

- (8-2) Options The exercise price on one of Flanagan Company's options is \$15, its exercise value is \$22, and its time value is \$5. What are the option's market value and the price of the stock?

## INTERMEDIATE PROBLEMS 3-4

- (8-3) Black-Scholes Model Assume that you have been given the following information on Purcell Industries:

Current stock price = \$15	Strike price of option = \$15
Time to maturity of option = 6 months	Risk-free rate = 6%
Variance of stock return = 0.12	
$d_1 = 0.24495$	$N(d_1) = 0.59675$
$d_2 = 0.00000$	$N(d_2) = 0.50000$

According to the Black-Scholes option pricing model, what is the option's value?

(8-4)  
Put-Call Parity

The current price of a stock is \$33, and the annual risk-free rate is 6%. A call option with a strike price of \$32 and with 1 year until expiration has a current value of \$6.56. What is the value of a put option written on the stock with the same exercise price and expiration date as the call option?

## CHALLENGING PROBLEMS 5-7

(8-5)  
Black-Scholes Model

Use the Black-Scholes Model to find the price for a call option with the following inputs: (1) current stock price is \$30, (2) strike price is \$35, (3) time to expiration is 4 months, (4) annualized risk-free rate is 5%, and (5) variance of stock return is 0.25.

(8-6)  
Binomial Model

The current price of a stock is \$20. In 1 year, the price will be either \$26 or \$16. The annual risk-free rate is 5%. Find the price of a call option on the stock that has a strike price of \$21 and that expires in 1 year. (*Hint:* Use daily compounding.)

(8-7)  
Binomial Model

The current price of a stock is \$15. In 6 months, the price will be either \$18 or \$13. The annual risk-free rate is 6%. Find the price of a call option on the stock that has a strike price of \$14 and that expires in 6 months. (*Hint:* Use daily compounding.)

## SPREADSHEET PROBLEM

(8-8)  
Build a Model: Black-Scholes Model



resource

Start with the partial model in the file *Ch08 P08 Build a Model.xls* on the textbook's Web site. You have been given the following information for a call option on the stock of Puckett Industries:  $P = \$65.00$ ,  $X = \$70.00$ ,  $t = 0.50$ ,  $r_{RF} = 5.00\%$  and  $\sigma = 50.00\%$ .

- Use the Black-Scholes option pricing model to determine the value of the call option.
- Suppose there is a put option on Puckett's stock with exactly the same inputs as the call option. What is the value of the put?