10 · 26 · 2026

Marlowe Whitt
Topaz

Quick notes today - messy notes due on wed.

Thermodynamics

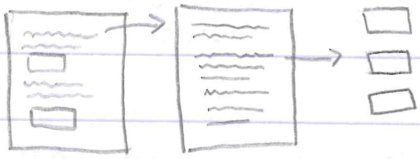
Thermodynamics
- How to take notes
- History of heat on Earth
- the math to calulate heat

How to take notes -

Anonation - with notes, and leave space between each notes.

> taking notes is not just taking notes because you need to re-write to put it into your brain

C.W.Y.C. - catch what you can → Become messy notes

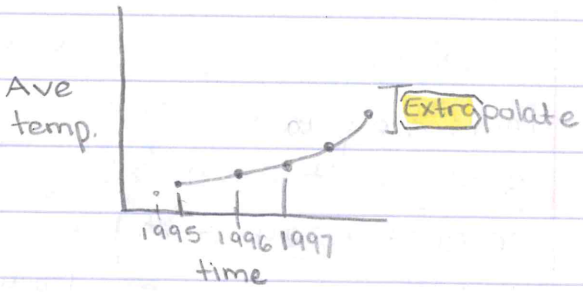


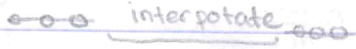
History of heat on Earth

> gobal warming - terms

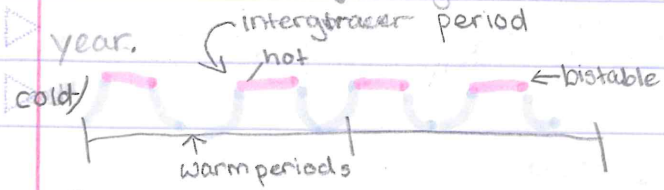
extrapolate - look forward and esimate the following

interpolate: inbetween the the following

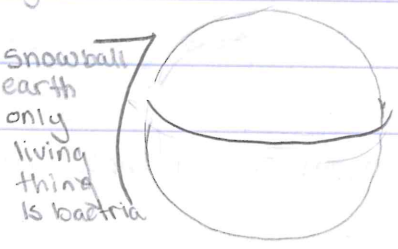




The earth is getting hotter every year.



Began ice ages 2 milion years ago



History of gobal heating

History of heat on earth

lived through ice ages
> all of modern civilization has only lived in the last 10,000 years of no active glacers.

Last glacier period was 50,000 years

The ocean chem. colds the planet down (supose to be in a glacier period)

We have released so CO_2 it's taking longer to go back to our ice age

Notes from 10·26·2026 (look at clarks website)

history of gobal heating

>high tides flooding
oclimate chang

As things get hot thing expand.
o water
o Metal
o Plastic
} as the ocean gets hotter it expans. Just like plastic and metal

What is heat vs. Water? → Our river is at sea level (petaluma)

Fact: the planet is getting hotter and we dont know what heat is.

Where is heat going?
> Ocean
The ocean is absorbing 95% of the heat

flood plane
When rivers flood they flood over flat expances. But floo planes are for natural floods

Ice age

oldest animal ever > paleozoic | mesozoic (inbetween (animals) layers) | cenozoic (modern animals)
· Jurassic

Earths climate is bistable. It has been flipping back and forth for years

zoic - meaning animals like zoo

10·26·2026

History of heat on Earth

Notes anontation:

Gobal warming terms:

extrapotolate: looking forward and esimating the feature

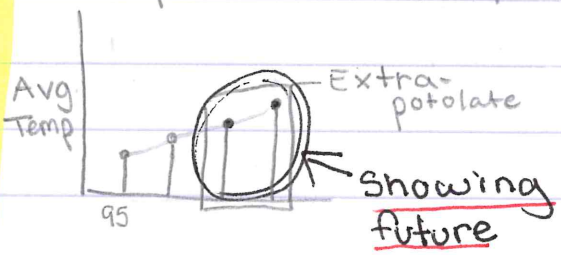
interpolate: Making an esimation on inbetween data

Which method involves esimati values betwee known data points

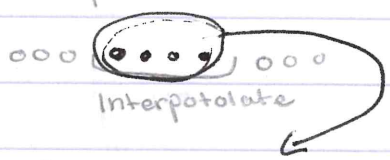
nterpolate
epersented
oy a series
dots between
wo point.
suggesting
stimating
ne value within
range)

xtrapolate
Based on
ne current
pward trend
f the graph,
nat is the
redicted
average
temp
for year
2050?

Extrapotolate example



Interpotolate example



Showing an esimate on whats inbetween

Why is H an on goi experien to miss da at a cer point during research

Gobal warming every year is getting hotter

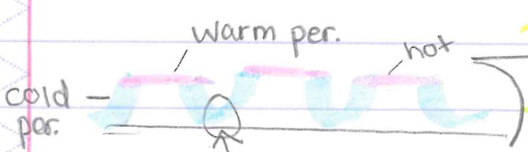
Does the current trend in gobal warmi suggest a prediction bas on current data or featur estimat

> Snowball earth only living thing baetria

The earth

The earth wasnt considered a snowball 750milion years ago

gobal warming diagram



How does an 'external force' affect a bistable system in text context of climate change?

bistable

a bistable system is a system that has two stable equalilibrium states and can switch between them when triggered by an external force

Earths climate is a bistable. It's been fliping out and in side of it For years.

What is the term for the theory that the earth w one entir covered i ice

Climate change is shown by there being hig tides.

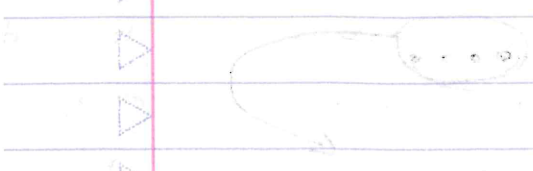
What is heat vs Water?

> When heat interacts with water it expands. And it causes water to flood areas. Heat doesnt just effect water. But also plastic and metal.

Where is the heat going

Mainly heat is going into the ocean.

The ocean is absorbing 95% of heat



anantation + notes

What is heat vs Water

paleozoic | mesozoic | cemozic |

What kind of climate did the in-between animals live in

Oldest animals

In between animals

animals

ocean died during this period

with as much as the ocean has expand I wonder how much more ocean we have?

gas that matters most is CO_2

How does the rotten smell contribute to the mass

> Sea life move to where Oxygen is in the ocean.

Sea releases a gas H_2S that cause the rotten smells.

Which is thriving bactria

This diagram shows how the Planet can heat up super fast and it takes a long time to cool down

The plant gets really hot really fast

and cools down very slow

How much lost oxygen has caused us to lose alot of oxygen.

almost 5% - 10% of the ocean

> Holocene

Aurthrepo

Scienist are saying to change this era to the age of humans

Eocene (massive valcanic eurptions)

paleocene

IF Whats is the specific chemical relationship between ocean rising an the reduct of dissolv in the wo

did the underlin during the peterm. to worlds atmospheric CO_2?

oceans got 105°F

not tub not mean lost of oxy. and lost of sea life

H_2S

70°F

70°F

P.E.T.M

Paleocene eocene themal maximus

The ocean has bacially died. Earth land doesnt mind heat.

> It affects big animals not small animals

(You cant be a big animal during a long period of heat.

Why are small animals more resilient to heat than big animals during these periods?

How does the "heat" of PETM compare to other known thermal maximums in Earths history?

Paleoseen ecoseen thermal maximus

Before this there was another period of time that was much hotter than P.e.t.m.



flooded and sea rised

astro nit in the ocean

Tectonic Activity: Explains moutains building

Warm: Climate: Links sea levels to temp.

Sediment Deposition: Explairo the effect of flooding.

10-27-2026

Eocene animals

1. draw a pic
2. what is the name
3. Is there a modern relative
4. What was the size?

1)



2) Rhinos menoceros

3) The menoceros are related to the rhinocerotidae family. The rhinocertidae family is relate to tapirs and equids (horses, zebras and donkeys)

4) During the eocene time period the rhino were about 2m. (6.5m. long and about 0.9 m. tall.) Weighing 500 kg. Compared to now 3.5m (11.5ft tall) and 1.8 m (5.9ft) tall weighing 2-3 tons.

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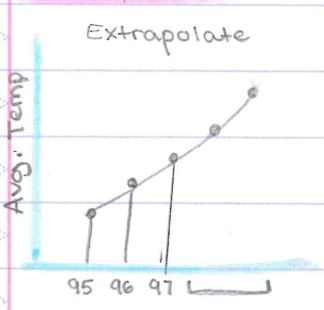
History of heat on earth and What is heat vs water? notes

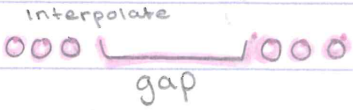
messy notes

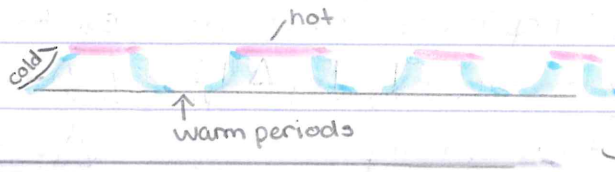
History of heat on Earth

Extrapolate - look forward and esimate the following

Interpolate - inbetween the following







Bistable: a bistable is a system that equilibrium states.

What is heat vs. water?

> When heat enters the ocean it expands the water

> it also causes water to flood in certain areas.

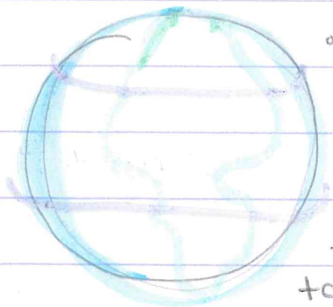
Where does all our heat go?

Our heat mainly goes to our ocean. The ocean is absorbing 96% of heat

Time periods

palozoic	mesozoic	cemozoic
oldest animal	inbetween animal	Modern animal

Scientist wanna call this the age of humans.



- water temps rising to 105°.
- Sea life couldnt live in those temps. / they swam to waters that were 70° to survive.

The ocean died?

The earth doesn't mind heat

> smalls dont mind heat

> Big animals cant not survive in the heat.

P - Palocene
E - eocene
T - Thermal
M - maximus

PETM - Before this period there was another period that was much hotter than p.e.t.m.

10 · 23 · 2026

NO HW

Clarkrules.com

Thermo dynamics

Thermo means heat.

dynamics means movement

Meaning: Heat motion

Thermo math

Letter repersent meaning.

T = temperture - T, T_o, ΔT

T_o = Starting temp.

T = final temp.

Equation

$\Delta T = T - T_o$

Δ - Delta meaning the change in temp.

Ex:

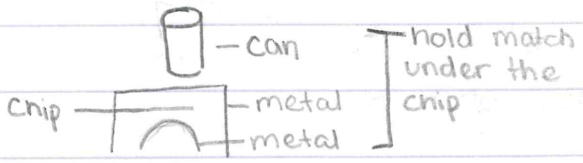
Water - 1 ml = 1 g

$\Delta T = 60 - 20 = 40°C = \Delta T$

1) how much water

2) $\Delta T = T - T_o$

Lab set up



Lab =

Water - 85 ml = 85 g] mass

Starting temp. T_o = 17°C

Final temp. T = 50°c