

1. Earnings and dividends per share at G3-Biz Inc. are expected to grow at a rate of 18 percent over the next two years, then at 15 percent in the third year, and then at 6 percent thereafter. G3- Biz just paid a dividend of \$1.15. If the required rate of return on the stock is 12 percent, what is the price of a share of G3-Biz stock today? Round off to two decimal points. (i.e. "x.xx")

Answer:

The correct answer is **26.95**.

There are three years of non-constant growth and the required rate of return is 12 %.

Let's calculate expected dividends for the first 4 years.

$$D_1 = 1.15(1 + 0.18) = 1.357$$

$$D_2 = 1.357(1 + 0.18) = 1.601$$

$$D_3 = 1.601(1 + 0.15) = 1.841$$

$$D_4 = 1.841(1 + 0.06) = 1.952$$

Next we calculate the stock price today  $P_0$ , which is given by:

$$P_0 = [1.357 / (1 + 0.12)^1] + [1.601 / (1 + 0.12)^2] + [1.841 / (1 + 0.12)^3] + [1.952 / (0.12 - 0.06)] * (1 + 0.12)^{-3} = 26.95$$

2. Suppose that the company XYZ is going to pay a dividend of \$1.50 per share next year, and the dividend is expected to grow by 10% forever. If investors require a 13%, what should the value of XYZ's stock be?
  - a) 55
  - b) 50
  - c) 62
  - d) 65

Answer:

The correct answer is **b**.

Recall the dividend discount model with constant growth rate.

$$P_0 = E(\text{Div}) / (r - g) = 1.5 / (0.13 - 0.10) = 50$$

3. Suppose that the stock of the company CFAA is currently trading on April 15 at a price of \$70. A call option with a strike price of \$70 and an expiration date on October 15 is

trading at \$4. What is your profit if the stock price at expiration date is \$80? Remember that each option contract is for 100 shares.

Answer:

The correct answer is **600**.

$$\text{Profit of a call option} = (S_T - X) - P = (80 - 70) * 100 - 400 = 600$$

$S_T = 80$  (Stock price at expiration date T)

$X = 70$  (Exercise price of each share)

$P = 4 * 100 = 400$  Premium (cost) of the option contract.

Since  $S_T > X$  – that is, since the price of the stock is greater than the exercise price, the option is in the money and it would make sense for the call option holder to exercise the option. Note that we still have to deduct the premium from the option's payoff to find the profit.

4. Suppose that a trader enters into a long futures position for 1000 oil barrels with a delivery date on December 2016 and a future price of \$40 per barrel. Suppose that on delivery date, the spot price of oil is \$45 per barrel. What is the payoff to the long position?

Answer:

The correct answer is **5000**.

$$\text{Payoff of the future contract (long position)} = (P_T - F_0) = (45 - 40) * 1000 =$$

5000  $P_T = 45$  (Spot price per barrel at maturity date T)

$F_0 = 40$  (Future price of each barrel)

5. Suppose your research shows that technology stocks currently provide an expected rate of return 12%. BMI, a large computer company, is expected to pay a dividend of \$2 per share at the end of the year. If the stock is currently selling at \$48 per share, what is the market's expectation of growth at BMI?
  - a) 6.53%
  - b) 7.83%
  - c) 4.17%
  - d) None of the above

Answer:

The correct answer is **b**.

Recall that  $P_0 = E(\text{Div})/(r-g)$

In this case,  $P_0 = \$48$ ,  $\text{Div} = 2$ ,  $r = 12\%$  and we can solve for  $g$ .

$$g = 7.83\%$$

6. An investor purchases a stock for \$28 and a put on the stock for \$0.40 with a strike price of \$24. She also sells a call on the same underlying stock for \$0.40 with a strike price of \$30 and with the same expiration date. What is the value of her portfolio, net of the proceeds from the options, if the stock price ends up at \$35 on the expiration date?

Answer:

The correct answer is **30**.

Write down the payoff associated with each position. She has a long position in the stock, a short position in the put, and a long position in the call. What is the payoff associated with each? Which options will be exercised if the stock price ends up at \$35?

Note that the premium for the puts will be offset by the premium she receives for the calls.

If the stock price ends up at \$35, the puts will be out of the money. The calls, however, will be in the money and will be called away. So the value of her portfolio is given by  $ST + -(ST - X) = (35) + -(35-30) = 30$ .

7. Which of the following is correct about the over-the-counter markets?

a) The counterparty risk is eliminated.

No. Over-the-counter markets is subject to counterparty risk.

b) There is no clearing house.

Yes, that is correct. An important distinction between exchanges and over the counter market is the clearing house. Its absence in the OTC markets is why investors are subject to counterparty risk.

c) Futures are traded in OTC markets.

No, futures contracts are traded on organized exchanges.

d) Both b and c are correct.

No. While it is correct that there is no clearing house in OTC markets, it is not correct that futures are traded in OTC markets. Futures are traded on organized exchanges.

Answer:

The correct answer is **b**.

8. A spread is a combination of two or more call options on the same stock with differing exercise prices or times to maturity. Some options are bought, and others are sold. Consider a bullish spread option strategy where you buy a call option with a \$35 exercise price priced at \$4 and sell a call option with a \$50 exercise price priced at \$2.50. If the price of the underlying stock increases to \$60 at expiration and each option is exercised on the expiration date, what is your net profit?
- a) 8.50
  - b) 13.50
  - c) 16.50
  - d) 23.50

Answer:

The correct answer is **b**.

Think about the profit associated with each position.

Long call:  $S_T - X - \text{premium}$  when  $S_T > X$

Short call:  $-(S_T - X) + \text{premium}$   $S_T > X$

Long call: your profit is  $(60 - 35) - 4 = 21$

Short call: your profit is  $(50 - 60) + 2.5 = -7.5$

Your total net profit =  $21 - 7.5 = 13.5$

9. Suppose you are a U.S. investor who is harmed when the dollar depreciates. Specifically, suppose that your profits decrease by \$200,000 for every \$0.05 rise in the dollar/pound exchange rate. If the pound futures contract on the Chicago Mercantile Exchange calls for delivery of 62,500 pounds, how many contracts will you need to enter to hedge? Will you take the long or the short side of the contracts?

- a) 64 contracts short
- b) 64 contracts long
- c) 32 contracts short
- d) 32 contracts long

Answer:

The correct answer is **b**.

Because you do poorly when the dollar depreciates, you can hedge it with a futures contract that will provide a payoff in that scenario. So think about what position in pound futures will earn profits when the futures price increases. Then think about how many contracts you will need to hedge.

If the profit on a long future contract would increase by  $\$0.05 \times 62,500 = \$3,125$ , you would need  $\$200,000/\$3,125 = 64$  contracts.

10. You know that many corporate bonds are issued with call provisions that allow the issuer to buy bonds back from the bondholders at some time in the future at a specified call price. Which of the following is correct?

- a) This is similar to the bond issuer holding a call option with an exercise price equal to the price at which the bond can be repurchased.

Yes, this is correct. The option inherent in a callable bond is like a call option held by the bond issuer and that allows the bond issuer to repurchase the bonds if the issuer chooses to exercise that option.

- b) This is similar to the bondholder owning a call option with an exercise price equal to the price at which the bond can be repurchased.

No this is not correct. Think about the option inherent in a callable bond. Who gets to exercise it?

The option inherent in a callable bond is like a call option held by the bond issuer and that allows the bond issuer to repurchase the bonds if the issuer chooses to exercise that option.

- c) This is similar to the bond issuer holding a put option with an exercise price equal to the price at which the bond can be repurchased.

No this is not correct. Think about the option inherent in a callable bond. Who gets to exercise it? And what is the exercise?

The option inherent in a callable bond is like a call option held by the bond issuer and that allows the bond issuer to repurchase the bonds if the issuer chooses to exercise that option.

- d) This is similar to the bondholder owning a put option with an exercise price equal to the price at which the bond can be repurchased.

No this is not correct. Think about the option inherent in a callable bond. Who gets to exercise it? And what is the exercise?

The option inherent in a callable bond is like a call option held by the bond issuer and that allows the bond issuer to repurchase the bonds if the issuer chooses to exercise that option.

Answer:

The correct answer is **a**.