FM 2555A
Chapter 17 *Practice Exercises*

Problems below, unless indicated otherwise, were taken from Brealey, R. (2017), Principles of Corporate Finance, 12th edition, McGraw-Hill Education, New York.
N.B.: ***You will learn and benefit more if you attempt solving them first before looking at their solutions.***

NOTE: Problem number format: [x/y], where x is the number of the problem and y is the page number in the 12th ed of the Brealey et al. textbook.

Problem [1/454]
Ms Kraft owns 50,000 shares of the common stock of Copperhead Corporation with a market value of $2 per share, or $100,000 overall. The company is currently financed as follows:

	Market Value
Common stock (8 million shares)	$16 million
Short-term loans	$2 million

Coperhead now announces that it is replacing $1 million of short-term debt with an issue of common stock. What action can Ms Kraft take to ensure that she is entitled to exactly the same proportion of profits as before?

Problem [2/454]
Spam Corp is financed entirely by common stock and has beta of 1.0. The firm is expected to generate a level, perpetual stream of earnings and dividends. The stock has a price-earnings ratio of 8 and a cost of equity of 12.5%. The company's stock is selling for $50. Now the firm decides to repurchase half of its shares and substitute an equal value of debt. The debit is risk-free, with a 5% interest rate. The company is exempt from corporate income taxes. Assuming MM are correct, calculate the following items after the refinancing:

a. The cost of equity
b. The overall cost of capital (WACC)
c. The price-earnings ratio
d. The stock price
e. The stock's beta

Problem [3/454]
The common stock and debt of Northern Sludge are valued at $50 million and $30 million, respectively. Investors currently require a16% return on the common stock and an 8% return on the debt. If Northern Sludge issues an additional $10 million of common stocks and uses this money to retire debt, what happens to the expected return on the stock? Assume that the change in capital structure does not affect the risk of the debt and there are no taxes.

Problem [4/455]
Suppose that Macbeth Spot Removers issues $2,500 of debt and uses the proceeds ti repurchase 250 shares.

a. Illustrate how earnings per share and share return vary with operating income.
b. If the beta of Macbeth's asset is 0.8 and its debt is risk-free, what would be the beta of the equity after the debt issue?

Problem [6/455]
Suppose that Ms Macbeth's investment bankers have informed her that since the new issue of debt is risky, debtholders will demand a return of 12.5%, which is 2.5% above the risk-free interest rate.

a. What are r_A and r_E?
b. Suppose that the beta of the unlevered stock was 0.6. What will be β_A, β_E, and β_D after the change to the capital structure?

Problem [8/455]
Gaucho Services starts life with all-equity financing and a cost of equity of 14%. Suppose it refinances to the following market-value capital structure:

Debt (D)	45%	at $r_D = 9.5\%$
Equity (E)	55%	

Use MM's proposition 2 to calculate the new cost of equity. Gaucho pays taxes at a marginal rate $T_C = 40\%$. Calculate Gaucho's after-tax WACC.

Problem [9/456]
Companies A and B differ only in their capital structure. A is financed 30% debt and 70% equity; B is financed 10% debt and 90% equity. The debt of both companies is risk-free.

a. Rosencrantz owns 1% of the common stock of A. What other investment package would produce identical cash flows for Rosencratz?

b. Guildenstern own 2% of the common stock of B. What other investment package would produce identical cash flows for Guildenstern?
c. Show that neither Rosencrantz nor Guildenstern would invest in the common stock of B if the *total* value of company A were less than that of B.

Problem [11/456]
Executive Chalk is financed solely by common stock and has outstanding 25 million shares with a market price of $10 a share. It now announces that it intends to issue $160 million of debt and to use the proceeds to buy back common stocks.

a. How is the market price of the stock affected by the announcement?
b. How many shares can the company buy back with the $160 million of new debt that it issues?
c. What is the debt ratio after the change in structure?
d. Who (if anyone) gain or loses?

Problem [13/456]
Hubbard's Pet Foods is financed 80% by common stock and 20% by bonds. The expected return on the common stock is 12% and the rate of interest on the bonds is 6%. Assuming the bonds are default-risk free, draw a graph that shows the expected return of Hubbard's common stock (r_E) and the expected return on the package of common stock and bonds (r_A) for different debt-equity ratios.

Problem [19/457]
Archimedes Levers is financed by a mixture of debt and equity. You have the following information about its cost of capital:

r_E = _____	r_D = 12%	r_A = _____
β_E = 1.5	β_D = _____	β_A = _____
r_f = 10%	r_m = 18%	D/V = 0.5

Can you fill in the blanks?

Problem [20/457]
Look back at Problem [19/457]. Suppose now that Archimedes repurchases debt and issues equity so that D/V = 0.3. The reduced borrowing causes r_D to fall to 11%. How do the other variables change?