Class Practice on Expectation #2

You have a chance to invest $18,000 in your friend’s new barber shop. Your financial advisor estimates that there is a 50% chance of making a net amount of $5000, and that there is a 25% chance of making a net amount of $3000. Of course, you might lose the $18,000. Compute your expectation. (Show all work including substitution into the expectation formula. Also, summarize the meaning of your answer with a complete sentence.)
Solution

big $  medium $  lose $

\[ E = P_1A_1 + P_2A_2 + P_3A_3 \]

\[ E = (0.5)(5000) + (0.25)(3000) + (0.25)(-18000) \]

\[ E = 2500 + 750 - 4500 \]

\[ E = 3250 - 4500 = -1250 \]

So, in summary, this means that if you were to make many such investments you would end up losing an average of $1,250 per investment.