AP Chemistry Daily Videos
1.4 Composition of Mixtures

Video #1

1. How is a mixture different from a pure substance? Be specific and discuss the particle diagrams.

2. Pause the video at 5:16 and attempt the problem, then evaluate how you did and identify any errors.

A 5.0 g sample of a mixture of $CaCO_3$ and SiO_2 contains 1.5 g of Ca. What is the percent $CaCO_3$ in the mixture?

Video #2

1. Pause the video at 0:25 and attempt the problem, then evaluate how you did and identify any errors.

The mass percent of carbon in pure glucose, $C_6H_{12}O_6$ is 40.0 percent. A chemist analyzes an impure sample of glucose and determines that the mass percent of carbon is 38.2 percent. Which of the following impurities could account for the low mass percent of carbon in the sample?

(A) Water, H_2O

(B) Ribose, $C_5H_{10}O_5$

(C) Fructose, $C_6H_{12}O_6$, an isomer of glucose

(D) Sucrose, $C_{12}H_{22}O_{11}$

2. Pause the video at 1:51 and attempt the problem, then evaluate how you did and identify any errors.

$Cu(s) + 4\ HNO_3(aq) \rightarrow Cu(NO_3)_2(aq) + 2\ NO_2(g) + 2\ H_2O(l)$

A student analyzes a 2.00 g sample of a mixture of copper, Cu, and aluminum, Al, by reacting the copper with nitric acid, HNO_3 as represented in the equation above. The student determines that the reaction produces 0.010 mol $Cu(NO_3)_2$. Assuming that all of the copper in the mixture reacted completely, what was the percent of Cu by mass in the 2.00g sample of the mixture?

(A) 16%

(B) 32%

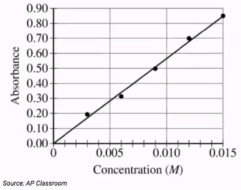
(C) 64%

(D) 96%

Source: AP Classroom

3. Pause the video at 4:17 and attempt the problem, then evaluate how you did and identify any errors.

A 0.630 g sample of a mixture containing cobalt, Co, is analyzed using a reaction with nitric acid, HNO_3, which converts all of the Co to $Co^{2+}(aq)$. The Co^{2+} solution is then diluted to a volume of 50.00 mL and spectrophotometrically analyzed at a wavelength of 510 nm to determine its concentration. The solution is determined to have an absorbance of 0.74.



Source: AP Classroom