**HOW TO GIVE A GOOD ANSWER TO A QUESTION**

**Question**: Why does the equation **PV = FV / (1+r)** calculate what a future amount (FV) is worth today (PV)?

**Answer**: Assume that everyone can borrow and lend (invest) at the same rate, r. If we lend/invest the amount PV for one period, we earn the amount r \* PV. The future amount (FV) of this investment would then be principal plus earnings, PV + r \* PV. Factoring out the term PV gives

 **FV = PV \* (1+r) (1)**

Solving formula (1) for PV gives

**PV = FV / (1+r) (2)**

For a given FV, formula (2) shows that FV / (1+r) is the amount that must be invested today to have FV one period from now. PV is less than FV if the investment rate, r, is positive.

**Example**: If FV = $110 and r = 10% (APR), PV = $110 / (1+10%) = $100. $100 today has the same worth or value that $110 has in one year because the $100 today can be invested and earn $10.

**Notes**: Answering the above question by stating that “present value must be less than future value due to the opportunity to invest at a positive rate” is only part of a complete answer. We also need to explain why that specific formula works. For example, why not use the formula **FV = PV \* (1-r)** that yields similar but different answers?