

9.11.19

Intro Topics: Temperature Scales


Today's Objectives:

- Learn the kinetic theory of temperature
- Learn the origins of the F, C, and K scales
- Convert between the scales using equations

What is temperature?

Avg
Speed of particles

Average
Kinetic
Energy



Higher Temp = Faster
Particles

Lower Temp = Slower
Particles.

Fahrenheit (Used in USA)

Water Boils 212°F

Human Temp $\sim 98^{\circ}\text{F}$

Water Freezes 32°F

Absolute Zero Really Low

(1742)

Celsius

(Based on Water)

(Used in other countries)

Water Boils

100°C

Human \rightarrow 37°C

Water Freeze

0°C

Absolute Zero

-273°C

(1848)

Kelvin

Absolute Scale = Never Negative!

Water Boil 373 K

Human 310 K

Water Freeze 273 K

Absolute Zero 0 K

← Coldest Temp Possible (All motion stops)

Conversion Equations

F: Fahrenheit
C: Celsius
K: Kelvin

$$C = \frac{5}{9}(F - 32)$$

$$F = (1.8C) + 32$$

$$K = C + 273$$

$$C = K - 273$$

Room temp is now:

$$F = 71.4 \quad C = \frac{5}{9}(71.4 - 32)$$

↘

$$C = 21.9^\circ C$$

$$K = C + 273$$

$$21.9 + 273$$

$$K = 294.9 K$$

Scientific Notation : easy way to write
big or small #s.

$$1 \text{ million} = 1,000,000 = 1 \times 10^6 = 1 \text{E}6$$

Exponent

+ exponent = big #
- exponent = small #