

Calculating Atomic Mass

We know the atom is small.....
so how much does it weigh?

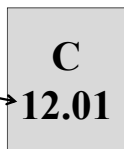
- Proton $1.67262158 \times 10^{-27}$ kilograms
- Neutron 1.6749×10^{-27} kilograms
- Electron $.000910938188 \times 10^{-27}$ kilograms
- How do you input these large numbers on a calculator? Get a calculator and you'll find out.

Calculate the Mass of Carbon

- How many protons _____
Weight =
- How many neutrons _____
Weight =
- How many electrons _____
Weight =

Atomic Mass Units

Periodic table shows mass in atomic mass units



- 1 amu (atomic mass unit)
- 1 amu = 1/12 (one twelfth) of the weight of a carbon atom
- **1 atomic mass unit = $1.66053886 \times 10^{-27}$ kilograms**

Masses of Atoms



- A scale was designed for atoms to give their small atomic masses in atomic mass units (amu)
- An atom of ^{12}C was assigned an exact mass of 12.00 amu
- Relative masses of all other atoms were determined by comparing each to the mass of ^{12}C
- An atom twice as heavy has a mass of 24.00 amu. An atom half as heavy is 6.00 amu.

Learning Check 6

Using the periodic table, specify the atomic mass of each element (round to the tenths place):

- A. calcium _____
- B. aluminum _____
- C. lead _____
- D. barium _____
- E. iron _____

Solution

Using the periodic table, specify the atomic mass of each element (round to the tenths place):

- A. calcium 40.1 amu
- B. aluminum 27.0 amu
- C. lead 207.2 amu
- D. barium 137.3 amu
- E. iron 55.8 amu
