10-28-2026

Answer the question

22/w

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Topaz

Science of heat

How can we use the mass and volume of water to calculate the specific amount of heat energy absorbed by it?



Our lab

— mass = volume (for water only)

"How much heat did your what absorb?"

Energy

How does the definition of "work" related to the conspet of energy transfer?

You can measure energy. You cant hold it in your hand. You can caltulate how much energy you had. Example: Wind has energy, Gas has energy. Something heavy over your head has energy. What is energy? Energy is the ability to do work. Energy is nothing more than the ability to do work. work has to move.

Define energy and explain its relationship to work

Why have we related temp. to heat for so long?

Temp. is not heat. When you remove heat/Joules the temp goes down.

1g = a rasain

What is Cp?

C - Conist P - Pessure

meaning: Specific heat Capacity

Why is equation specifically only for water? Are they certain equations for metal and glass?

$Cp_{H_2O} = \frac{4.2\,J}{1g \cdot C^\circ}$ (For water)

If you want your water to heated it takes 4.2J per gram per c° time 58°.

Water need everything to be mulipulied by this equation.

Example:

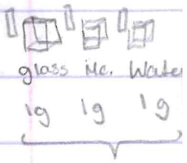
$\Delta T = T - T_o$

$= 55° - 20 = {}^{+}35°C = \Delta T$

Math for

$\Delta Q = m \cdot \Delta T \cdot Cp$

These are all ideas



deltaQ is the chang in heat

heat is diferent that temp

grams — We only use grams

1mL = 1g
1000 ml = 1000g = 1000kg

Work: force = Push or Pull

(Work) = force • distance

We are using the smyb Q to "measure" Energy.

Newton
1 newton is equal to ½ pound = 0.225 lbs.

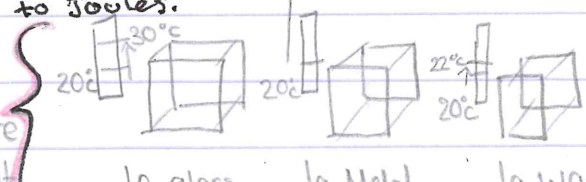
No one uses pounds

Newton
1n • 1m = 1 Joule
Heat is energy measure in Joules.

Time
Joules

Heat is measure by?

What do Joules provide to heat? and what does heat provide to Joules?



How does the material (g, m vs w) affect the amount of energy needed to chengeits temp?

10.29.2026
messy notes + poster - starting on friday

Science of heat

(LAB + notes)

Why can't energy be directly measured in real time?

You can not measure energy directly

What is the ability to do work?

Energy is an idea

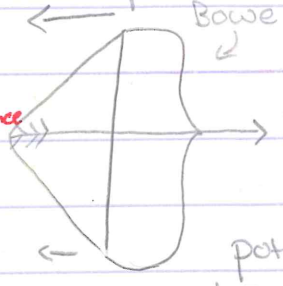
Different forms of energy

Why do we need different kinds of energy? Why do we need different kinds of energy measure? What is the importance

- heat
- Kenetic
- potenial energy - it's right there but it hasn't happened yet
- gravitational.

How do we use this different kinds of energy in daily life. Are they usefull or just used daily

Example



Chemical energy is being used in the archers muscle and the muscle ending was motion and heat. Potential energy is used before the arrow is let go of

potenial energy because the bow could launch off

potenial energy is stored energy that an object has

Units of Energy

1) Joule = comes from conspect of work

work = force x dist.

This equation makes Joule (work) because it uses

Why are Joules such an important thing in Hi?

Joules aren't that big

1 mile long

1.4km

1 km

100 mph = 130 km

? Kilograms and miles per hour cannot always be compared ba they are measure differ ?

2) Calorie } How big is a Calorie compared to a clarible

How come Joules are much smaller than a calorie but have a big number in return

lower case > calorie = 4.2 J

upper case > Calorie = One food Cal. = 1000 scienc? cal.

compared

1) KJ can be seen as like a 1-liter bottle of wate

2) Joule would be a drop of water compared.

21 -> 22 C
1g H_2O

4.2 J = 1 calorie

How come there's a 0th law when the first law came before the zeroth.

Laws of thermodynamics

0th = 1st law

1st law = if you have a closed system. No came in the room and adeded to the 34 people in the room.

What's a domain? ??? all of these have domains

Kilo Joules = 1,000 Joules

KJ

Mega Joules = 1,000,000 Joules

MJ

B.T.U = One pinte. > most things are measured in b.t.u.s

British thermal unit

'Energy is being everywhere' cant we see sometypes so as like the the bow. Cant have see the arrow using energy to pul it back. And use strenght against it?

There is energy everywhere but for there to be change in the room all the heat has to add up to zero

Change is energy

Ex: Change could use energy as a firework exploding

Are the numbers we are calculating important?

What is the meaning behind this math? Why are we calculating important numbers to get nothing in returnn?

smybol

$\Delta \$_m + \Delta \$_c =$

$+10 + -10 = 0$

3 What are domains

domains are the concept depending on whether you are talking about the internet, physics biology or math

Marlowe Whittington

Science of heat

messy notes:

Energy and work

Energy: the ability to do work. It is a measurable quantity.

Work: The process of transferring energy. It is calculated as:

Work = Force x Distance

Unit: Newton (N) force, Joule (J) for work/energy

Relationship: Work is a from of energy transfer.

Heat: A form of energy measured in Joules (J)

Temp: A measure of how hot or cold something is. When heat is added, temperature rises; when heat is removed, temperature drops.

Temp. Change: The diference between final and inital temperatures $\Delta T = T_f - T_i$

formula – $Q = m \cdot Cp \cdot \Delta T$

- m: Mass (g)
- Cp: Specific heat Capacity (J/g·C)
- ΔT: Change in temp (C°)

Law of Thermodynamics

1st law- is a closed system, energy is neither created nor destroyed only transferred.

Froms of energy

- > Kinetic
- > Potential
- > Gravitational

Units of measurement

- > 1 Joule (the work done by 1 Newton over 1 meter)
- > 1 calorie = 4.2k
- > 1 kJ ≈ 1 liter of water
- > 1 kcal = 1,000 calories