



Melting and Freezing

How Matter Changes State

True or False

Gold can melt in a very hot fire.



TRUE



FALSE

Answers on the next slide...

True or False  



Gold can melt in a very hot fire.



TRUE

Gold is a solid. If it gets hot enough, it will turn into liquid.

Today's Purpose

Our Job

We will watch ice turn to water.

Why?

To understand how things change state.

Link

Like a frozen heart thawing in a story.



Key Words



Solid

Hard and keeps its shape. Like ice or a rock.



Liquid

Wet and flows. Takes the shape of its container.



Melting

Turning from a solid to a liquid. Needs heat.



Freezing

Turning from a liquid to a solid. Needs cold.

What is a Solid?



Solids Keep Shape

A solid stays the same shape.

Examples

Ice is a solid water.

A chair is a solid too.

What is a Liquid?



Liquids Can Flow

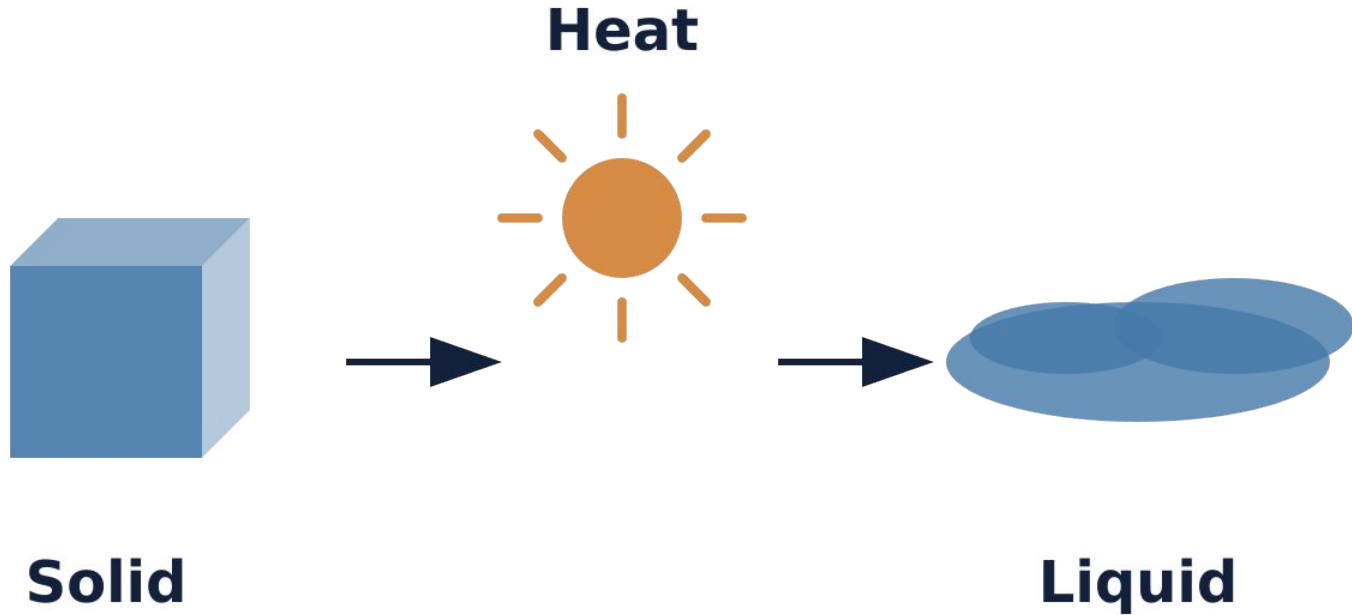
A liquid can move and pour.

Examples

Water is a liquid.

Milk is a liquid too.

The Melting Process



Model: Watch the Ice



Look at the ice cube on your desk.

1. Touch it gently. Is it hard or wet?
2. Hold it in your hand for one minute.
3. Look at your hand. What do you see?

Fill in the blanks

When ice gets warm, it turns into _____. This is called _____.
Water is a _____.

Word bank 

water, melting, liquid, solid, freezing, ice

Answers on the next slide...

Fill in the blanks



When ice gets warm, it turns into **water**. This is called **melting**.
Water is a **liquid**.

Word bank 

water, melting, liquid, solid, freezing, ice

Independent Task



Do: Draw ice before & after.

Why: Show heat changing matter.

Time: 15 mins.

Support: Use 'The ice is...'

Stretch: Explain melting.

Discuss!



Review

What happened to the ice? Why did it change?

Discuss!



You might have said...

The ice turned to water.

It melted because it got warm.

My hand heat made it change.

Exit Ticket

Answers on the next
slide...

What makes ice melt?

1. Freezing air

2. Heat

3. Staying cold

4. Turning solid

Exit Ticket



What makes ice melt?

1. Freezing air

2. Heat

3. Staying cold

4. Turning solid



Keeping Warm

Which Wrap is Best?

True or False

A thick coat keeps you warm by making heat.



TRUE



FALSE

Answers on the next slide...

True or False



A thick coat keeps you warm by making heat.



FALSE

Coats do not make heat. They trap your own body heat to stop it escaping.

Our Job Today

The Goal

We need to keep a bottle of warm water hot.

The Test

We will wrap bottles in **wool**, **foil**, or **bubble wrap**.

We must find which one works best.

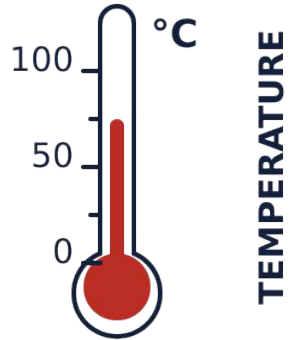


Key Words



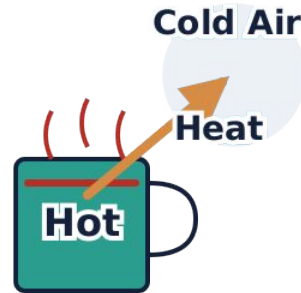
Insulator

A material that stops heat from escaping. Like a winter coat.



Temperature

How hot or cold something is. We use a thermometer to measure it.



Heat

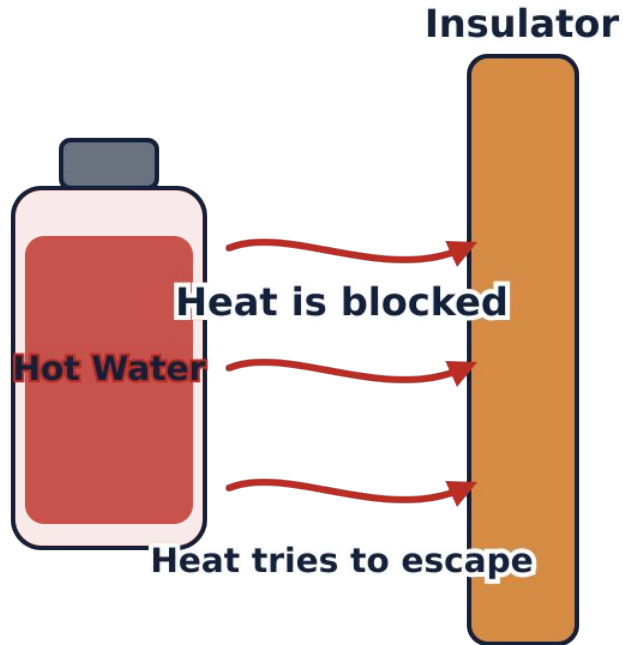
Heat: energy that warms, moves hot to cold.



Material

What something is made of. Wool, foil, and plastic are materials.

Recap: Hot and Cold



Heat Moves

Heat always moves from hot to cold.

The Problem

Warm water in a bottle cools down because heat escapes into the air.

The Fix

An **insulator** wraps around the bottle. It traps the heat inside.

The Experiment

What We Need

- 3 bottles with warm water
- Wool, Foil, Bubble wrap
- Thermometer

What We Do

1. Wrap each bottle in a different material.
2. Wait for 10 minutes.
3. Check the temperature.

Final Answer

Four students used a laboratory thermometer to measure the temperature of water as shown :

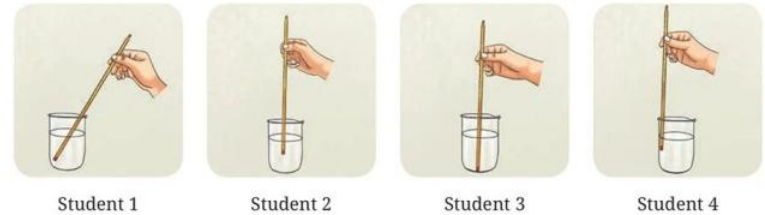


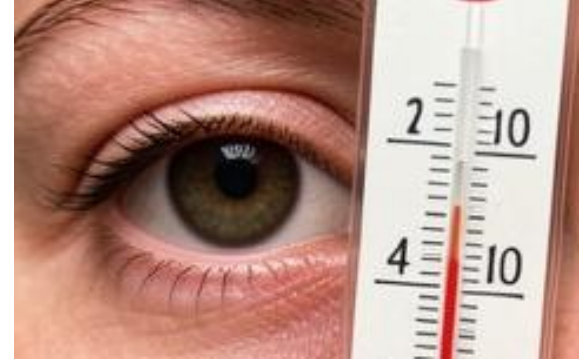
Fig. 7.6

Who do you think followed the correct way for measuring temperature?

- (i) Student 1
- (ii) Student 2 ✓
- (iii) Student 3
- (iv) Student 4

Student 2 is measuring the temperature correctly as the thermometer is held vertically and it is not tilted.

How to Wrap the Bottle



Wrap It Tight

Cover the whole bottle.
Leave no gaps.



Seal It

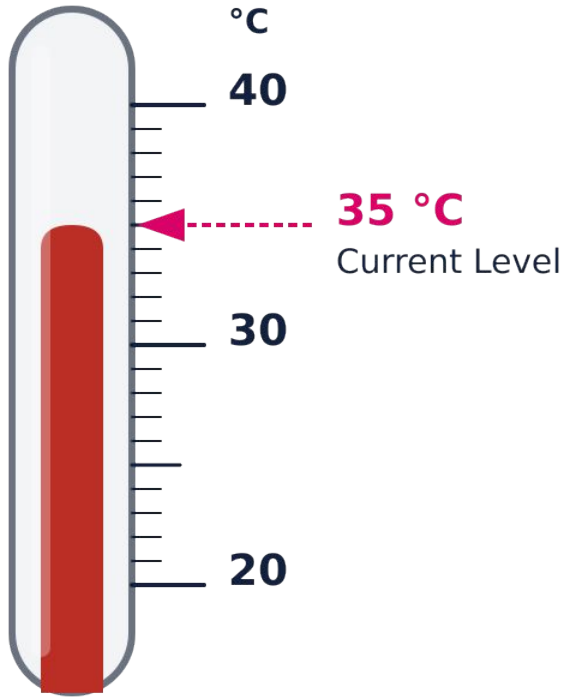
Use tape or elastic to
hold the wrap tight.



Check the Start

Read the thermometer at
the start. Write it down.

Reading the Scale



Look at the Line

The red line shows the heat.

Read the Number

Find the number next to the red line.

Tip

If the line is between two numbers, read the closest one.

Your Turn



Wrap your bottle neatly. Wait 10 minutes. Measure the temperature. Write the number in your table.

Check Your Work

Answers on the next
slide...

Which bottle stayed the warmest after 10 minutes?

1. The one with the lowest number.

2. The one with the highest number.

3. The one wrapped in foil.

4. The one that feels coldest.

Check Your Work



Which bottle stayed the warmest after 10 minutes?

1. The one with the lowest number.

2. **The one with the highest number.**

3. The one wrapped in foil.

4. The one that feels coldest.

What Did We Find?

The Best Insulator

The material that kept the water warmest is the best insulator.

Why?

It trapped the most heat. It stopped the heat from escaping to the cold air.



Discuss!



Thinking Time

If you were going on a cold walk, which material would you choose for your coat? Why?

Discuss!



You might have said...

Wool, because it is a good insulator.

Bubble wrap, because it traps air.

Foil, because it reflects heat.



Floating and Sinking

Shipwreck Science: Will it stay safe?

True or False

A big heavy ship floats because it is full of air.



TRUE



FALSE

Answers on the next slide...

True or False  



A big heavy ship floats because it is full of air.



TRUE

Big ships have air inside. This makes them light enough to float on water.

Last Time: Keeping Warm

What did we learn?

Last week we tested **insulation**.

We wrapped bottles to keep water warm.

Bubble wrap was the best insulator.

It trapped the heat like a coat.



Key Words



Float

To stay on top of the water.



Sink

To fall down to the bottom.



Density

How heavy something is for its size.

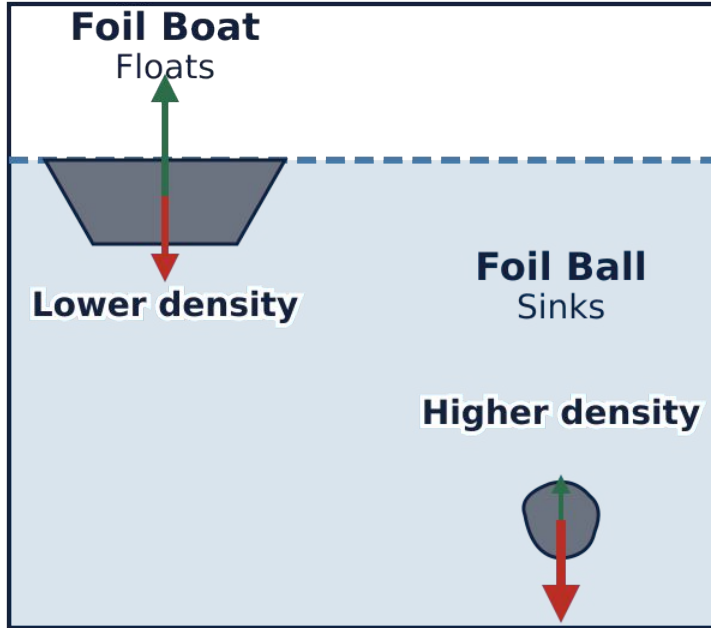


Prediction

A good guess about what will happen.

What makes things float?

→ Upthrust → Weight



Why do things float or sink?

It depends on what the object is made of.

Light things (like wood) usually **float**.

Heavy things (like metal) usually **sink**.

But the **shape** matters too.

A ball of foil sinks. A foil boat floats!



Today's Job

The Storm at Sea

Imagine a ship in a storm.

We need to know which items are **safe**.

Will they stay on the water (float)?

Or will they drop to the bottom (sink)?

We will test 5 items to find out.

How to do the test

1



Step 1

Look at the item. Make a prediction. Guess if it will float or sink.

2



Step 2

Drop the item gently into the water tank. Watch what happens.

3



Step 3

Record your result. Tick the box for Float or Sink.

Let's Try One Together



Model: The Wooden Block

Look: It is wood. It is light.

Predict: I think it will **Float**.

Test: Put it in water.

Result: It stays on top.

My Table:

- Float
- Sink

True or False and why?

If you change the shape of a ball of clay into a boat, it will sink.



TRUE



FALSE

Now it's time to explain why...

True or False and why?

If you change the shape of a ball of clay into a boat, it will sink.



Why is that?

- a) The boat shape pushes more water away, so it floats.
- b) The clay is still heavy, so it must sink.

Answers on the next slide...


True or False and why?



If you change the shape of a ball of clay into a boat, it will sink.



Why is that?

- a) The boat shape pushes more water away, so it floats. 
- b) The clay is still heavy, so it must sink.

Your Turn: Test the Items



Your Task

1. Get your 5 items from the tray.
2. Fill in your **Prediction** column first.
3. Test each item in the water tank.
4. Fill in your **Result** column.

Remember: Be gentle with the water!

Discuss!



What did we find out?

Which items were safe (floated)?
Which items sank? Did your prediction match the result?

Discuss!



You might have said...

Wood floated because it is light.

Metal sank because it is heavy.

Plastic floated because it is less dense than water.



Exit Ticket

What I Learned

I learned that [item] floats because...

What I Will Try Next Time

Next time I will make sure I...



Plant Needs

Growing in a Winter-to-Spring Tale

True or False

A seed can grow into a big plant without any water.



TRUE



FALSE

Answers on the next slide...

True or False



A seed can grow into a big plant without any water.



FALSE

Plants need water to wake up and grow. Without water, the seed stays dry and small.

What Do Plants Need?

The Big Three

To grow strong, plants need three key things:

- **Light:** From the sun. It gives the plant energy.
- **Water:** From the rain or a watering can. It keeps the plant soft and growing.
- **Soil:** Holds the roots tight. It gives the plant a home.





Key Words to Know

Germination

When a seed wakes up and starts to grow.

Nutrient

Food found in the soil that helps the plant stay healthy.

Photosynthesis

How a plant uses sunlight to make its own food.

Variable

The one thing you change in a test to see what happens.

Recap: Floating and Sinking



Last Time

We tested if items float or sink.

Fair Test

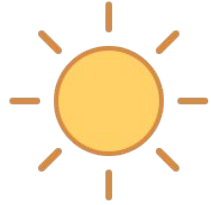
We learned to test fairly.

We changed the **item**, but we kept the **water** the same.

Today, we will test plants fairly too.

Our Plant Test

Pot A: Light



VS

Pot B: No Light



How to Set Up the Test

1

Fill the Pots

Put soil in both pots. Fill them to the same level.



2

Plant the Seed

Push one seed into the soil in each pot. Do this gently.



3

Add Water

Give each pot one small drink of water. Be careful not to flood it.







Where Will They Grow?



One pot gets light. One pot gets no light.

What is a Fair Test?

	Pot Size	SAME
	Soil Type	SAME
	Water	SAME
	Light	CHANGE

Keep Things the Same

To be fair, we must keep most things the same.

- Same **pot size**.
- Same **soil** type.
- Same **amount** of water.

Change One Thing

We only change the **light**.

This lets us see if light really matters.

Set Up Your Pots



1. Get your two pots and labels.
2. Plant your seeds in the soil.
3. Water both pots.
4. Put one pot in the light.
5. Put one pot in the dark box.

Check Your Understanding



Question 1:

What do we change in our test?

Question 2:

What must stay the same in both pots?

Question 3:

Why do we give the seed water?

Answers on the next slide...

Check Your Understanding



Answer 1:

The light

Answer 2:

The pot size and water

Answer 3:

To help it grow

Summary

Plants need light, water, and soil to grow.

We set up a fair test to see what happens without light.

We kept the pots and water the same.

Now we watch and wait!





Sound and Vibration

Musical Messages

True or False

Sound can travel through empty space where there is no air.



TRUE



FALSE

Answers on the next slide...

True or False



Sound can travel through empty space where there is no air.



FALSE

Sound needs air or an object to travel through. It cannot move through a vacuum.

What is a Vibration?

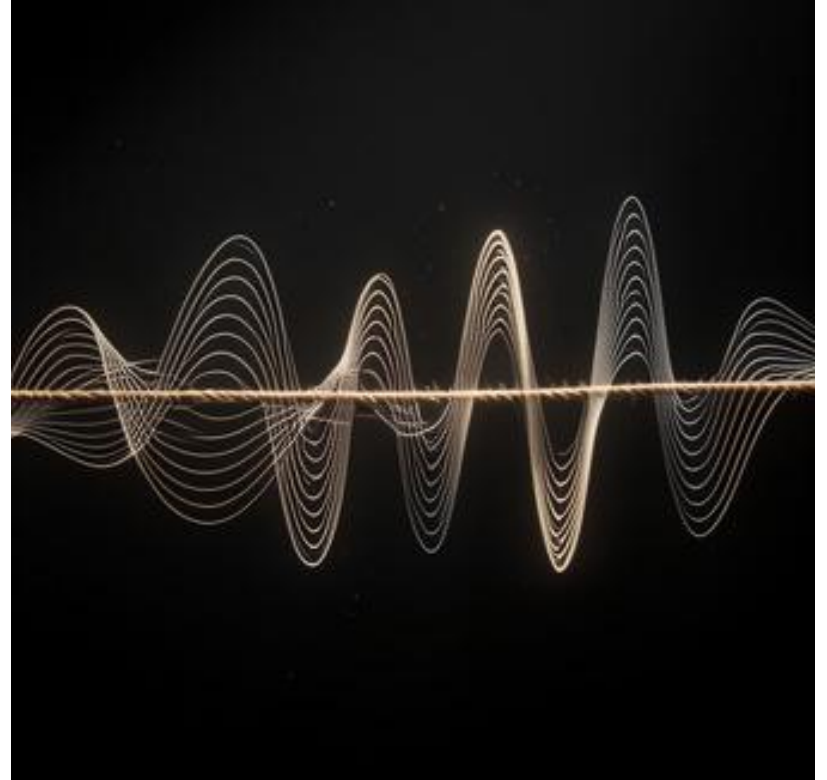
The Shake

A **vibration** is a fast shake.

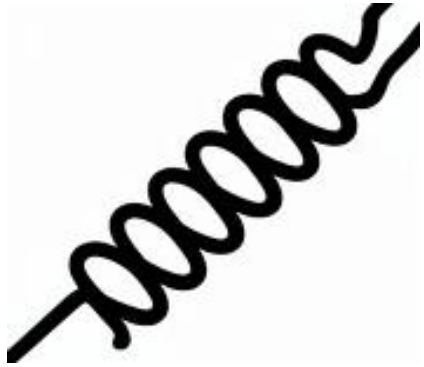
Sound starts with a shake.

When an object shakes, it pushes the air.

This makes **sound waves** travel to your ears.



Key Words



Vibration

A fast back and forth shake.



Sound wave

A push of air that carries sound.



Energy

The power to make things move or happen.



Hearing

Using your ears to catch sound waves.

Recap: Plant Needs

Last Time

We planted seeds for Perdita's garden.

What We Found

Plants need **light**, **water**, and **soil** to grow strong.

Without light, plants cannot make food.



The Drum Experiment

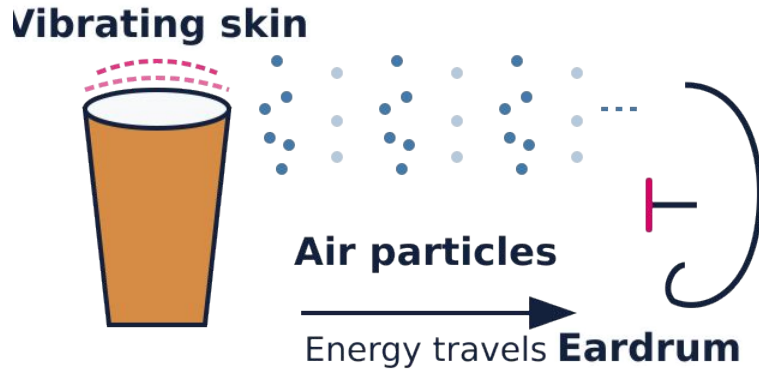
Seeing the Shake

We can use rice to see sound.



When you hit the drum, the skin shakes.
The rice jumps up and down!

How We Hear



From Drum to Ear

1. The drum skin vibrates (shakes).
2. It pushes the air.
3. The air pushes your **eardrum**.
4. Your brain tells you it is sound.

Let's Try It

1. Get Ready

Put some rice on the drum skin.



2. Hit the Drum

Tap the drum gently with your beater.



3. Watch Close

Look at the rice dance on the skin.



Your Turn



Anchor Point

Do: Place rice on a drum and strike it.

Why: Observe how sound causes motion.

Time: 10 mins

Task

1. Put rice on the drum.
2. Hit gently, observe.
3. Hit harder, note changes.

Discuss!



Talk About It

Why did the rice jump when you hit the drum?

Discuss!



You might have said...

The drum skin was vibrating.

The sound made the rice move.

The shake pushed the rice up.

Fill in the blanks

Sound starts when an object _____. The rice jumped because the drum was _____. We hear sound with our _____.

Word bank 

vibrates, shaking, ears, sleeping, still, eyes

Answers on the next slide...

Fill in the blanks



Sound starts when an object **vibrates**. The rice jumped because the drum was **shaking**. We hear sound with our **ears**.

Word bank 

vibrates, shaking, ears, sleeping, still, eyes

Summary

What We Learned

Vibration is a fast shake.

Sound starts when things vibrate.

We can see, feel, and hear sound.





Pitch and Volume

The Shepherd's Flute: Making Signals for Help

True or False

Sound can travel through empty space where there is no air.



TRUE



FALSE

Answers on the next slide...

True or False



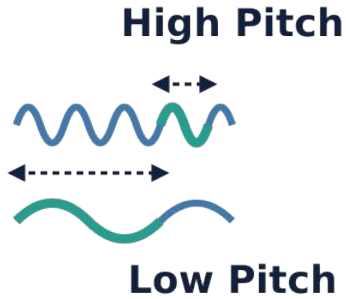
Sound can travel through empty space where there is no air.



FALSE

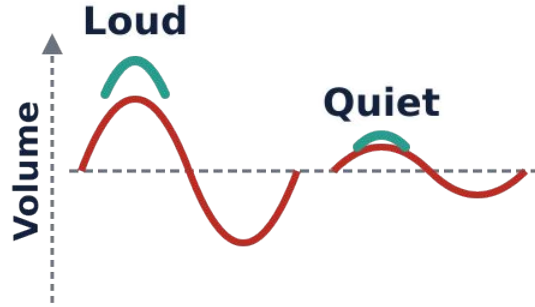
Sound needs air or another material to travel through. It cannot move through a vacuum (empty space).

Key Words for Sound



Pitch

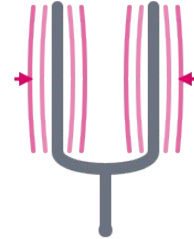
How high or low a sound is.



Volume

How loud or quiet a sound is.

Vibration
(A fast shake)



Vibration

A fast shake. Sound starts here.

Recall: What is a Vibration?



Remember Last Lesson

Sound starts with a shake.

This shake is called a **vibration**.

When things vibrate, they push the air. We hear this as sound.

High and Low Pitch

Pitch

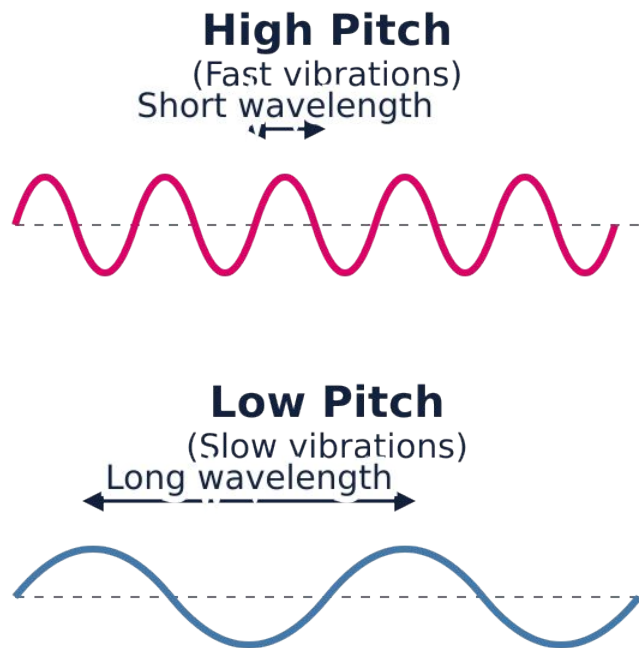
Pitch is how high or low a sound is.

The Rule

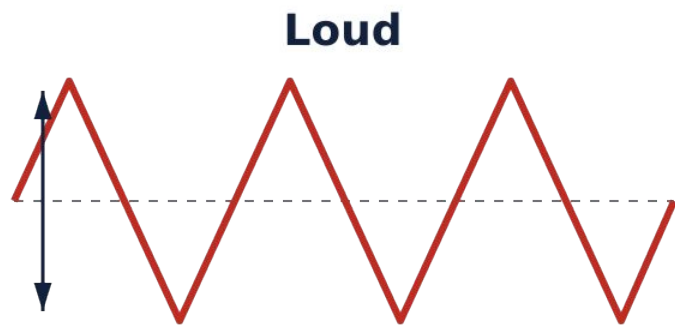
Fast vibrations = High sound.

Slow vibrations = Low sound.

Think of a mouse (squeak) versus a bear (growl).

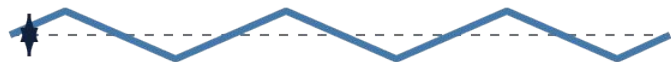


Loud and Quiet Volume



Big vibrations

Quiet



Small vibrations

Volume

Volume is how loud or quiet a sound is.

The Rule

Big vibrations = Loud sound.

Small vibrations = Quiet sound.

Hit a drum hard for a loud bang. Tap it gently for a quiet tap.

The Shepherd's Flute

Shepherds use flutes to signal for help.
They need different sounds for different messages.

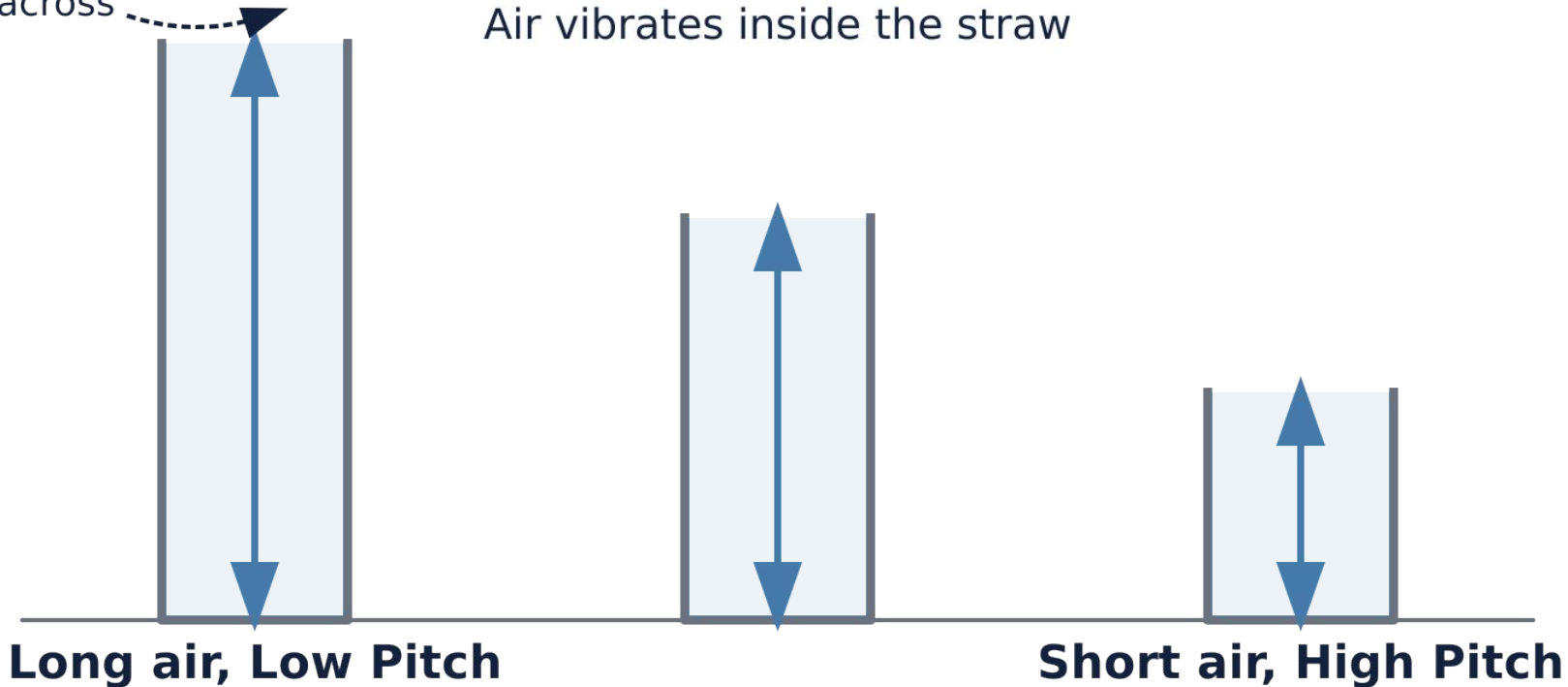


A short pipe makes a **high** sound.
A long pipe makes a **low** sound.

How Straw Length Changes Pitch

Blow across

Air vibrates inside the straw



Task: Straw Pan Pipes



Do

Blow through the different straws. Listen to the sound.

Why

To learn how to signal for help like a shepherd.

Time

15 minutes

Success Steps

1

Step 1

I made a high sound with the short straw.

2

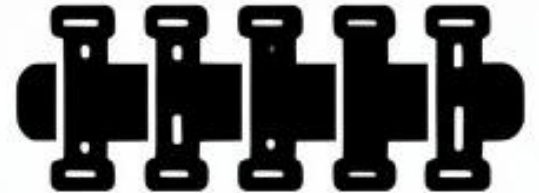
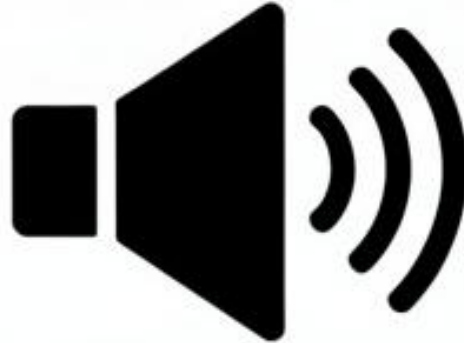
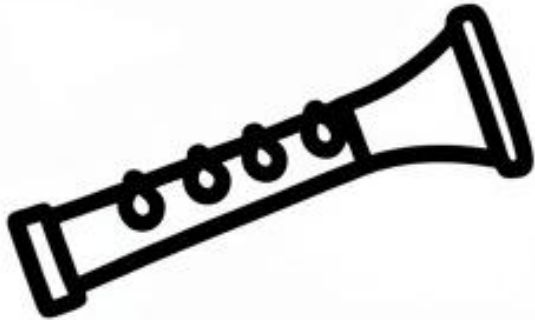
Step 2

I made a loud sound by blowing harder.

3

Step 3

I sorted the straws from high to low pitch.



Check Your Understanding

Answers on the next
slide...

Which straw will make the highest sound?

1. The longest straw

2. The shortest straw

3. The widest straw

4. The red straw

Check Your Understanding



Which straw will make the highest sound?

1. The longest straw

2. **The shortest straw**

3. The widest straw

4. The red straw

Discuss!



Exit Ticket

What did you learn about pitch and volume today?

Discuss!



You might have said...

I learned that short straws make a high sound.

I learned that blowing hard makes a loud sound.

I learned the difference between pitch and volume.



Push and Pull

Forces at Work

True or False

You can move an object without touching it.



TRUE



FALSE

Answers on the next slide...

True or False  



You can move an object without touching it.



TRUE

Yes! Magnetism and Gravity are forces that can pull or push objects without touch.

Lesson Purpose

The Job

We are learning to **push** and **pull** safely.

Why?

This helps us move **heavy boxes** at work.

PfA: Employment

Golden Thread: Independence



Key Words



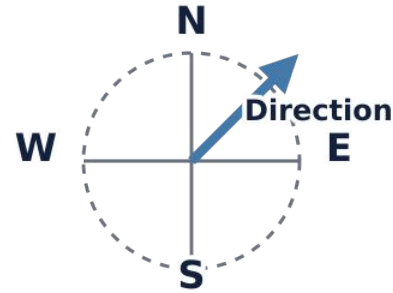
Force

A push or a pull.
Forces make things move.



Motion

Moving from one place to another.



Direction

The way something moves,
like left or right.



Gravity

A force that pulls things down to the ground.



What is a Force?

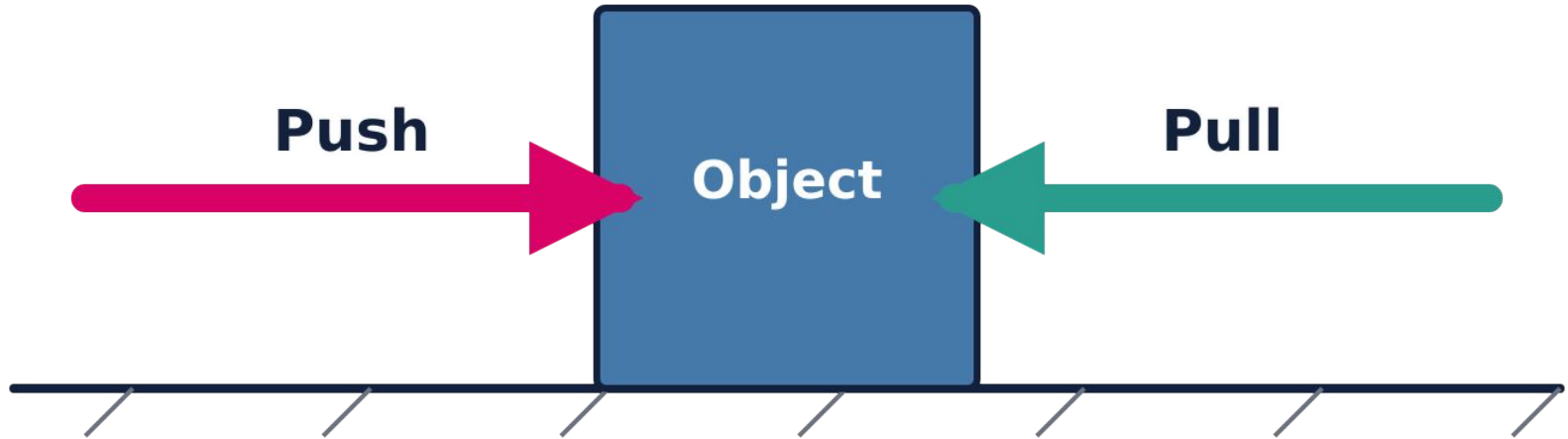
A **force** is a push or a pull.

We use forces every day.

Forces can:

- Make things **start moving**.
- Make things **stop moving**.
- Change the **direction**.

Force Diagrams



Push or Pull?

Push

Move an object away from you.

PUSH

Away from you



PULL

Towards you



Pull

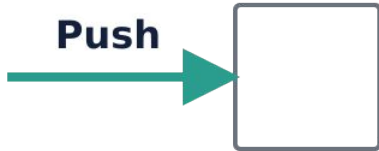
Move an object towards you.

How to Draw Forces



Step 1

Draw the object. For example, a box.



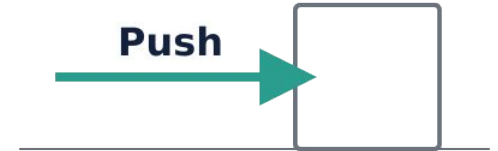
Step 2

Draw an arrow. The arrow shows the direction of the force.



Step 3

Label the arrow. Write 'Push' or 'Pull'.



Your Turn: Move the Box



Anchor Point

Do: Use spring scales to pull weights.

Why: Learn safe heavy box moving at work.

Time: 14 mins

Task: Move the box using equipment.
Try a push, then a pull. Draw arrows on your sheet to show your actions.

Check Your Learning

Answers on the next
slide...

Which force do you use to close a drawer?

1. A Pull

2. A Push

3. Gravity

4. A Twist

Check Your Learning



Which force do you use to close a drawer?

1. A Pull

2. **A Push**

3. Gravity

4. A Twist

Discuss!



Think and Talk

Why is it safer to push a heavy box than to pull it?

Discuss!



You might have said...

Pushing helps you see where you are going.

It is better for your back.

You have more control.

Review and Exit

Success Steps

1. I moved the box two ways.
2. I used an arrow to show direction.
3. I named the force correctly.

Exit Ticket

I learned: _____

Next time I will: _____

