1. Gateway Communications is considering a project with an initial fixed asset cost of $2.46 million which will be depreciated straight-line to a zero book value over the 10-year life of the project. At the end of the project the equipment will be sold for an estimated $300,000. The project will not directly produce any sales but will reduce operating costs by $725,000 a year. The tax rate is 35 percent. The project will require $45,000 of inventory which will be recouped when the project ends. Should this project be implemented if the firm requires a 14 percent rate of return? Why or why not?   
   **Solution**

Initial cash flow = -$2,460,000 - $45,000 = -$2,505,000  
OCF = $725,000(1 - 0.35) + ($2,460,000/10)(0.35) = $557,350  
Final cash flow = $45,000 + $300,000 (1 - 0.35) = $240,000  


1. The returns on the common stock of New Image Products are quite cyclical. In a boom economy, the stock is expected to return 32 percent in comparison to 14 percent in a normal economy and a negative 28 percent in a recessionary period. The probability of a recession is 25 percent while the probability of a boom is 10 percent. What is the standard deviation of the returns on this stock?   
   **Solution**

E(r) = (0.10 × 0.32) + (0.65 × 0.14) + (0.25 × -0.28) = 0.053  
Var = 0.10 (0.32 - 0.053)2 + 0.65 (0.14 - 0.053)2 + 0.25 (-0.28 - 0.053)2 = 0.039771  
Std dev = √0.039771 = 19.94 percent

1. Which one of the following stocks is correctly priced if the risk-free rate of return is 3.7 percent and the market risk premium is 8.8 percent?  
     
        
   **Solution**

E(r)A = 0.037 + (0.64 × 0.088) = 0.0933  
E(r)B = 0.037 + (0.97 × 0.088) = 0.1224  
E(r)C = 0.037 + (1.22 × 0.088) = 0.1444

E(r)D = 0.037 + (1.37 × 0.088) = 0.1576  
E(r)E = 0.037 + (1.68 × 0.088) = 0.1848

1. Phillips Equipment has 80,000 bonds outstanding that are selling at par. Bonds with similar characteristics are yielding 6.75 percent. The company also has 750,000 shares of 7 percent preferred stock and 2.5 million shares of common stock outstanding. The preferred stock sells for $53 a share. The common stock has a beta of 1.34 and sells for $42 a share. The U.S. Treasury bill is yielding 2.8 percent and the return on the market is 11.2 percent. The corporate tax rate is 38 percent. What is the firm's weighted average cost of capital?   
   **Solution**

Re = 0.028 + 1.34 (0.112 - 0.028) = 0.14056  
Rp = (0.07 × $100)/$53 = 0.13208  
  
  
  
WACC = ($105m/$224.75m) (0.14056) + ($39.75m/$224.75m) (0.13208) + ($80m/$224.75m) (0.0675) (1 - 0.38) = 10.39 percent

1. Travis & Sons has a capital structure which is based on 40 percent debt, 5 percent preferred stock, and 55 percent common stock. The pre-tax cost of debt is 7.5 percent, the cost of preferred is 9 percent, and the cost of common stock is 13 percent. The company's tax rate is 39 percent. The company is considering a project that is equally as risky as the overall firm. This project has initial costs of $325,000 and annual cash inflows of $87,000, $279,000, and $116,000 over the next three years, respectively. What is the projected net present value of this project?   
   **Solution**

WACC = (0.55 × 0.13) + (0.05 × 0.09) + [0.40 × 0.075 × (1 - 0.39)] =0.0943  
NPV -$325,000 + ($87,000/1.0943) + ($279,000/1.09432) + ($116,000/1.09433) =

1. Jemisen's has expected earnings before interest and taxes of $6,200. Its unlevered cost of capital is 13 percent and its tax rate is 34 percent. The firm has debt with both a book and a face value of $2,500. This debt has a 9 percent coupon and pays interest annually. What is the firm's weighted average cost of capital?   
   **Solution**

VU = [$6,200 × (1 - 0.34)]/0.13 = $31,476.92  
VL = $31,476.92 + (0.34 × $2,500) = $32,326.92  
VE = $32,326.92 - $2,500 = $29,826.92  
RE = 0.13 + (0.13 - 0.09) × ($2,500/$29,826.92) × (1 - 0.34) = 0.132213  
WACC = [($29,826.92/$32,326.92) × 0.132213] + [($2,500/$32,326.92) × 0.09 × (1 - 0.34)] = 12.66 percent

1. Wagner Industrial Motors, which is currently operating at full capacity, has sales of $29,000, current assets of $1,600, current liabilities of $1,200, net fixed assets of $27,500, and a 5 percent profit margin. The firm has no long-term debt and does not plan on acquiring any. The firm does not pay any dividends. Sales are expected to increase by 4.5 percent next year. If all assets, short-term liabilities, and costs vary directly with sales, how much additional equity financing is required for next year?   
   **Solution**

Projected assets = ($1,600 + $27,500) × 1.045 = $30,409.50  
Projected liabilities = $1,200 × 1.045 = $1,254  
Current equity = $1,600 + $27,500 - $1,200 = $27,900  
Projected increase in retained earnings = $29,000 × .05 × 1.045 = $1,515.25  
Equity funding need = $30,409.50 - $1,254 - $27,900 - $1,515.25 = -$259.75