2220 - Entrepreneurial Finance and Venture Capital
Problem set 4

Question 1

The General Partners (GPs) of Redwood, a VC firm, have successfully raised a $250 million fund. The fund has a 10-year life span.

a) Calculate the gross multiple and IRR of the fund (i.e. before fees paid to GPs), and the net multiple and IRR for LPs (i.e. after fees), under the following assumptions:

- Management fees are 2.5% over the 5-year investment period and 1.5% after that, charged over committed capital for the entire life of the fund
- Carried interest for GPs is 20%
- 20% of the fund's total invested capital is invested every year between years 1 and 5
- 1/3 of invested capital is written off, 1/3 returns 1X and the remaining 1/3 returns 8X
- 20% of the fund's total proceeds are distributed per year between years 6 and 10, and LPs must be made whole before GPs receive any carry

Note: you can ignore the beginning/end of year distinction in the note "The Basics of Private Equity Funds", and you do not need to calculate Net Asset Values

b) Suppose that one of the failed investments that were written off had instead returned 100x. The investment amount was $8 million. What would the fund's gross and net multiples be in this case?

Question 2

Redwood would like to sell its stake in one of its investments, Heuristic Algorithms (HAL), to Yellowstone, an asset manager. Assume for the purposes of this exercise that there are only two types of startups in the world: good startups and bad startups, also known as lemons. Redwood values its stake at 100 million if HAL is a good startup, and 0 if it is a lemon. Yellowstone is better diversified and therefore willing to pay a 30% premium over Redwood's valuation. At what prices will they be willing to agree on a deal if:

a) Neither Redwood nor Yellowstone know if HAL is good. They only know that 20% of startups are good and the remaining 80% are lemons.

b) Redwood does not know for sure if HAL is good, but based on information acquired through their monitoring activities as board members, they have formed an opinion about its quality. If Redwood thinks HAL is good, then it will turn out to be good with 25% probability. If they think HAL is a lemon, then it will turn out to be a lemon for sure. Yellowstone knows that Redwood has an opinion about HAL, and how that opinion affects the probability that HAL is good, but does not know what Redwood's opinion of HAL is. All that Yellowstone knows, as before, is that 20% of startups are good and the remaining 80% are lemons.

c) Same scenario as in b), except that Redwood now has a more informed opinion. If they think HAL is good then it will turn out to be good with 50% probability.