

Mar 11

Phases of Matter

Solid liquid gas plasma

Phase changes

Solid → Liquid
Melting

Liquid → Solid
Freezing

liquid → gas

vaporization

- Boiling
- evaporation

Not the same

Boiling - all the material is hot enough to change phase

evaporation analogy - "Poker" Tournament
everyone gets \$20

Temperature - The average kinetic energy of the molecules of a substance

"PoKr" 20 people each with \$20
 average is $\frac{20}{\text{person}}$

↓
 ↓
 ↓

18 people with \$290
 avg is $\frac{16}{\text{person}}$

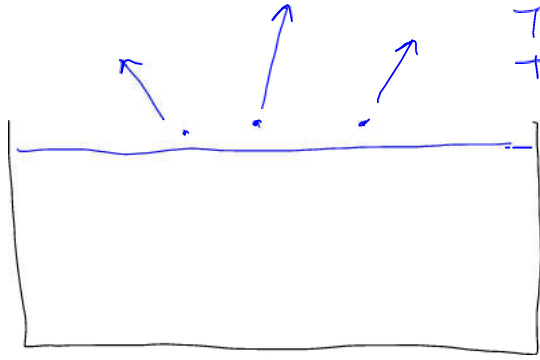
2 people are gone with \$110

water

average KE = temperature

What if we have one molecule near the surface w/ almost enough energy.

It gets extra energy from a collision and it leaves (changes state) and takes its energy with it.



The diagram shows a rectangular container labeled "water". Three arrows point upwards from the surface of the water, representing evaporating molecules. To the right of the arrows, the text reads "These leave + take energy". Below the container, the text says "avg energy is less".

Temperature - avg KE of the molecules
So - Temperature of the water goes down.

Canteen, western

Prairie "Fridge"

Wine cooler

Swamp cooler

all work on
Evaporative cooling

Why we sweat
(yuck)
So that there is
a liquid that can
evaporate --- and cool
you.