

Contents

Melting Ice & Units of Measure.....	1
Level 1: The power of units (pg 87)	1
Level 2 (Modeled after John’s application).....	2

Melting Ice & Units of Measure

Fact: In 1790, Thomas Jefferson (then Secretary of State) proposed adoption of the metric system to Congress. Had it passed, the US would have become the first country to adopt the metric system (France was first in 1795).

Level 1: The power of units (pg 87)

Converting units (linear, area, volume)

US to metric.

Chain of conversions

Metric to Metric (Km to cm)

Game: Dimensional Analysis

Do several conversions. Have flash “cross out” appropriate units.

Day → Seconds

$$1 \text{ day} \times \frac{24 \text{ hr}}{1 \text{ day}} \times \frac{60 \text{ min}}{1 \text{ hr}} \times \frac{60 \text{ sec}}{1 \text{ min}} = 86400 \text{ sec}$$

Convert US to Metric or Metric to US

Meters to feet

$$74 \text{ meters} \times \frac{1 \text{ ft}}{0.3048 \text{ meters}}$$

feet to meters

$$24 \text{ feet} \times \frac{1 \text{ meter}}{3.28 \text{ ft}}$$

0.0074 km to m

$$0.0074 km \times \frac{1000 m}{1 km}$$

Level 2 (Modeled after John's application)

Measurements of polar ice show that, if all Earth's polar ice melted, about 25 million km^3 of water would be added to the oceans. How much would the sea level rise as a result? It will be helpful to know that the surface area of the earth's oceans is about 340 million km^2 .

$$\frac{25\,000\,000\ km^3}{340\,000\,000\ km^2} \approx 0.074\ km = 74\ m$$

Level 3:

Since it will probably take thousands of years for all of the polar ice to melt, assume 1% of the ice melts in the next 100 years. How much will the sea level rise? What about 5%, 10%?

