

## 7

# How Things Work

## Chapter Notes:

### Introduction

- We use many things daily like books, toys, pencils, and bags.
- These things help us in our work.
- We should think and observe how things work.
- Sometimes, things work differently in different situations.

### Spinning

- Spinning means moving round and round.
- Examples:
  - Coin
  - Top (Lattu)
  - Bangle
  - Ceiling fan
- Observations:
  - Some objects spin well (coin, top).
  - Some objects do not spin properly (eraser).
  - A spinner slows down and then stops.

### Why do things spin better?

- Proper balance
- Centre position (hole in the middle)
- Shape of the object
- A spinner with a hole at the centre spins better.

### Shape and Spinning

- A square spinner looks round (circular) while spinning.
- Different shapes behave differently when spun.

### Colours and Spinning

- When a coloured spinner spins:
  - Colours mix together
  - New colours may appear

### Do You Know?

- A charkha (spinning wheel) is used to make thread from cotton.
- Mahatma Gandhi used the charkha to make clothes.
- Spinning tops (Lattu) have been used in India for many years.

### Floating and Sinking

- When an object stays on water → Float
- When an object goes down in water → Sink
- Examples:
  - Leaf 🍃 → Floats
  - Paper boat 🚤 → Floats
  - Iron nail 🍬 → Sinks
  - Stone 🪨 → Sinks

**Important**

- Heavy things do not always sink.
- Light things do not always float.
- It depends on:
  - Shape
  - Material
  - Air inside

**Effect of Shape**

- Example: Aluminium foil
  - Spread out → Floats
  - Cup shape → Floats
  - Ball shape → Sinks
- Changing shape can change floating or sinking.

**Boats**

- Boats can be made from:
  - Paper
  - Ice-cream sticks
  - Coconut shell
- Good boat:
  - Strong
  - Balanced
  - Does not fall

**New Terms**

Word	Meaning
• <b>Spin</b>	- To move round and round
• <b>Float</b>	- To stay on the surface of water
• <b>Sink</b>	- To go down in water
• <b>Balance</b>	- To stay steady without falling
• <b>Spinner</b>	- An object that spins
• <b>Centre</b>	- The middle point of something
• <b>Shape</b>	- The form of an object
• <b>Material</b>	- What something is made of

**Activity 1 (Page 105)**







**Q 1. Do you think all objects can spin? Make a list of a few objects that can spin.**

**Ans.** No, all objects cannot spin.




Some objects that can spin are:

- Coin
- Bangle
- Top (Lattu)
- Wheel
- Plate
- Bottle cap

**Q 2. Collect the objects mentioned in the table given below. Spin and observe them. Then, complete the table.**





Objects	I observe	I wonder	I think
Coin 	As it slows down, it begins to shake	Why does it start to shake as it slows down?	
Bangle 	As time passes, the sound...		
Pencil 			
Piece of Stone 			
Wooden Spinner (Top) 			
Eraser 			

Ans.



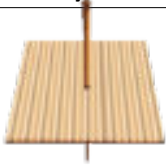


Object	I observe	I wonder	I think
 Coin	- Slows down and begins to shake	- Why does it shake when it slows down?	- It loses balance as it slows down
 Bangle	- Makes sound while spinning, then slows down	- Why does the sound decrease?	- Sound reduces as speed becomes less
 Pencil	- Does not spin properly, falls quickly	- Why does it not spin well?	- It is not balanced (not round)
 Piece of stone	- Hardly spins, stops quickly	- Why can it not spin properly?	- It has uneven shape and is not balanced
 Wooden spinner	- Spins smoothly for a long time	- How does it stay balanced?	- It has proper shape and centre balance
 Eraser	- Does not spin well, falls quickly	- Why does it not spin?	- It is not round and not balanced

**Activity 2 (Pages 106 – 107)**

Collect things, such as pieces of cardboard, toothpicks, an empty tube of a ballpoint pen, and other small objects. Make the following spinners. Spin them and record your observations.

Change in the spinner	What do you observe? (spins/ does not spin)	Any other observations
Toothpick at the centre 		
Toothpick away from the centre 		
A square spinner 		
Circular spinner with a circular mark on its body 		
Any other		

Ans.

Change in the spinner	Observation (Spins / Does not spin)	Any other observations
 <b>Toothpick at the centre</b>	- Spins well	- Stays balanced and spins smoothly
 <b>Toothpick away from the centre</b>	- Does not spin properly	- Wobbles and falls quickly
 <b>A square spinner</b>	- Spins	- Looks round (circular) while spinning
 <b>Circular spinner with circular mark</b>	- Spins very well	- Moves smoothly; mark may look like a circle/blur
 <b>Triangle spinner</b>	- May be spin well	- Spins but may wobble

**Discuss (Page 108)****Q 1. Which of the spinners did not spin properly? Discuss the possible reasons.****Ans.** The spinner with the toothpick away from the centre did not spin properly.

- Reasons**
- It was not balanced
  - The hole was not at the centre
  - The shape was uneven

**Q 2. Have you noticed the position of the hole in the first two spinners? Did this difference in the position of the hole make a difference in the spinning of these spinners?****Ans.** Yes, the position of the hole made a difference.

- Spinner with hole at the centre → spins well
- Spinner with hole away from centre → does not spin properly

So, correct centre position helps the spinner spin better

### Activity 3 (Pages 110-111)

Collect objects, such as a leaf, an iron nail, an empty bowl (katori), a plastic bottle with a lid, pieces of stone, aluminium foil and other things of your choice. Fill a bucket with water. Before dropping the things listed in the table, guess whether things will float or sink. You may try other things too. Then, observe what happens when it is actually dropped in water. You can write 'F' for objects that float and 'S' for objects that sink.



Items	Before dropping		After dropping	
	What is your guess?	Why do you think so?	What is your observation?	What could be the reason?
Leaf	F	It is light	F	It is light
Iron nail or pin				
Empty steel bowl				
A piece of stone				
Empty bottle with a closed lid				
Bottle full of water with a closed lid				

Ans.

Item	Before (Guess)	Why do you think so?	After (Observation)	Reason
• Leaf 🌿	F	- It is light	F	- Light and floats easily
• Iron nail / pin 🛠️	S	- It is heavy	S	- Heavy and made of metal
• Empty steel bowl (katori)	F	- It has air inside	F	- Air inside helps it float
• A piece of stone 🪨	S	- It is heavy	S	- Heavy and solid
• Empty bottle (closed lid)	F	- It has air inside	F	- Air inside makes it float
• Bottle full of water (closed lid)	S	- It is heavy	S	- No air, filled with water so sinks

**Discuss (page 111)**

Did all the light objects float and all the heavy objects sink? Name the heavy objects that floated and lighter objects that sank.

Ans. No, all light objects did not float and all heavy objects did not sink.

- **Heavy object that floated:** Empty steel bowl (katori), empty plastic bottle
- **Light object that sank:** Small stone (if light in size, still sinks)

So, floating and sinking depend on shape and air inside, not only on weight.

**Activity 4 (Page 112)**

Let us find out whether shape plays a role in floating and sinking.

Aluminium foil when—	Do they float (F) or sink (S) in water?			
	Before dropping		After dropping	
	What is your guess?	Why do you think so?	What is your observation?	What could be the reason?
spread out				
pressed tightly into a ball				
in a cup-like shape				

Ans.

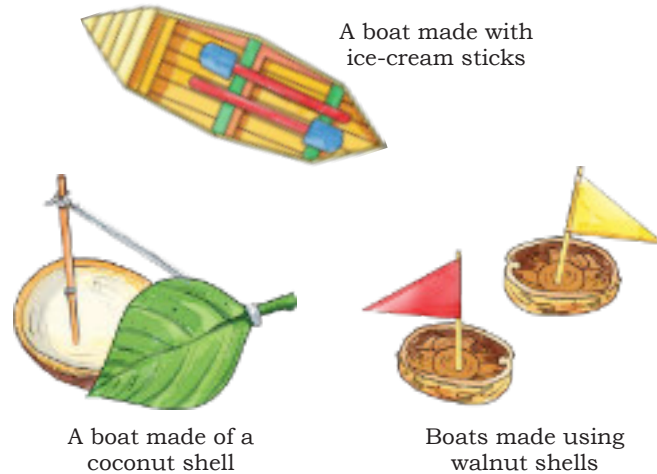
Aluminum foil when...	Before (Guess)	Why do you think so?	After (Observation)	Reason
• Spread out	F	- It is flat and light	F	- Large surface area helps it float
• Pressed tightly into a ball	S	- It becomes compact/heavy	S	- Less air and small surface → sinks
• In a cup-like shape	F	- It can hold air	F	- Air trapped inside helps it float

**Activity 5 (Pages 113 -114)**






Q 1. Let us create some boats:

- Collect some paper, cardboard boxes, ice-cream sticks, clay, adhesive tape, etc.
- Create groups of three to four students.
- Think of how you can make a boat using some of the materials that you have.

- Draw a picture.
- Prepare a boat. Try to ensure that your boat is different from boats made by other groups.
- Organise an exhibition of boats in the class.
- Following are some different types of boats which can be made.



**Ans.** We can make different types of boats using simple materials. Some examples are:

-  Boat made with ice-cream sticks
-  Boat made from a coconut shell
-  Boat made using walnut shells
-  Paper boat
-  Boat made from cardboard
- Each group can design a different and creative boat using available materials.
- Boats should be strong, balanced, and able to float properly

**Q 2. Compare your boat with others' boats.**

Strengths of your boat	Challenges of your boat

**Ans.**

Strengths of your boat	Challenges of your boat
- Floats well on water	- May tip over easily
- Strong and does not break	- May get damaged in water
- Balanced and steady	- May not carry much weight
- Made from good material	- Shape may not be perfect

## Let us reflect

### 1. Enquire about something

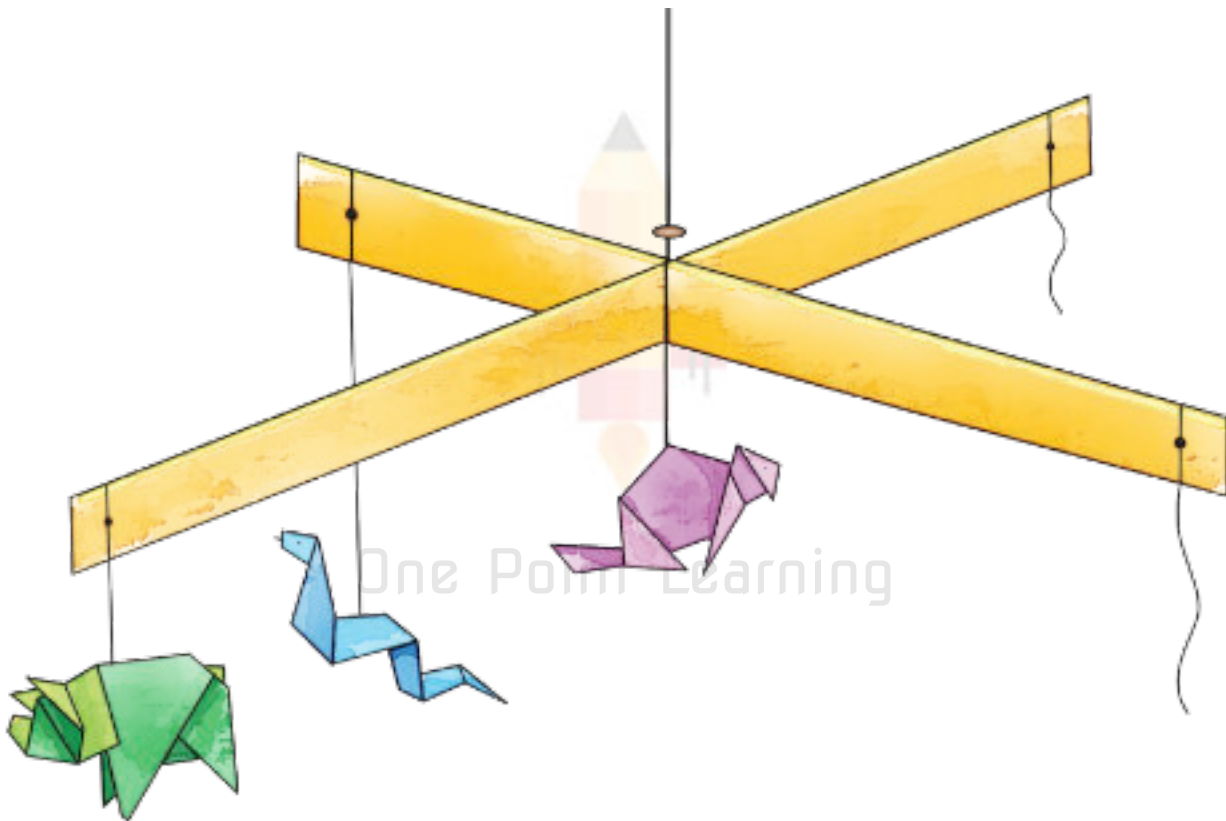
When Ravi spins a spinner, he notices that it slows down and eventually stops. He is curious about this and asks his teacher some questions. List at least two questions that he could ask.

**Ans.** Ravi can ask these questions:

- Why does the spinner slow down after some time?
- Why does the spinner stop spinning?
- How can we make the spinner spin for a longer time?

### 2. Figure It out

(a) The following figure is bending towards the side 'A'. What should be done to balance it?



(b) How would you make a floating object sink and a sinking object float?

**Ans.**

(a) To balance the figure: Move some weight from side A to side B or add weight on side B so both sides become equal.

(b)

- To make a floating object sink → Make it heavier or remove air from it.
- To make a sinking object float → Change its shape (like a cup/boat) so that it can hold air.

So, balance, weight, and shape help objects behave differently

## 3. Do an activity


Classify the objects below based on whether they float or sink in water.

Wax	Marble	Thermocol	Candle	Coin
Cork	Leaf	Eraser	Spoon	Ice-cube
Potato	Tomato	Pump		

**Things that float**


**Things that sink**


Ans.

Things that float	Things that sink
Thermocol	Marble
Cork	Coin
Leaf 	Spoon
Ice-cube	Eraser
Pumpkin	Potato
Lemon	Wax
Tomato	Candle