

## Energy

1. What does the word energy mean to you?
2. What are some issues surrounding energy in our world today?
3. What does energy in the \*real world\* look like?

1. What does the word energy mean to you?

- electricity
- light
- wind
- ability to do work
- heat
- food, rest for body
- potential, kinetic
- effort of doing or changing something

2. What are some issues surrounding energy in our world today?

- transportation → release of greenhouse gases
- climate change
- . ⇒ - the way we gather/produce energy
- pollution
- natural disasters
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3. What does energy in the \*real world\* look like?

- everything, sort of .... everything has energy
- movement / consumes energy
- effort / change.

## Energy

In science, energy has a very precise definition:

Energy is the ability to do work.

So ... what is work?

## So...what is work?

Five Experiments	Yes	No
1) Holding a book <i>→ no movement</i>	21	1
2) Walking at constant speed holding a book	25	1
3) Lifting book	26	☺ <i>←←←</i>
4) Pushing wall <i>→ no movement</i>	24	1
5) Swing mass on rope in a circle	24	1

In order for work to be done,  
3 things must happen

- 1) There must be a force.
- 2) An object must move
- 3) At least part of the force must be directed in the direction of the motion

## Types of Energy

Potential Energy  
(stored energy)

chemical energy (batteries, food)  
Combustion of fuels

elastic energy (springs - anything  
that can be  
compressed or  
stretched)

nuclear energy (reactors, bombs)  
Sun

electromagnetic energy (batteries gain,  
magnets, charged objects)

gravitational energy (higher up = more  
energy)

Kinetic Energy  
(energy of motion)

wind energy (movement of  
air)

light

radiant heat

electrical (current)

anything that moves





Questions for discussion:

1. With the knowledge of the scientific meaning of energy, does this change the answers to your questions at the start of class?
2. How can we recognize energy in the world around us?
3. Which energies are possible to harness to help make society more sustainable?
4. What type of energy production would you like to know more about?

