Chapter 24 - Options

24-1:

In both cases, if the option is exercised, you will be buying the underlying shares. The difference is that the buyer of the option pays the premium to the writer for the privilege of deciding whether to exercise the option or not; the writer of the option is obliged to make delivery whenever the buyer so chooses.

If you buy a GE December $40 call option and in December GE trades at $35, you can choose to let the option expire. If in December GE trades at $45, you can choose to exercise, buying 100 shares of GE from the writer at $40 per share.

If you write a GE December $40 put option and in December GE trades at $45, then the buyer of the option will choose to let it expire. But if in December GE trades at $35 the buyer of the option will choose to exercise, forcing you to buy 100 shares of GE from him at $40 per share. The premium you collected when you wrote this option compensates you for letting the buyer make this choice.

24-2:

A and D coincide at prices above $40 (where the option is exercised). The value of the $40 call option (A) is the same as the profit of the underlying shares when the shares are purchased at $40 (D) so long as GE remains in the money. However, when GE is below $40 the option expires worthless.

The vertical distance between the value and the profit on the shares is $4000: the cost of the shares. The vertical distance between the value and the profit on the call option is $250: the cost of the option.
24-3:

A and D coincide at prices above $40 (where the option is exercised). The value of the $40 call option (A) is the same as the profit of the underlying shares when the shares are sold short at $40 (D) so long as GE remains in the money. However, when GE is below $40 the option expires worthless.

The vertical distance between the value and the profit on the shares is $4000: the value of the shares when they were sold short. The vertical distance between the value and the profit on the call option is $250: the premium when the option was written.
24-4:

A and D coincide at prices below $40 (where the option is exercised). The value of the $40 put option (A) is the same as the profit on the underlying shares when the shares are short sold at $40 (D).

The vertical distance between the value and the profit on the shares is $4000: the price of the shares when they were short sold. The vertical distance between the value and the profit on the call option is $270: the cost of the option.
A and D coincide at prices below $40 (where the option is exercised). The value of the $40 put option (A) is the same as the profit on the underlying shares when the shares are purchased at $40.

The vertical distance between the value and the profit on the shares is $4000: the purchase price of the shares. The vertical distance between the value and the profit on the call option is $270: the premium collected when the option was written.
24-6:

Figure 24 - 7: Written/Short Put.

We can tell that it is short because when the option is exercised it generates a loss. We can tell that it is a Put because it is exercised when prices go down. The value line is horizontal at $0 where the option expires worthless. The profit line has both a positive and a negative part.

Figure 24 - 8: Purchased/Long Call.

We can tell that it is long because when the option is exercised it generates a profit. We can tell that it is a Call because it is exercised when prices go up. The value line is horizontal at $0 where the option expires worthless. The profit line has both a positive and a negative part.

Figure 24 - 9: Written/Short Call.

We can tell that it is short because when the option is exercised it generates a loss. We can tell that it is a Call because it is exercised when prices go up. The value line is horizontal at $0 where the option expires worthless. The profit line has both a positive and a negative part.

Figure 24 - 10: Purchased/Long Put.

We can tell that it is long because when the option is exercised it generates a profit. We can tell that it is a Put because it is exercised when prices go down. The value line is horizontal at $0 where the option expires worthless. The profit line has both a positive and a negative part.

24-7:

A. This option is in-the-money. The buyer of the option (John Q. Investor) can exercise the option, buying shares of GE from you at $30 and selling them in the market at $35. The value of the option is positive. Thus the option is in-the-money.

B. Yes, JQ will exercise these options since they are in the money.

C. JQ realizes a loss of $5,200. Exercising ten option contracts allows him to buy 1000 shares of GE from you at $30 per share. He can then sell them at $35. The value of the option is thus $5,000. However, since he bought the options for $10,200 he realized a net loss of $5,200 from the investment. Even an in-the-money option need not necessarily generate a profit when the premiums are factored in.

D. If JQ does not exercise the options he loses the entire $10,200.

E. You were forced to sell 1000 shares of GE at $30 when they were worth $35. This generated a loss of $5,000. However you sold the options for a premium of $10,200. Therefore your profit on the transaction is $5,200.
24-8:

A. The 70 April Call is quoted at 0.450 so Susan pays $100 * 0.450 = $45.00 for the option.

B. 
1. At 6.0% and 6.5% the 70 Call is out of the money. It expires worthless.

2. At 7.0% the 70 Call is at the money. It expires worthless.

3. At 7.5% the 70 Call is in the money and Susan exercises. The value of the option is $100 (75 - 70) = $500. Susan realizes a profit of $455.00

4. At 8.0% the 70 Call is in the money and Susan exercises. The value of the option is $100 (80 - 70) = $1000. Susan realizes a profit of $955.00

C. 

[Diagram: Long 70 (7.0%) April Call @ $0.45]
D. The 70 April Put is quoted at 4.000 so Susan pays $100 * 4.000 = $400.00 for the option.

E.  
1. At 6.0% the 70 Put is in the money and Susan exercises. The value of the option is $100 (70 - 60) = $1,000. Susan realizes a profit of $600.00
2. At 6.5% the 70 Put is in the money and Susan exercises. The value of the option is $100 (70 - 65) = $500. Susan realizes a profit of $100.00
3. At 7.0% the 70 Put is at the money. It expires worthless.
4. At 7.5% and 8.0% the 70 Put is out of the money. It expires worthless.