EPISODE GUIDE | EPISODE 9

WHERE DO WE GET ELECTRICITY?

CONCEPTS

Magnets & Electricity; Motors & Generators; How Electricity Gets to our Homes

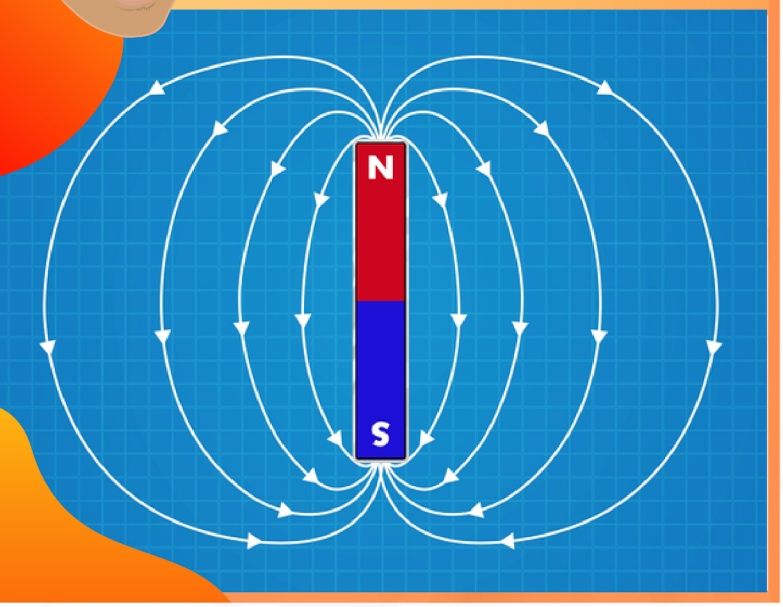
CURRICULUM CODES

S3FE-IIIg-h- 4, S3FE-IIIi-j-3, S4FE-IIId-e-3, S5FE-IIIh-8, S5FE-IIIi-j-9, S9FE-Ii-32, S9FE-IVc-46, S10FE-Ii- 53 to 54

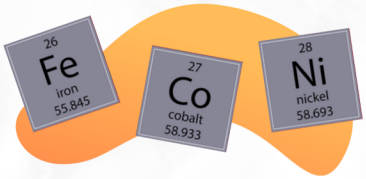
#1 MAGNETS & ELECTRICITY

"Surrounding any magnet is a force field called a MAGNETIC FIELD. Magnets have two poles: the NORTH POLE and the SOUTH POLE.

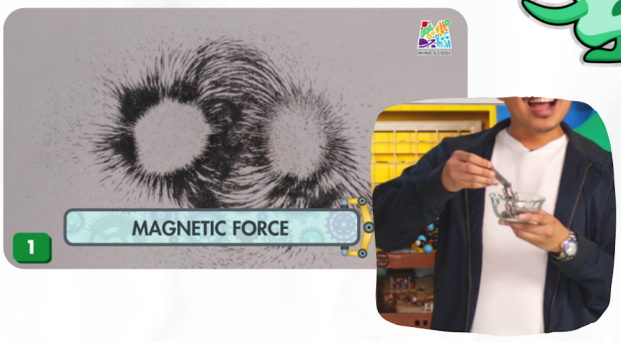
The magnetic field always points from the north pole to the south pole of a magnet."



"When things containing lots of iron, nickel and cobalt are in a magnetic field, a MAGNETIC FORCE is created."



"This magnetic force can make certain things stick to magnets. It can also make certain things line up with the magnetic field."



#2 MOTORS & GENERATORS

"ELECTROMAGNETS are magnetic only when there is electricity."

"They are magnets that can be turned on and off!"

ELECTRIC MOTORS are devices that can convert electrical energy into mechanical energy.

Meanwhile, **GENERATORS** do the opposite and convert mechanical energy into electrical energy.

#3 HOW ELECTRICITY GETS TO OUR HOMES

POWER RATING

Amount of electrical energy consumed per unit time by a device or appliance.

"It's measured in units of **WATTS**! The higher the power rating, the more energy is consumed per second."

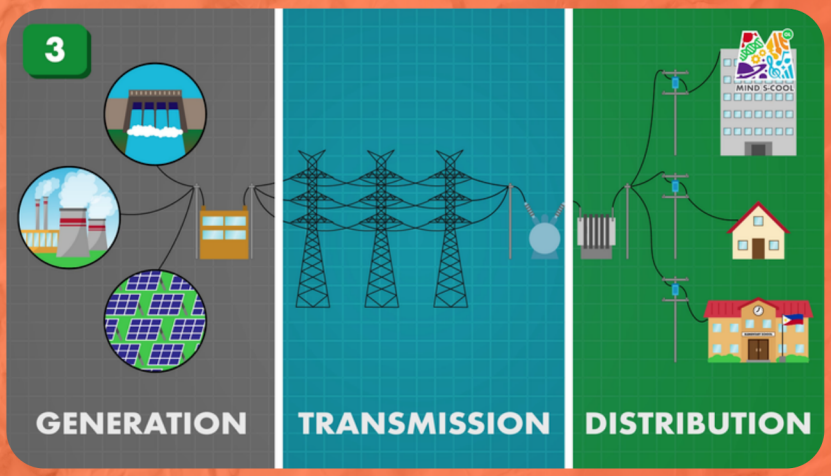
50 watts

800 watts

For it to work, the electric kettle needs 2,000 joules of energy every second.

2000 watts

"This is where some other form of energy is converted to electrical energy."

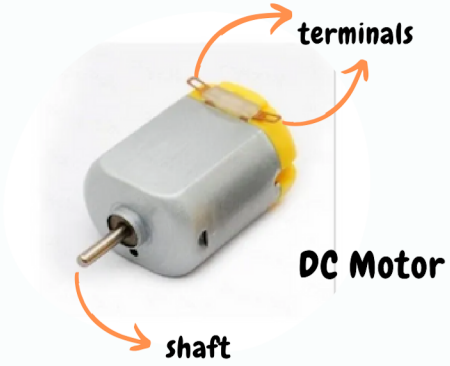


"This is where electric power is brought down from transmission lines to neighborhoods."

"Large amounts of electric power is carried from power stations to users."

HOW TO MAKE A GENERATOR FROM A MINI MOTOR

MATERIALS



PROCEDURE

1. Insert the (+) and (-) ends of the LED to the terminals of the DC motor.
2. Cut around a 10-inch length of string and tie one end to the shaft of the DC motor.
3. Wind the rest of the string around the shaft of the DC motor.
4. Pull the string quickly to turn the shaft quickly and watch the LED light up!

In this activity, we see that the mini motor can be used as a generator by converting kinetic energy to electrical energy!