

Worksheet on buying on margin and selling short.

Buying on Margin

=> Buying on margin means borrowing to buy securities.

=> Margin refers to the part **not borrowed**.

=> Margin = $[(\text{current value of the securities}) - (\text{amount borrowed})]/(\text{current value of securities})$

- If the initial margin is 40%, and you are buying 100 shares at \$20/share, how much money do you have to have to provide?

You need to provide 40% of \$2,000, or \$800.

Your account is:

\$2,000 Stock		\$1,200 Debt
		\$800 Equity

- If the price increases to \$30, what is the margin now?

Your account is:

\$3,000 Stock		\$1,200 Debt
		\$1,800 Equity

Margin = $(\$3,000 - \$1,200)/\$3,000 = 0.60$

- If you sell at a price of \$30 one year from now and the margin interest rate was 10%, what was your rate of return?

$(3,000 - 1.1 * 1,200 - 800)/800 =$

- The maintenance margin is 10%. At what price would you have a margin call?

$(100 * P - \$1,200)/100 * P = 0.1$

$90P = \$1,200$

$P = \$13.33$

Selling Short

=> Selling short means to borrow securities in order to sell them now.

=> You must provide cash or securities (margin) which is added to your account

=> Margin = $[(\text{assets in account}) - (\text{current value of securities})]/(\text{current value of securities})$

- If the initial margin is 40%, and you are selling 100 shares at \$20/share, how much money do you have to provide and how much is in your account?

Your Account

\$2,000 Cash		\$2,000 (Value of 100 shares)
\$800 Cash (for marg)		\$800 Equity

- If the price increases to \$25, what is the margin now?

Your T-account

\$2,000 Cash		\$2,500 Shares (Value of 100 shares)
\$800 Cash		\$300 Equity

- If you close your account one year from now, buying at a price of \$25 (assume that margin interest rate was 10% on the initial value of shares borrowed, no interest was earned on cash in your account and no dividends were paid), what was your rate of return?

$$(\$2,800 - 2,500 - 200 - 800)/800 = -0.875$$

- The maintenance margin is 10%. At what price would you have a margin call (ignoring interest)?

$$(2,800 - 100 * P) / 100 * P = 0.1$$

$$110P = \$2,800$$

$$P = \$25.45$$

Problems

- 1) If the initial margin is 50%, and you are buying 200 shares at \$30/share, how much money do you have to have to provide?
- 2) If the price decreases to \$20, what is the margin now?
- 3) If you sell at a price of \$20 one year from now and the margin interest rate was 10%, what was your rate of return?
- 4) The maintenance margin is 15%. At what price would you have a margin call?
- 5) If the initial margin is 50%, and you are selling 200 shares short at \$30/share, how much money do you have to provide and how much is in your account?
- 6) If the price decreases to \$20, what is the margin now?
- 7) If you close your account one year from now, buying at a price of \$20 (assume that margin interest rate was 10% on the initial value of shares borrowed, no interest was earned on cash in your account and a \$1/share dividend was paid), what was your rate of return?
- 8) The maintenance margin is 15%. At what price would you have a margin call (before interest and dividends)?

Answers

- 1) \$3,000
- 2) 25%
- 3) -76.7%
- 4) 17.65
- 5) \$3,000; \$9,000
- 6) 125%
- 7) 40%
- 8) \$39.13