

## Lesson Plan

# Thunder & Lightning



### In this lesson each student will learn:

1. The definition of thunder and lightning.
2. How to make a sound similar to thunder.
3. How static electricity works (that is, how positive and negative charges are made).

### Thunder

Thunder is the sound made as a result of lightning.

It is either a sharp, loud crack or a low rumble.

It is caused by the rapid expansion of air around the bolt of lightning.

### Lightning

Lightning is a charge of electricity that travels out from a thunder cloud.

Like electricity, the bolt of lightning moves from the negative to the positive.

This creates a giant spark.

### Experiment 1: How thunder is made

#### Materials needed:

- Brown paper bag



#### Method:

1. Blow up the brown paper bag until it is full.
2. Now twist the end of the bag and close it.
3. Quickly burst the bag by clapping it with two hands.
4. Listen.

#### Result:

The bag makes a noise!

### Why does this happen?

When you hit the bag, the air inside it compresses or squeezes quickly.

This puts pressure on the bag.

The bag bursts and the air is pushed outside.

This air moves in a wave.

When it reaches your ear, you hear the sound.

### How is this similar to thunder?

Thunder is made in a similar way.

When lightning strikes, the air around it expands quickly.

This puts pressure on the air and causes it to move.

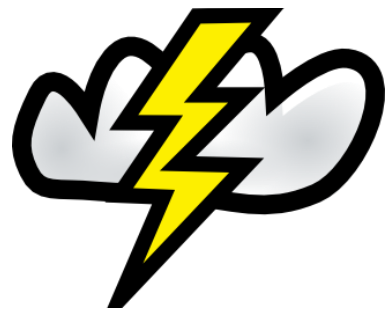
The air moves in a wave.

When it reaches your ear, you hear the sound of thunder.

### Experiment 2: How lightning is made

#### Materials needed:

- Balloon
- Ball of wool
- A wall



#### Method:

1. Blow up the balloon and tie a knot in it.
2. Next quickly rub the balloon with the ball of wool.
3. Next place the balloon against the wall and let go.
4. Watch what happens.

#### Result:

The balloon sticks to the wall.

### Why does this happen?

As you rub the balloon, it gets covered with negative charges.

The wall has a positive charge and the balloon has a negative charge.

The negative charge is attracted to the positive charge and this is why it sticks to the wall.

Opposites attract!

### How is this similar to lightning?

Lightning is made in a similar way.

The electricity moves from the negative towards the positive.

Some parts of clouds end up with a lot of negative charges (like the balloon).

The earth can have positive charges (like the wall).

If the difference between the two is big enough, the negative charge will be attracted to the positive charge.

A spark will jump between the cloud and the earth because opposites attract.