Chapter 7 - Level 4 - Course FM
Solutions

ONLY CERTAIN PROBLEMS HAVE SOLUTIONS. THE REMAINING WILL
BE ADDED OVER TIME.

1. (S12PQ) A company’s earnings for the year just ended were $5 per share. They
expect their earnings to increase at 10% per year. Once their earnings exceed $10
per share, they will payout 75% as a dividend. Dividends are paid annually at the
end of the year.

Calculate the value of the stock to yield 15%.

\[
1.1^7 \left( \frac{15}{4} \right) (1.15)^{-1} \frac{1 - \frac{1.1}{1.15}}{1.15} = 60.44
\]

2. (S12PQ) Jordan can purchase the stock of Murphy Manufacturing for X per share.
As an alternative, he can purchase the stock of Smith Corporation for X per share.

Both stocks are priced using the dividend discount method with an annual
discount rate of 20% compounded quarterly. Both stocks will pay their next
dividend in 3 months.

Murphy Manufacturing pays a quarterly dividend of 8 per quarter.

Smith Corporation pays a quarterly dividend. The next dividend is expected to be
D. Each future dividend is expected to be 1% greater than the previous dividend.

Calculate D.

\[
Murphy : x = \frac{8}{\left( \frac{0.2}{4} \right)}
\]

\[
Smith : x = \frac{8}{\left( \frac{0.2}{4} \right)} = \frac{D(1.05)^{-1}}{1 - \frac{1.01}{1.05}}
6.095238095 = D(0.952380952)
D = 6.4
\]
3. (S12PQ) A stock pays annual dividends. The next dividend will be paid in 6 months and will be 6.5. The next nine dividends thereafter will be each be 5% greater than the previous dividend. Following these first 10 dividends, future dividends are expected to remain at the level of the 10th dividend.

Calculate the theoretical price of this stock using the dividend discount method using an annual effective interest rate of 10%.

\[
\frac{6.5(1.1)^{-1} - 6.5(1.1)^{-10}(1.05)^{-11}}{1 - \frac{1.05}{1.1}} = \frac{5.9090909 - 3.710964592}{.0454545} = 48.35877946
\]

\[
\frac{6.5(1.05)^9}{.1}(1.1)^{-10} = 38.87677192
\]

48.35877946 + 38.87677192 = 87.23555138

87.23555138(1.1)^{\frac{1}{2}} = 91.49
4. (S09PQ) Clark Oil Company had annual earnings of 12 for the year just ended. Clark’s earnings are expected to grow at an annual rate of 12%. Clark does not currently pay a dividend. However, Clark anticipates paying a dividend at the end of the fourth year that is equal to 75% of the fourth year’s earnings. Thereafter, Clark anticipates paying 75% of each year’s earnings as a dividend.

Calculate the price of this stock to yield 20%.

a. 102.44  
b. 112.16  
c. 126.00  
d. 136.59  
e. 168.00

Solution:

Earnings last year = 12

Earning during 4th year = (12)(1.12)^4 = 18.8822

Dividend = (18.8822)(0.75) = 14.1617

\[ PV = 14.1617(1.20)^{-4} + 14.1617(1.12)(1.20)^{-5} + 14.1617(1.12)^2(1.20)^{-6} + \ldots = \]

\[ \frac{14.1617(1.20)^{-4}}{1 - \frac{1.12}{1.20}} = 102.44 \]