

## EXAM FM QUESTIONS OF THE WEEK

S. Broverman, 2007

### Week of January 15/07

A retail store has a deferred payment plan as an alternative to payment at the time of purchase. For an item with a retail price of \$100, the deferred payment plan allows payment of  $\$X$  at the end of one year and  $\$Y$  at the end of two years. The customer is allowed to choose any non-negative payment amounts  $X$  and  $Y$  as long as the present value of the payments is 100. The company states that the interest rate paid on the deferred payment plan is an annual effective rate of 12%. A customer chooses  $X$  and  $Y$  so that the total amount paid is 120. Find  $X$  and  $Y$ .

**The solution can be found below.**

## **Week of January 15/07 - Solution**

$$\frac{X}{1.12} + \frac{Y}{1.12^2} = 100 \quad \text{and} \quad X + Y = 120.$$

Multiplying the first equation by  $1.12^2$  results in  $1.12X + Y = 125.44$ .

Subtracting the second equation from this results in  $.12X = 5.44$ , so that  $X = 45.33$ .

Then  $Y = 120 - 45.33 = 74.67$ .