Zoe H
10/4

24/25

Kinetic Energy and its Relationship to TEMPURATURE

A law of physics says when you compress a gas it has to get hot.

Energy is the ability to do work

Energy - measured in joules

Heat Energy

Newton - he was an amazing person but didn't understand energy.

nobody liked him

had an idea of life energy. Vis Viva

Moving objects had an inner spirit

WHAT IS ENERGY?

Its not a thing

Emilie du Châtelet

- published many scientific works
- 16, daughter of super rich french man ← were they royal or just rich
- married general at 19
- 23 discovered advanced mathematics
- her and Voltaire had an affair and he moved in w/ her

distance / time

they could see mass and velocity but they didn't know what to do with it.

Newton → mass • velocity
mass • velocity^2 ← Liebniz

- newton came up w/ laws of motion

- how high do you have to drop the ball so they are dropping at double speed

this is really sexist

Leibniz was right

can measure the speed you were going by the skid marks.

"She was a great man, whose only fault was being a woman" died from child birth

took a hundred years for this idea to be accepted.

when was it finally accepted?

Kinetic Energy

this is the equation for kinetic energy

$K.E. = \frac{1}{2}mv^2$

Joules $= \frac{1}{2}(2kg)(5m/s)^2$

mass • velocity

$K.E. = \frac{1}{2}mv^2$

Static electricity ← not continuous energy

ENERGY IS A CONCEPT

1780

They thought electricity was the energy of life.

Mary Shelly wrote frakenstien based on the thought that electricity is the energy of life.

when was frakenstien published

he comes back to life bc of electricity

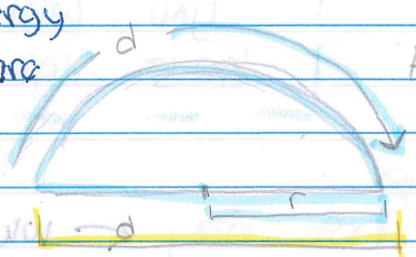
Zoe H
10/5

Kinetic Energy and its relationship to Tem

kinetic energy - the energy of motion

what other types of energy are there

throwing a baseball
force
distance
it is work you put work into a ball the ball had kinetic energy



distance
Arc length.
$r \cdot \pi$

$V = \frac{d}{time}$ ← meters
seconds

$K.E. = \frac{1}{2} m v^2$

energy measured in joules

when you add heat, more particles go faster because you are adding kinetic energy

Adding energy speeds up the particles

if you take away heat do the particles slow down

when talking about somethings tempurature, you are talking about the average kinetic energy in the particles

starts at absolute zero

tempurature = average kinetic energy in the particles

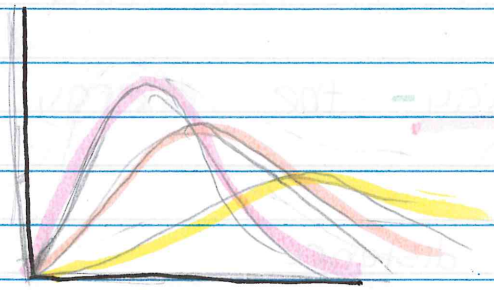
3 temp scales
Metric
Farenheit
Kelvin

How cold can it get, is there a limit? absolute zero

if the velocity goes to 0, if the particles stop

0°C is when fresh water freezes, 100°C is when water boils

0°F is the temp that salt water freezes at, 32°F is when fresh water freezes, 100°F is a nice bath



does this mean that every thing has light we just can't see it?

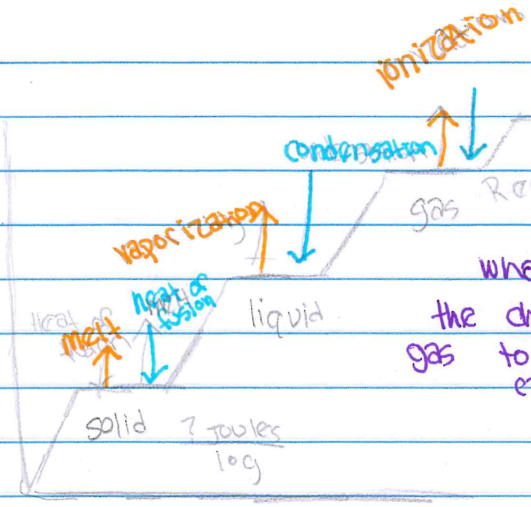
If you have heat you will have light

golden gate bridge expands on hot day ← who came up with the technology of moving expasion plates.

Every thing expands with heat

do humans expand with heat? Is this why when wounds swell they are hot?

Extra credit.



what is the change from gas to plasma called?

If you can see it, it is not a gass

Condensation is gas changing to liquid vaporization is liquid changing to gas

water vapor condenses back into liquid water — vapor tone

How many joules does it take to melt 1 gram of water?

HEAT OF FUSION

the joules it takes to go back and go forth between liquid and solid is the same

Pressure change

{ water boils at a lower temp at higher altitude. }

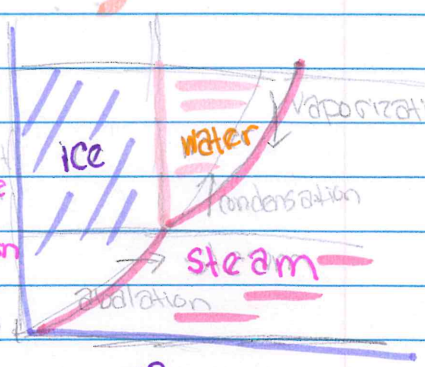
hen did they land back on earth?

In the summer we sent some astronautes to the moon. now do you manage re entry?

artemis II

orion

test run want to send more ppl to the moon



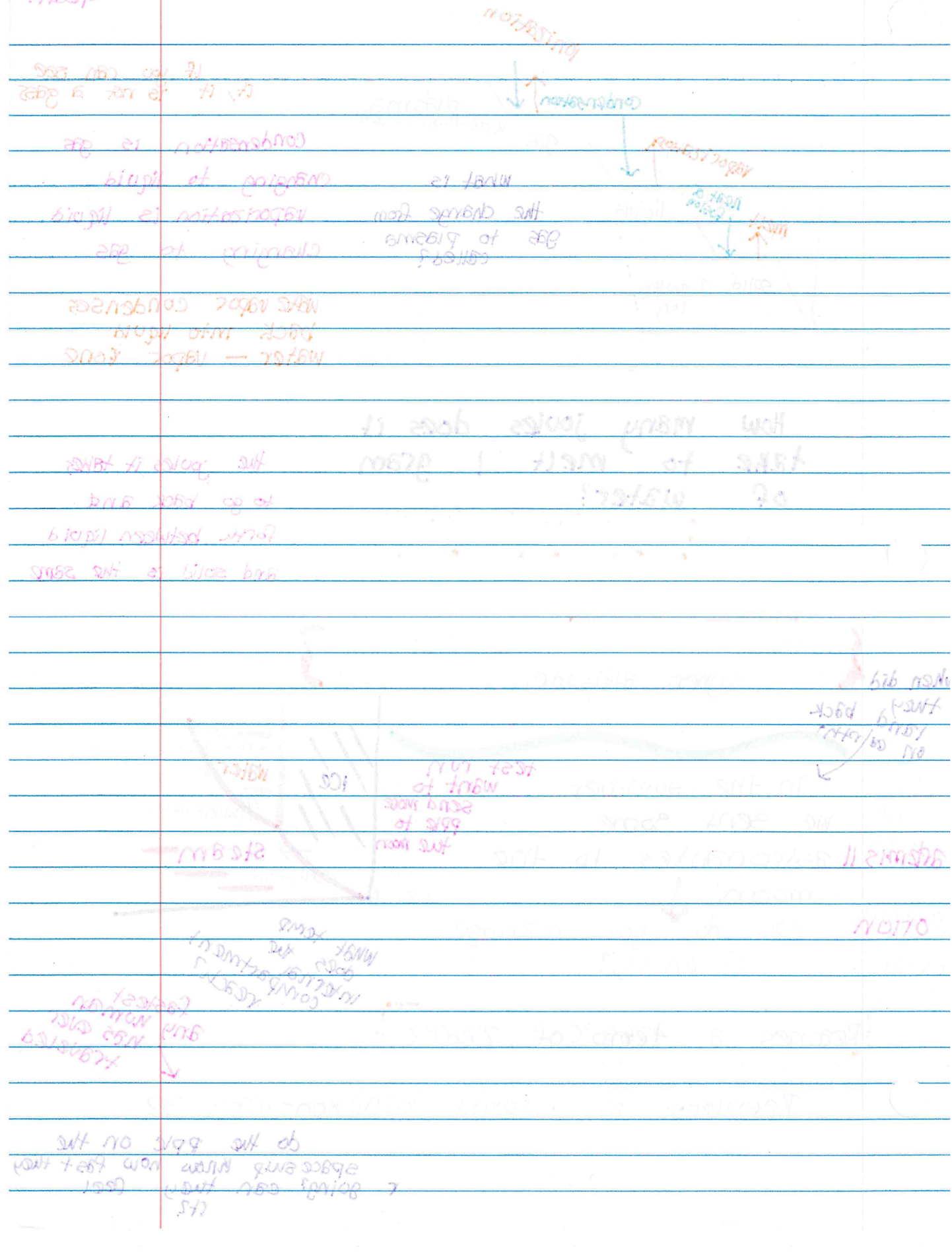
What temp does the internal compartment reach?

Reaches a ~~temp~~ °C of 2760° C

fastest any human has ever traveled

Reenters at around 40000 mph - Mach 32

do the ppl on the spaceship know how fast they r going? can they feel it?



Extra credit

Any kind of ~~metal~~ melts way beforre 2760°C

- outer most layer chars sacrificial cover
shield sacrifices and chars
or to protect the inner craft.

When you compres a gas it becomes plasma and heats up
Nothing is on fire, it just is enguifed in plasma

avcoat - protect from heat

parachutes deploy to slow down re-entry to 27 kmph

they have a shelter what is a for solar storms solor storm

rotates until the heat
Sheild is facing towards earth
splash down off
the coast of san deigo