

# Input vs. output

Are they ever the same?



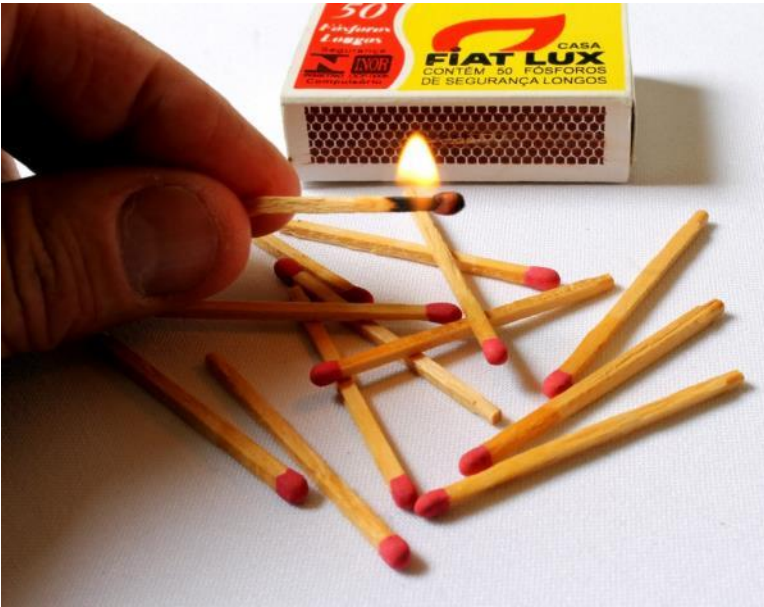
# Potential



# Kinetic



# Energized?



# Try it!



## Put out the candle.

1. Safely light the candle.
2. From two feet away, blow out the candle using as little energy as possible.
3. Re-light the candle safely. Increase your distance by a foot, and try again to blow it out.
4. Continue until the distance is too great to blow out the candle.

Distance from candle (Measured feet)	Energy exerted (10-point scale)

# Law of Conservation of Energy



# Incandescent vs. LED

LED = Light emitting diode



## 60 watt Incandescent



Yearly Operating Cost - \$12.92

Energy Usage - 60w

Brightness(Lumens) - 800

Bulb Lifetime- 750 Hours

## 12 watt LED



Yearly Operating Cost - \$2.58

Energy Usage - 12w

Brightness(Lumens) - 800

Bulb Lifetime- 50,000 Hours+



# So ... what's a watt?



# Try it!



## Balloon vs. bulbs

1. Compare differences in heat between an incandescent bulb and an LED.
2. Predict how long it will take for the incandescent bulb to pop the balloon.
3. Compare your prediction with the actual amount of time.
4. Approximate the amount of energy “wasted” as heat energy.



# Show whatcha know...

## Elaborate on the points below.

- Energy cannot be created or destroyed.
- Kinetic energy and potential energy are the two main forms of energy.
- Energy can transform into different types of energy.
- When energy transforms, it often becomes more than one type of energy.



# The law in action: efficiency vs. waste

True or false?

If a phone charger is plugged in but not charging a phone or a tablet, it still uses electricity.

**True!**

This is sometimes called *vampire power*, *leaking electricity* or *phantom load*!



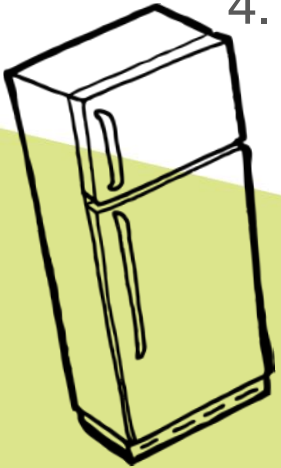
# The law in action: Electric currents



# Your turn

## Stop the waste

1. Develop a definition of *energy efficiency*.
2. Create a list of things that use energy around the home.
3. Organize your list: frequency of use, amount of energy consumed, importance, type of energy.
4. Choose at least 10 items on the list and offer suggestions to make them more energy efficient and/or how to minimize wasting energy.



# Your turn

## Stop the waste

5. Convince others to be more energy efficient!  
Prioritize and organize your list from Step 4.
  - How easy/difficult will it be for people to make the change?
  - How much of a positive impact will the change make?
  - What else should you consider for your recommendations?
6. Present your recommendations to the class.

