CHAPTER – 7

EXPERIMENTS WITH WATER

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Question Think What Would Hap:

- Ayesha put a puffed *puri* in a bowl of water. Would it sink or float?
- You put a steel plate on water. Would it sink or float? What would happen to a spoon?
- Would the cap of a plastic bottle sink or float on water?

Answer:

- Puffed *puri* in a bowl of water would float as it is lighter than water. However, after sometime it would start to sink due to absorption of water by the dough of *puri*.
- A steel plate would float on water as it is lighter than water. On the other hand, a spoon which is heavier than water would sink. The size of a body does not decide whether it floats or sinks. It is the mass and volume of the body that collectively decide whether it floats or sinks.
- The cap of a plastic bottle would float on water as it is lighter than water.

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Question Do This and Find Out:

Do this experiment in groups of four friends? Each group will need a big pot filled with water and the things listed in the table. Put each thing one-by-one in water and observe.

Mark [√] for the things that float. Mark [×] for those that sink.

Things to be put in water	I guessed, before I did it	I saw, when I did it
(a) Empty bowl (*katori*) (b) After putting in 6-7 small pebbles, one-by-one		
Iron nail or pin		
Matchstick		
(a) Empty plastic bottle with its lid closed (b) Bottle half-filled with water (c) Bottle full of water		
Aluminium foil (from medicine packing) (a) Open and spread out (b) Pressed tightly into a ball (c) In a cup-like shape		
(a) Soap cake (b) Soap cake on a small plastic plate		
A piece of ice		

Find out from the other groups which things floated and which sank in the water?

After doing the experiment, fill in the blanks.

- The iron nail _____ in water but the *katori* _____. I think this happened because _____ _____.
- The empty plastic bottle _____ on water. The bottle filled with water _____ because _____ _____.
- The aluminium foil _____ when it was spread out. When pressed tightly into a ball it _____. This may have happened because_____ _____.

Answer:

- The iron nail sank in water but the *katori* floated. I think this happened because

(i) the weight of water displaced by the iron nail is less than its own weight

(ii) the weight of water displaced by the *katori* is equal to its own weight.

- The empty plastic bottle floats on water. The bottle filled with water sinks because

(i) the weight of water displaced by the empty plastic bottle is equal to its own weight.

(ii) the weight of water displaced by the bottle filled with water is less than its own weight

- The aluminium foil floated when it was spread out. When pressed tightly into a ball it sank. This may have happened because

(i) the weight of water displaced by the aluminium foil is equal to its own weight.

(ii) the weight of water displaced by the aluminium ball is less than its own weight

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Question Is It Magic?

- Take some water in a glass. Put a lemon in it. Now keep putting salt in the water, half-a-spoon at a time. Were you able to float your lemon in water?
- What do you think, the lemon floated in salty water, because…?

Answer:

- Yes, the lemon would float in water containing excess salt. This is due to the fact that water gets heavier when salt has been added in excess amount. And lemon (lighter in weight) will be able to float on heavier water.
- When salt is added to water, the water gets heavy. As compared to a lemon, the salty water is heavier. So, the lemon that is lighter floats on salt water that is heavier.

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Question Do This Experiment:

Make groups of four friends. For the experiment you will need 4-5 glasses or bowls, spoons, water, and the things listed in the table. Take some water

in each glass. Now try to dissolve one thing in one glass. Observe what happens and note in the table.

Things	Did it dissolve or not?	What happened after keeping for 2 minutes?
1. Salt	2.	
2. Soil	3.	
3. Chalk powder	4.	
4. 1 spoon milk	5.	
5. Oil	6.	

Answer:

Disclaimer: *The purpose of this question is to introduce the children to the method of general science activities. This involves certain prior imagination followed by experimentation and logical deductions. Keeping this process of imagination and experimentation in mind, the answer to this question has not been provided.*

Question Tell:

- Could you see the salt after it dissolved in water? If no, why?
- Does that mean that now the water does not have salt? If it has, then where is the salt?

- What difference did you see – in the water with salt, and the water with chalk powder – after keeping for some time?
- Which of the two would you be able to separate from the water by straining with a cloth – salt or chalk powder?
- Do you think the oil got dissolved in the water? Why do you think so?
- You also try to do the same and then tell – which drop went ahead? Why did it slide faster?

Answer:

- No, we could not see the salt after it dissolved in water.

This is because as soon as salt is added into water it starts breaking down into smaller particles that are difficult to be seen by naked eyes. These salt particles get inside the water. At this stage, the salt starts dissolving in the water and a stage comes when the entire salt gets dissolved. Thus, no more salt could be seen.

- No, that does not mean that water does not have salt.

The salt got broken into smaller particles that occupy the position in between the particles of water.

- After keeping for some time, the water with salt looks clear. However, the water with chalk powder does not. Some of the chalk powder gets settled while some of it remains scattered throughout the water.
- Out of the two substances, we would be able to separate chalk powder from water by straining with a cloth. This is because salt particles cannot be seen in water whereas chalk powder can be.
- Oil will not get dissolved in water

Disclaimer: *The second part of the question aims to increase the process of scientific thinking in the students. Keeping this process of participation in mind, the answer to this question has not been provided.*

- ***Disclaimer:*** *The purpose of this question is to introduce the children to the method of general science activities. This involves certain prior imagination followed by experimentation and logical deductions. Considering the sustenance of this process of imagination and experimentation the answer to this question has not been provided.*

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Question Where Did the Water:

One day Ayesha's mother put some water to boil on the stove for making tea. She got busy with something and forgot about it. When she remembered and came back to check, she found only a few drops of water left in the pan.

- Think where did the water go?
- Why did Chittibabu and Chinnababu keep their mango jelly under the sun?
- At your house, what things are made by drying in the sun?

Answer:

- The water from the pan got evaporated and converted to vapour.
- Chittibabu and Chinnababu kept their mango jelly under the sun in order to dry it.
- *Disclaimer: This question aims to make the students familiar with the things they come across in their daily lives. Keeping this process in mind, the answer to this question has not been provided.*

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Question What We Have Learnt:

- You have washed your handkerchief and you want to dry it quickly. What all can you do?
- What things do you put in water to make tea? Which of those things dissolves in water?
- You have been given some *mishri* pieces (lumps of sugar). Suggest some ways to dissolve them quickly.

Answer:

- The handkerchief can be dried in the sun or under the fan to dry it quickly.
- The ingredients used to make tea are water, tea leaves, milk and sugar. Among these, milk and sugar dissolve in water.
- Some ways in which the *mishri* pieces can be dissolves quickly are
    - crush them and then dissolve them by stirring continuously
    - heat the water while continuously stirring in the pieces of *mishri*

Disclaimer: *This question aims to make the students familiar with the things they come across in their daily lives. Keeping this process in mind, a sample answer has been provided and the answers of the students can vary from this answer.*