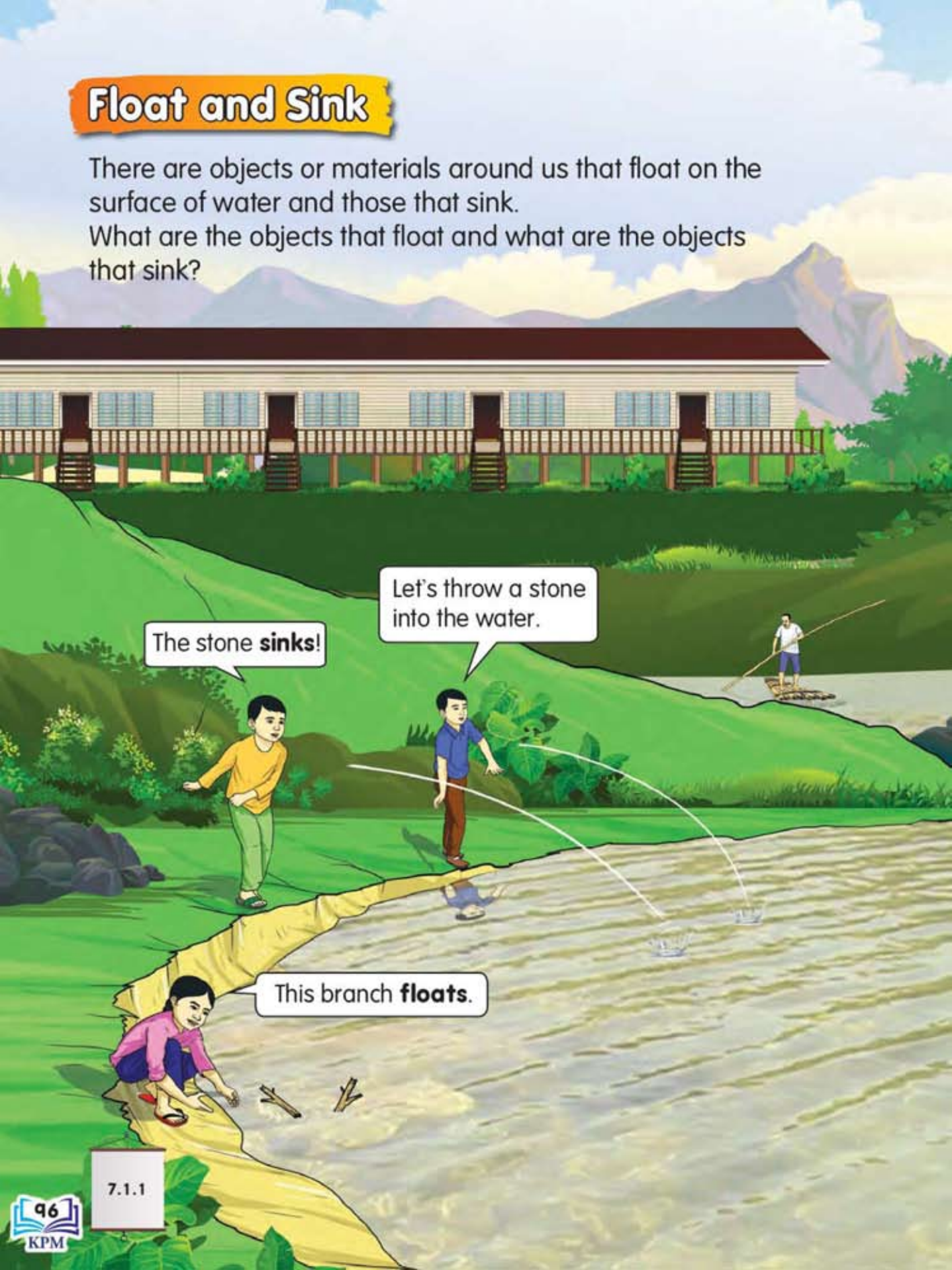
Unit 7

DENSITY

Why doesn't the toy duck sink?

Float and Sink

There are objects or materials around us that float on the surface of water and those that sink.
What are the objects that float and what are the objects that sink?



7.1.1

Let's Test

Testing Objects that Float and Objects that Sink

GROUP

Apparatus and Materials

- small aquarium
- coin
- ping-pong ball
- marble
- soap
- cork
- sponge

Steps

1. Fill the aquarium with water.
2. Put all objects to be tested in the aquarium.
3. Observe whether each object floats or sinks.
4. Record your observations as in Table A.

Table A

Object	Sink	Float
Coin		
Ping-pong ball		
Marble		
Soap		
Cork		
Sponge		

Questions

Based on the activity above:
(i) Which objects float? (ii) Which objects sink?

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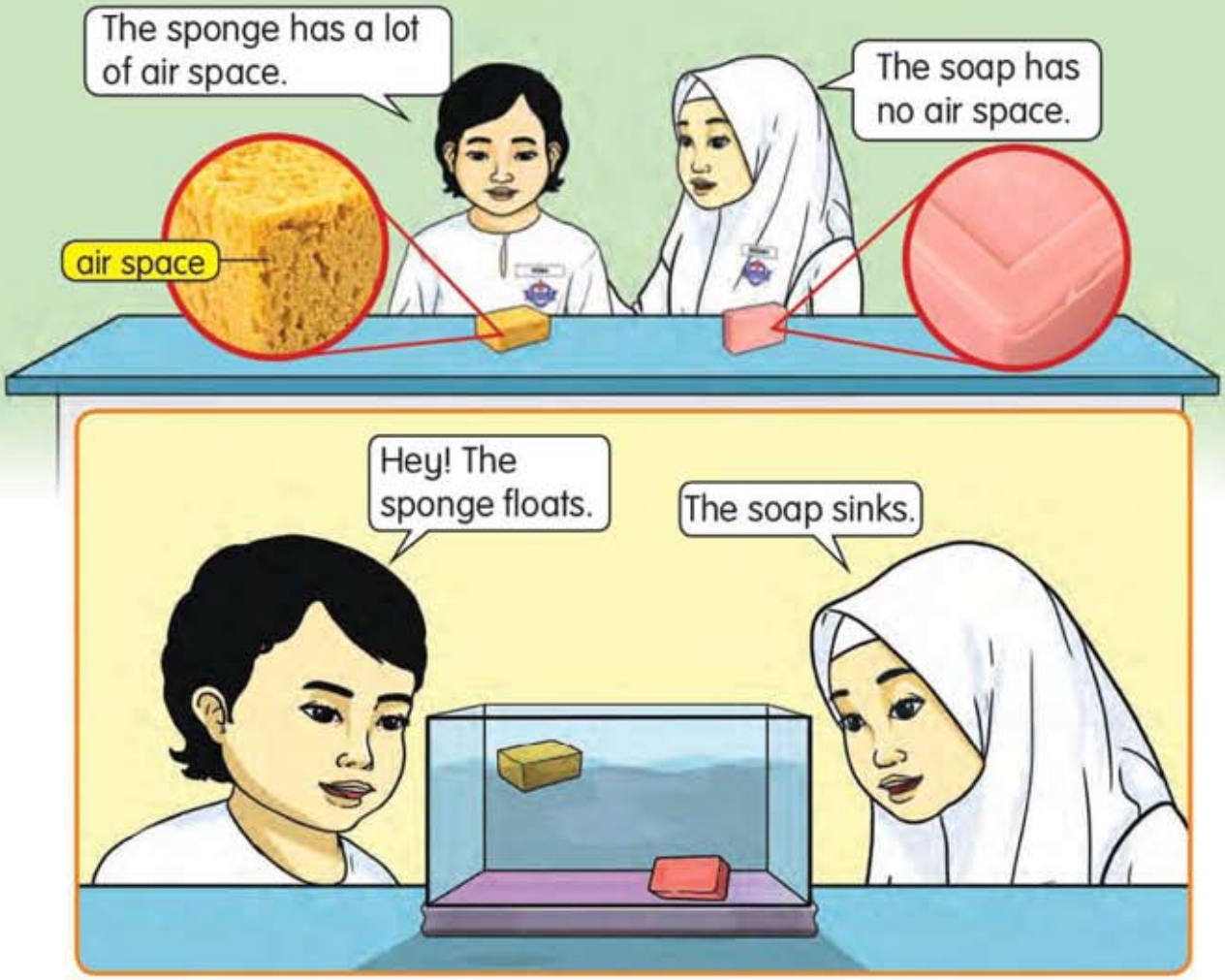
KPM

Density

The floating or sinking of an object is related to the density of the object against the density of water. Observe the situation below.



The density of objects is different from one to another. There are objects that are more dense than water and objects that are less dense than water.

Objects that are **less dense** than water will **float**.
Objects that are **more dense** than water will **sink**.

7.1.2

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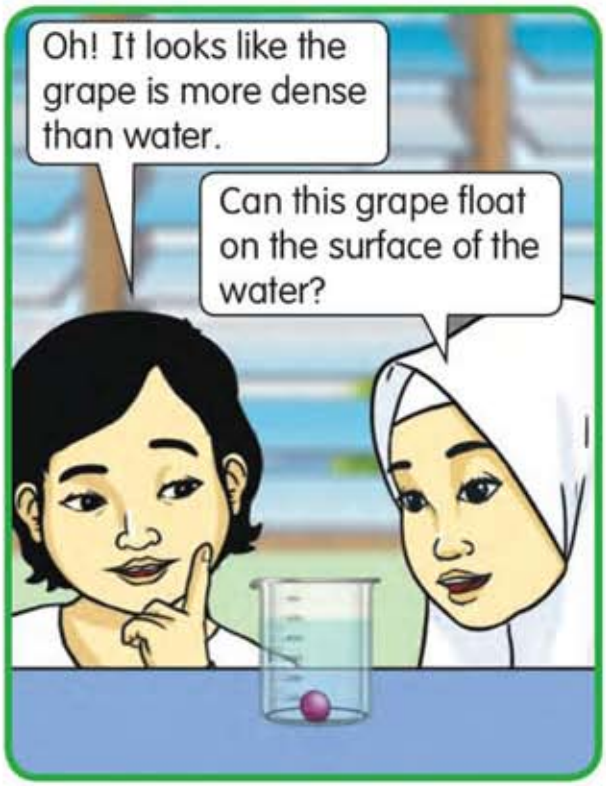
Why do logs float on the surface of water but rubber bands sink in water?

Water Becomes More Dense



7.1.2
7.1.3

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KPM

When salt is dissolved in water, the water will become more dense. Therefore, the grape that sank before, can now float.

Water becomes more dense when salt is added to it.

What will happen if sugar is added to water?
Let us carry out an experiment.

Let's Test Floating a Fish Model on Water

ACTIVITY GROUP

Apparatus and Materials

- beaker
- cutter Caution
- 200 mℓ of water
- sugar
- spatula
- carrot

Steps

1. 

Carve out the shape of a fish from the carrot.

2. 
Place the fish model and one spoonful of sugar in the water.

3. 
Stir to dissolve all the sugar.

4. 
Add more sugar and stir until the fish model floats.

5. Discuss your observation.

7.1.3
7.1.4

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Questions

1. How many spoonfuls of sugar are needed to make the fish model float?
2. Why does the fish model float when sugar is added to the water?

Fun Activity Density of Liquids

ACTIVITY INDIVIDUAL

Apparatus and Materials

- plastic bottle
- beaker
- funnel
- 100 mℓ of coloured water
- 100 mℓ of cooking oil
- 100 mℓ of glycerine

Steps

1. Pour the coloured water into the bottle using the funnel. Then, pour in the cooking oil.
2. Screw on the bottle cap tightly and shake it. Leave it for a while. Observe the changes that take place.
3. Pour the glycerine slowly into the bottle and observe the changes.
4. Record your observations. Then, discuss.

Question

Compare the density of coloured water, cooking oil, and glycerine. Which is the most dense?

TEACHER'S NOTES

- Glycerine is available at a pharmacy or baking supplies store.

Applications of Density in Life

What are the applications of density in life?

Ships and anchors are made of iron. A ship floats on the surface of the water but an anchor sinks. Why?

Safety

Life jacket

Farming

Fish farming enclosures

How is density applied in the above situations?

7.1.1
7.1.4

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Fun Activity — Submarine Project

GROUP ACTIVITY

Apparatus and Materials

- plastic bottle
- clay
- weight
- adhesive tape
- basin
- 40 cm tube

Steps

1. Make a hole in the bottle cap and insert the tube into the opening.

2. Make several holes along one side of the bottle.

3. Attach the weight to the bottom of the bottle using adhesive tape.

4. 

Screw on the bottle cap with the inserted tube. Seal the opening in the bottle cap with clay.

5. Fill the basin with water and submerge the submarine model in the water.
6. Blow air into the submarine model through the tube.
7. Observe the situation. Then, discuss.

Question

State two importance of density in life.

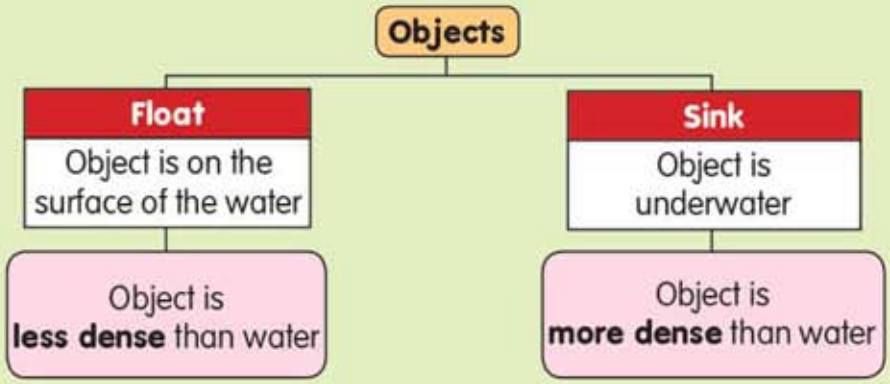
Leisure Science — Dancing Egg Shells

Steps

1. Put vinegar and crushed egg shells into a bottle and immediately screw on the bottle cap tightly.
2. Shake the bottle and observe the changes that take place.

Let's Remember

1.



2. The density of each object and liquid is different.
3. Water can be made more dense by adding salt or sugar to it.
4. Density applications in daily life are life jackets, iron anchors, and buoy at fish farming enclosures.

Let's Answer

Answer all the questions in the Science exercise book.

1. Which of the following will float on water?


paper clip


apple


quill


grape

2. An object that is _____ dense than water will sink.
3. Oil will _____ on the surface of the water as oil is _____ dense than the water.
4. How does a life jacket save a life?

HOTS

How can we sink an orange in water?