Answer on Question#65123 – Chemistry – General Chemistry

Question:

Ca and Mg are often determined in blood plasma by atomic emission. In this case, 1 mL of a blood sample was diluted with 25 mL of methanol. The analysis of the diluted sample gave a signal of 15 units for Ca and 20 units for Mg, respectively. Blood plasma standards spiked with Ca and Mg were used as standards and gave the following results:

Standard Concentration (PPM) 0.50 1.0 5.0 10

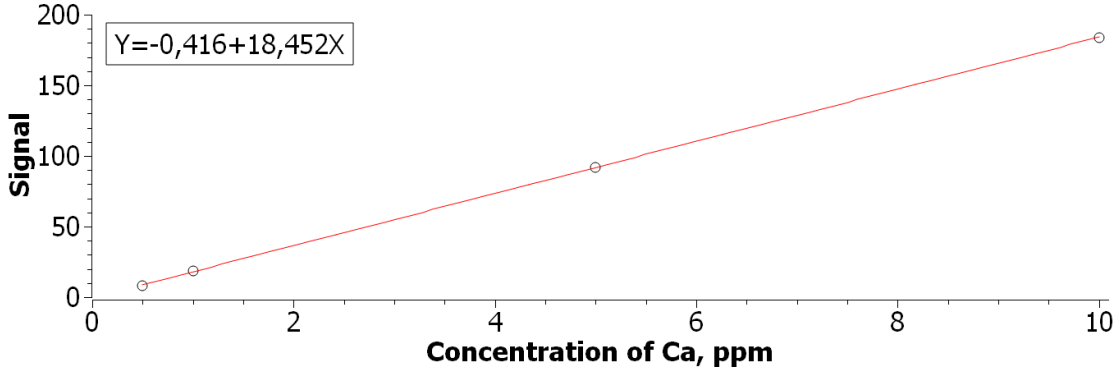
Ca 8.1 18.7 92 184

Mg 10.6 23.4 120 228

What are the Ca and Mg concentrations in the original plasma sample?

Solution:

a) Ca

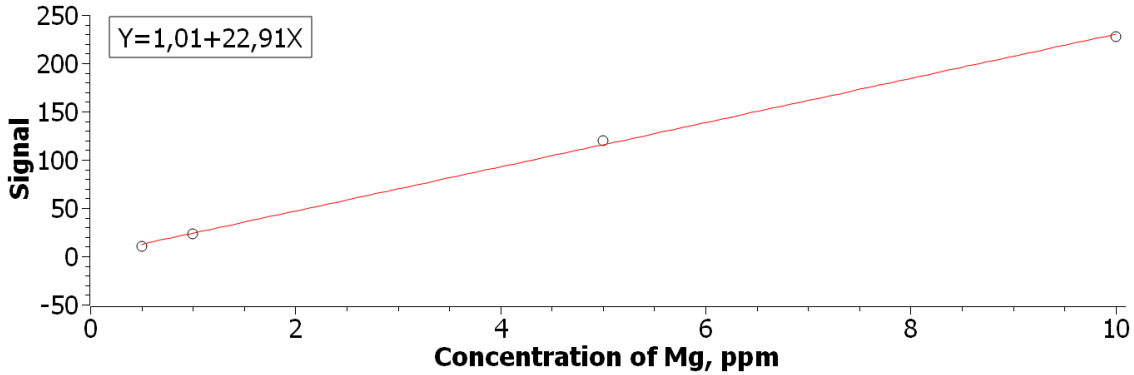


15 = - 0.416 + 18.452X

X = 0.836 ppm – concentration of Calcium in the diluted sample

C(Ca) = 25*0.836 ppm = 20.9 ppm – Ca concentration in blood sample

b) Mg



20 = 1.01 + 22.91X

X = 0.829 ppm – Mg concentration in the diluted sample

C(Mg) = 25*0.829 = 20.7 ppm – Mg concentration in the blood sample
Answer: 20.9 ppm Ca; 20.7 ppm Mg.