

Chapter 4
More Word Problems

1. Suzanne is planning to invest \$ 8000 dollars total into two different certificates of deposit.
 - A: 4% annual interest rate compounded quarterly
 - B: 3.75% annual interest rate compounded continuously

Assuming that Suzanne has \$11,741.55 after 10 years, how much did she invest in each certificate?

2. Recall that the half-life of carbon-14 is 5730 years, so that the amount of carbon-14 remaining, of a sample of size 100 g, after t years is given by the formula

$$m(t) = 100\left(\frac{1}{2}\right)^{t/5730}.$$

Find a formula which gives the number of years when m grams of the sample will be remaining.

3. You have a \$50 coupon for the purchase of a cell phone. The store where you are purchasing your cell phone is offering a 20% discount. Let x represent the sticker price of the cell phone.

- (a) Suppose that only the 20% discount applies. Find a function f that models the purchase price of the cell phone as a function of the sticker price.
- (b) Suppose that only the \$50 coupon applies. Find a function g that models the purchase price of the cell phone as a function of the sticker price.
- (c) If you can use the discount and the coupon, then the purchase price is either $f(g(x))$ or $g(f(x))$, depending on the order in which they are applied. Find both and determine which order will give the lower price.