

FINM3093 Investments

Lecture 1 Exercises

Solutions

1.
 - a. The bank loan is a financial liability for Lanni, and a financial asset for the bank. The cash Lanni receives is a financial asset. The new financial asset created is Lanni's promissory note to repay the loan.
 - b. Lanni transfers financial assets (cash) to the software developers. In return, Lanni receives the completed software package, which is a real asset. No financial assets are created or destroyed; cash is simply transferred from one party to another.
 - c. Lanni exchanges the real asset (the software) for a financial asset, which is 1,250 shares of Microsoft stock. If Microsoft issues new shares in order to pay Lanni, then this would represent the creation of new financial assets.
 - d. By selling its shares in Microsoft, Lanni exchanges one financial asset (1,250 shares of stock) for another (\$125,000 in cash). Lanni uses the financial asset of \$50,000 in cash to repay the bank and retire its promissory note. The bank must return its financial asset to Lanni. The loan is "destroyed" in the transaction, since it is retired when paid off and no longer exists.
2.
 - a. The stock is purchased for: $300 \times \$40 = \$12,000$
The amount borrowed is \$4,000. Therefore, the investor put up equity, or margin, of \$8,000.
 - b. If the share price falls to \$30, then the value of the stock falls to \$9,000. By the end of the year, the amount of the loan owed to the broker grows to:
$$\$4,000 \times 1.08 = \$4,320$$

Therefore, the remaining margin in the investor's account is:
$$\$9,000 - \$4,320 = \$4,680$$
 - c. The percentage margin is now: $\$4,680 / \$9,000 = 0.52$, or $52\% > 30\%$.

Therefore, the investor will not receive a margin call.

- d. Using an end price of \$30, the rate of return on the investment over the year is:

$$(\text{Ending equity in the account} - \text{Initial equity}) / \text{Initial equity}$$

$$= (\$4,680 - \$8,000) / \$8,000 = -0.415, \text{ or } -41.5\%$$

Alternatively, divide the initial equity investments into the change in value plus the interest payment:

$$(\$3,000 \text{ loss} + \$320 \text{ interest}) / \$8,000 = -0.415.$$

3. a. The initial margin was: $0.50 \times 1,000 \times \$40 = \$20,000$

As a result of the increase in the stock price Old Economy Traders loses:

$$\$10 \times 1,000 = \$10,000$$

Therefore, margin decreases by \$10,000. Moreover, Old Economy Traders must pay the dividend of \$2 per share to the lender of the shares, so that the margin in the account decreases by an additional \$2,000. Therefore, the remaining margin is:

$$\$20,000 - \$10,000 - \$2,000 = \$8,000$$

- b. The percentage margin is: $\$8,000 / \$50,000 = 0.16$, or 16%

So there will be a margin call.

- c. The equity in the account decreased from \$20,000 to \$8,000 in one year, for a rate of return of: $(-\$12,000 / \$20,000) = -0.60$, or -60%

4. a. Initial margin is 50% of \$5,000, or \$2,500.

- b. Total assets are \$7,500 (\$5,000 from the sale of the stock and \$2,500 put up for margin). Liabilities are $100P$. Therefore, equity is $(\$7,500 - 100P)$. A margin call will be issued when:

$$\frac{\$7,500 - 100P}{100P} = 0.30 \Rightarrow \text{when } P = \$57.69 \text{ or higher}$$

5. The broker is instructed to attempt to sell your Marabel, Inc. stock as soon as the Marabel, Inc. stock trades at a bid price of \$70 or less. Here, the broker will attempt to execute but may not be able to sell at \$70, since the bid price is now \$69.95. The price at which you sell may be more or less than \$70 because the stop-loss becomes a market order to sell at current market prices.

6. a. \$55.50

- b. \$55.25

c. The trade will not be executed because the bid price is lower than the price specified in the limit-sell order.

d. The trade will not be executed because the asked price is greater than the price specified in the limit-buy order.

7. The offering price includes a 6% front-end load, or sales commission, meaning that every dollar paid results in only \$0.94 going toward purchase of shares. Therefore:

$$\frac{NAV}{\text{Offering price} = 1 - \text{Load}} = \frac{\$10.70}{1 - 0.06} = \$11.38$$

8. a. Start-of-year price: $P_0 = \$12.00 \times 1.02 = \12.24

End-of-year price: $P_1 = \$12.10 \times 0.93 = \11.25

Although NAV increased by \$0.10, the price of the fund decreased by \$0.99.

$$\text{Rate of return} = \frac{P_1 - P_0 + \text{Distributions}}{P_0} = \frac{\$11.25 - \$12.24 + \$1.50}{\$12.24} = 0.042, \text{ or } 4.2\%$$

- b. An investor holding the same securities as the fund manager would have earned a rate of return based on the increase in the NAV of the portfolio:

$$\frac{NAV_1 - NAV_0 + \text{Distributions}}{NAV_0} = \frac{\$12.10 - \$12.00 + \$1.50}{\$12.00} = 0.133, \text{ or } 13.3\%$$

9. As an initial approximation, your return equals the return on the shares minus the total of the expense ratio and purchase costs: $12\% - 1.2\% - 4\% = 6.8\%$.

But the precise return is less than this because the 4% load is paid up front, not at the end of the year.

To purchase the shares, you would have had to invest: $\$20,000/(1 - 0.04) = \$20,833$.

The shares increase in value from \$20,000 to: $\$20,000 \times (1.12 - 0.012) = \$22,160$.

The rate of return is: $(\$22,160 - \$20,833)/\$20,833 = 6.37\%$.