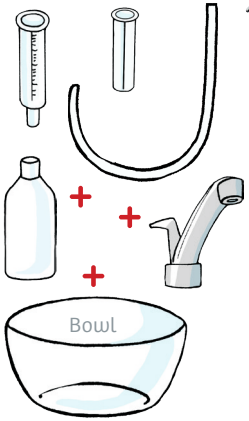


Tip: You can also try performing the experiment with a half-filled bottle.

EXPERIMENT 6



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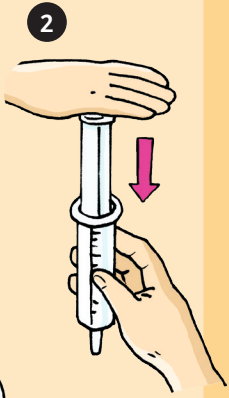
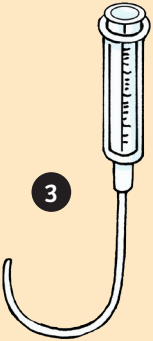
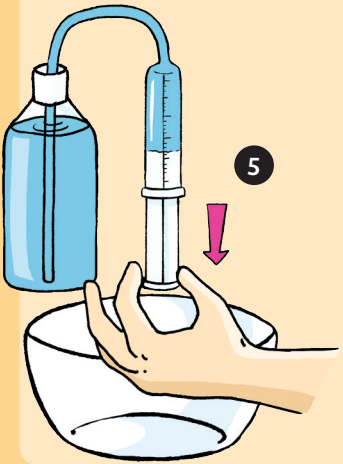
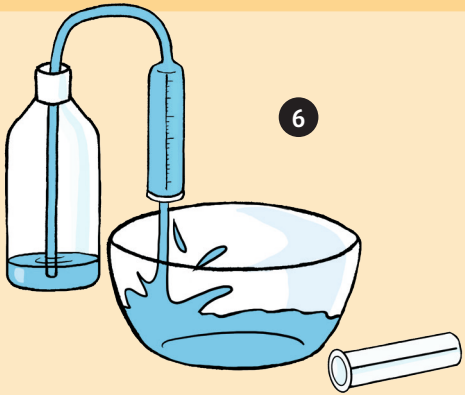






HERE'S HOW

Water always runs downhill. It can only rise up the hose to the bend when it is sucked up by the syringe. But then it keeps flowing without any more suction — all by itself! The reason has to do with the **cohesion** ("sticking together") of water. The individual water particles stick tightly together and won't let go of each other.



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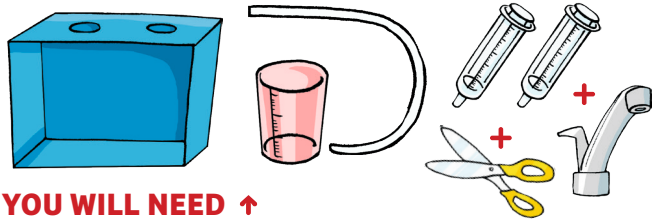

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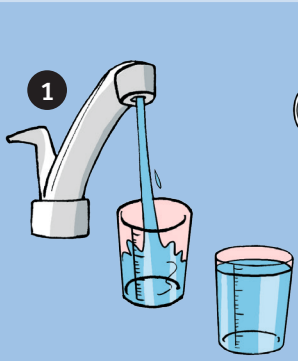
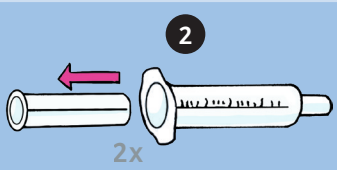
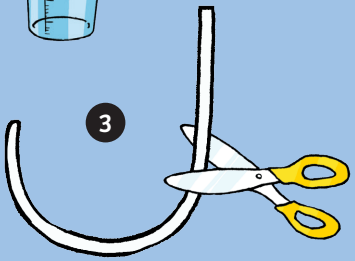




Tip: Use a pen or pencil to pre-drill holes for the syringes!



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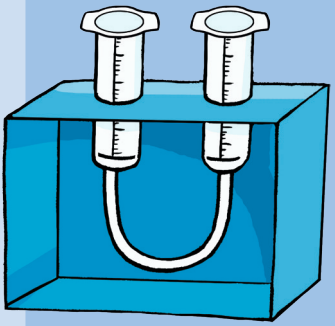

HERE'S HOW

When pipes or containers are connected together in such a way that water can move freely within them, the water level is always exactly the same in all of them. That is known as the **principle of communicating vessels**.

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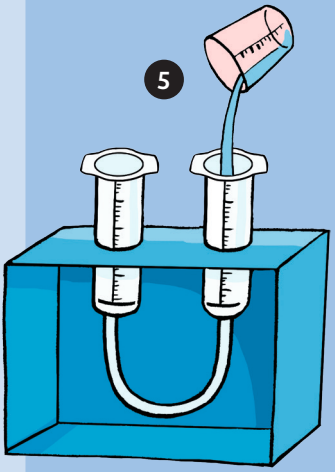

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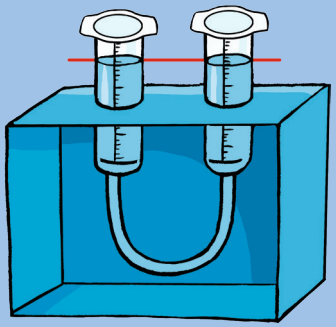

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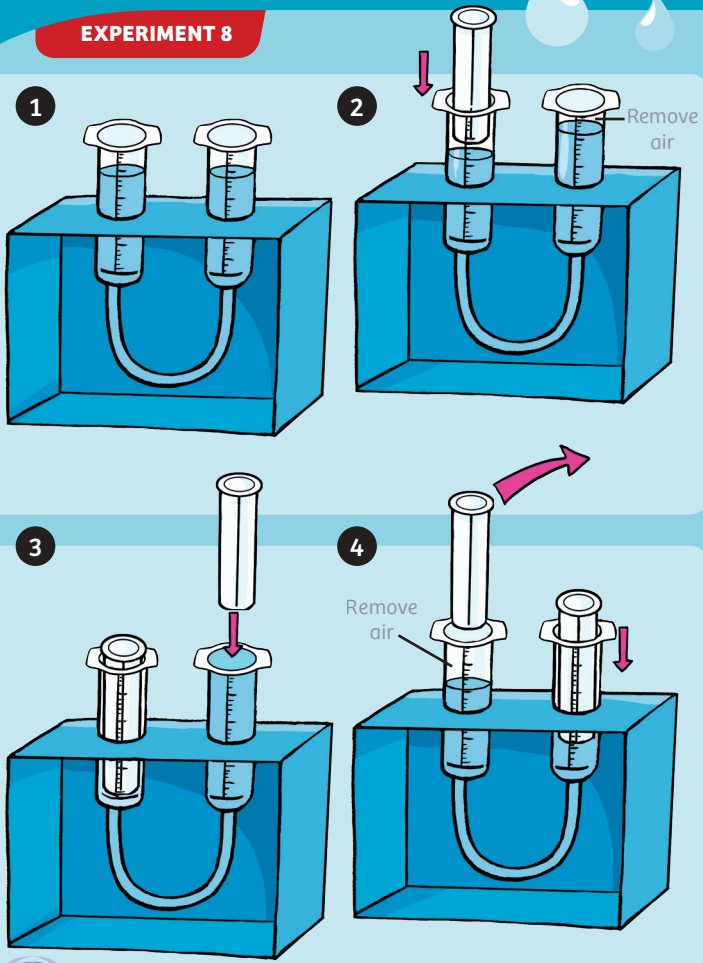

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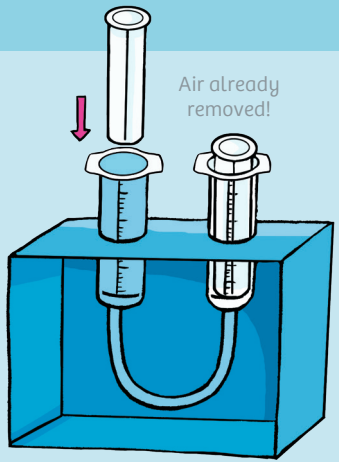

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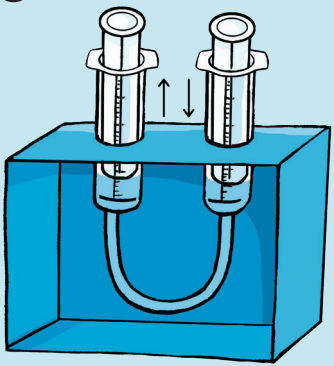

Water elevator

HERE'S HOW

Water won't let itself be compressed. If you press down with a syringe, the water under it is pushed away, and it pushes the syringe plunger up on the other side. This principle of force transfer, known as **hydraulics**, is used in earth-moving equipment shovels.

3rd Edition 2012

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