

Units and Measurements

Phys109

Fall 2019

1. Estimate the number of breaths taken during an average lifespan.(choose 10 breaths per minute as our estimate and take average life span as 70 years). Answer: $4 * 10^8$
2. A student got 50 food calorie (*Calorie = Cal*) from a drink. Express the energy from this drink in Joules. ($1Cal = 1000cal$, $1cal = 4.18J$). Answer: 209000 J
3. If $x = a + bt + ct^2$, where x is in meter and in second.Then what is the unit of c ? Answer: $\frac{m}{s^2}$
4. Which of the following measurements is the most precise? Answer: a
 - (a) 5 mm
 - (b) 5 cm
 - (c) 5 m
 - (d) 5 km
5. Which of the following is an example of a unit? Answer: a
 - (a) Meter
 - (b) Force
 - (c) Time
 - (d) Volume
6. How many 325mg tables can be produced from 2.5 kg of ibuprofen? Answer:7692 tablets
7. A solid piece of lead has a mass of 23.94 g and a volume of 2.10 cm^3 . From these data, calculate the density of lead in SI units (kilograms per cubic meter). Answer: $11.4 * 10^3 kg/m^3$
8. An ore loader moves 1200 *tons/h* from a mine to the surface. Convert this rate to pounds per second, using $1ton = 2000 lb$. Answer: 667 lb/s

9. A pyramid has a height of 481 ft, and its base covers an area of 13.0 acres. The volume of a pyramid is given by the expression $V = Bh$, where B is the area of the base and h is the height. Find the volume of this pyramid in cubic meters. (1 acre=43,560 ft^2 , 1ft = 0.3048 m)
Answer: $7.7 * 10^6 m^3$
10. A unit of area often used in measuring land areas is the hectare, defined as $10^4 m^2$. An open-pit coal mine consumes 75 hectares of land, down to a depth of 26 m, each year. What volume of earth, in cubic kilo-meters, is removed in this time? Answer: $1.95 * 10^{-2} km^3$