

LO.a: Evaluate whether a security, given its current market price and a value estimate, is overvalued, fairly valued, or undervalued by the market.

1. A given stock is trading at \$36.81. An analyst estimates its intrinsic value as \$38.25. According to the analyst the stock is *most likely*:
 - A. undervalued.
 - B. overvalued.
 - C. fairly valued.
2. You are evaluating a security which is actively traded and followed by many analysts. Based on your model you arrive at an intrinsic value which is much lower than current market prices. The sensible course of action will be to:
 - A. re-evaluate your model.
 - B. place a large buy order.
 - C. place a large sell order.
3. If an investor changes his investment horizon from 10 years to 20 years, what will it do to the stock's intrinsic value, keeping all other factors constant?
 - A. Increases.
 - B. Decreases.
 - C. Remains same.
4. Peter Lynch determines the intrinsic value of an equity security to be less than its current market value. Lynch believes that the equity is *most likely*:
 - A. undervalued.
 - B. overvalued.
 - C. fairly valued.

LO.b: Describe major categories of equity valuation models.

5. A decrease in the dividend payout ratio will *most likely* decrease the intrinsic value when using a(n):
 - A. multiplier model.
 - B. asset-based valuation model.
 - C. present value model.
6. An analyst is estimating intrinsic value of an equity security. To do so, he has constructed a model which projects cash flows over the next several years. Which of the following models is he *most likely* using?
 - A. Asset-based valuation model.
 - B. Present value model.
 - C. Multiplier model.

LO.c: Explain the rationale for using present value models to value equity and describe the dividend discount and free-cash-flow-to-equity models.

7. Free cash flow to equity is calculated as:
- A. Net Income – FCInv + Net borrowing.
 - B. CFO – FCInv – Net borrowing.
 - C. CFO – FCInv + Net borrowing.
8. Which of the following statements is *most* accurate? A firm's free-cash-flow-to-equity (FCFE):
- A. is not a measure of the firm's dividend-paying capacity.
 - B. increases with an increase in the firm's net borrowing.
 - C. is significantly affected by the amount of dividends paid by the firm.
9. An analyst interested in finding a firm's dividend paying capacity will, in order to value a firm, *most likely* use:
- A. Gordon growth model.
 - B. FCFE model.
 - C. Asset valuation model.
10. Which of the following statements is incorrect about FCFE model?
- A. FCFE is a measure of a firm's expected dividends.
 - B. It can also be used for a non-dividend paying stock unlike DDM which requires the timing and the amount of the first dividend to be paid.
 - C. Not all of the available cash flow is distributed to shareholders because a company retains some part of it for future investments as a going concern.
11. With respect to FCFE model, which of the following statements is *most* accurate?
- A. FCFE model can only be used if a stock pays a dividend.
 - B. FCFE model cannot be used if a stock is not expected to pay a dividend.
 - C. FCFE model can be used if a stock pays a dividend, is expected to pay a dividend, or is not expected to pay a dividend.

LO.d: Calculate the intrinsic value of a non-callable, non-convertible preferred stock.

12. Information on a non-callable, non-convertible preferred stock is given below:
- Par value per share: \$20
 - Annual dividend per share: \$1
 - Maturity: 10 years
- Assuming the required rate of return is 8% and the current market price per share of the preferred stock is \$17, the *most likely* conclusion is that the preferred stock is:
- A. overvalued.
 - B. undervalued.
 - C. fairly valued.
13. A company's 6% preferred stock has the following features:
- Par value of \$100 and pays quarterly dividends.
 - Current market value \$80.
 - The shares are retractable (at par) with the retraction date set for three years from today.

Similarly rated preferred issues have an estimated nominal required rate of return of 15%. Analysts expect a sustainable growth rate of 5% for the company's earnings. The intrinsic value estimate of a share of this preferred issue is *closest* to:

- A. \$78.57.
- B. \$80.00.
- C. \$92.39.

14. An Australian bank has an issue of 3.2%, AUD 50 par value, perpetual preferred shares outstanding. The required rate of return on a similar issue is 6.02%. The intrinsic value of the preferred share is *closest* to:

- A. 94.06.
- B. 26.58.
- C. 23.26.

15. The present value of a non-callable, perpetual, preferred share is 117.6. What will an investor be willing to pay for another preferred share which is similar in all respects except it is callable?

- A. More than 117.6.
- B. Exactly 117.6.
- C. Less than 117.6.

16. The following data is available for a company:

Par value of preferred stock offered at a 6% dividend rate: \$100

Company's sustainable growth rate: 3%

Yield on comparable preferred stock issues: 9.5%

Investor's marginal tax rate: 40%

The value of the company's preferred stock is *closest* to:

- A. \$43.48.
- B. \$55.26.
- C. \$63.16.

17. Given that the value of the preferred stock of a company is \$56, which of the following is *most likely* to be the dividend rate for the stock? Assume par value of stock to be \$100, tax rate to be 35%, sustainable growth rate to be 5% and required rate of return of 13.4%.

- A. 4.87%.
- B. 7.15%.
- C. 7.50%.

LO.e: Calculate and interpret the intrinsic value of an equity security based on the Gordon (constant) growth dividend discount model or a two-stage dividend discount model, as appropriate.

18. An investor gathers the following data on a company:

Next year's sales revenue: \$150 million

Next year's net profit margin: 10%

Dividend payout ratio: 40%

Dividend growth rate expected during Years 2 and 3: 15%

Dividend growth rate expected after Year 3: 5%

Investors' required rate of return: 12%

Number of outstanding shares: 7.5 million

The current value per share of the company's common stock according to the two-stage dividend discount model is *closest* to:

- A. \$13.49.
- B. \$14.08.
- C. \$15.86.

19. An analyst has gathered the following data:

Return on equity 15%

Dividend payout ratio 30%

Required rate of return on shares 18%

Current year's dividend per share \$1.50

Using the Gordon growth model, the intrinsic value per share is *closest* to:

- A. \$20.00.
- B. \$21.75.
- C. \$22.10.

20. An investor gathers the following data:

| | |
|---------------------------|-----|
| ROE | 15% |
| Retention Ratio | 70% |
| Required Return on Shares | 12% |
| Next Year's EPS | \$5 |

The justified forward P/E is *closest* to:

- A. 10.5x.
- B. 20x.
- C. 27x.

21. Two companies, Gamma and Theta have justified forward P/E ratios of 12.59x and 14.29x respectively. Their ROE and payout ratios are:

| Company | Gamma | Theta |
|------------------|--------|--------|
| Return on equity | 13.50% | 15.00% |
| Payout ratio | 45.00% | 50.00% |

The required rate of return is 11%. If Gamma's payout ratio increases to 55% and Theta's payout ratio decreases to 40%, what would be the *most likely* resultant effect on their justified P/E ratios?

- A. Gamma's P/E ratio will increase but Theta's P/E ratio will decrease.
- B. Gamma's P/E ratio will decrease but Theta's P/E ratio will increase.
- C. Both P/E ratios will increase.

22. If an investor expects dividends from shares of common stock for the next three years to be D1, D2 and D3 and the selling price of the stock two and three years from now, P2 and P3 respectively, what is the intrinsic value of the stock today based on the dividend discount model?

- A. Present value of P2 and P3.
B. Present value of D2, D3, P2 and P3.
C. Present value of D1, D2, D3, and P3.
23. A security's required rate of return is 12% and its beta is 1.5. The market risk premium is 6%. What is the risk-free rate?
A. 6%.
B. 3%.
C. 9%.
24. ABC Corporation will pay a dividend of \$1.25 per share next year. If the required rate of return is 11.32% per year and dividends are expected to grow at a constant rate of 4% per year, the intrinsic value of ABC Corporation stock is *closest* to:
A. \$ 17.76.
B. \$ 17.08.
C. \$ 11.08.
25. In a Gordon growth model, what happens to the intrinsic value if dividend increases?
A. Increases.
B. Decreases.
C. Cannot be determined with certainty.
26. Peter is considering the purchase of a common stock. The current annual dividend is EUR 3.5. This dividend is expected to grow at a rate of 5% annually. If the required return is 7%, the intrinsic value of the stock is *closest* to:
A. 184.
B. 175.
C. 53.
27. Jim gathers the following information about a stock:
- | | |
|---|---------|
| Current price per share | \$54.00 |
| Current annual dividend per share | \$2.50 |
| Annual dividend growth rate for Years 1-4 | 12% |
| Annual dividend growth rate for Years 5+ | 6% |
| Required rate of return | 15% |
- Based on DDM, the stock is *most likely*:
A. overvalued.
B. fairly valued.
C. undervalued.
28. Corporation XYZ has just paid a dividend of \$2.57 per share. Dividends are expected to grow by 12% for the next two years and 8% the year after that. From the fourth year, the dividends are expected to grow at 6.2% indefinitely. What is the intrinsic value of the stock of XYZ if the required rate of return is 7.2%?
A. 376.17.
B. 388.22.

C. 308.65

29. An analyst is attempting to value shares of Mitsubishi. Mitsubishi has just paid a dividend of \$5 per share. Annual dividends are expected to grow at the rate of 6% per year over the next three years. At the end of three years, shares of Mitsubishi are expected to sell for \$ 70. If the required rate of return is 10%, the intrinsic value of a share is *closest* to:
- A. \$ 56.38.
 - B. \$ 66.53.
 - C. \$ 45.63.

30. A company has the following figures for its dividends history over the last four years:

| Year | 2013 | 2012 | 2011 | 2010 | 2009 |
|----------|------|------|------|------|------|
| DPS (\$) | 2.6 | 2.55 | 2.51 | 2.48 | 2.42 |

A company analyst uses the average of the compounded annual growth rate over the 4-year period and the sustainable growth rate for 2013 in order to estimate the growth rate of the company. She then uses the Gordon growth model to find the value of company's stock.

Given that the required rate of return is 12%, company's ROE in 2013 is 14% and the earnings retention rate is 38%, the stock's intrinsic value is *closest* to:

- A. \$25.98.
 - B. \$30.82.
 - C. \$31.92.
31. Which of the following is *least likely* to be an assumption of the Gordon growth model?
- A. Dividend growth rate, g , must be constant throughout.
 - B. Required rate of return is always greater than dividend growth rate.
 - C. Required rate of return, r may be expected to change.
32. Jill Angelica wishes to compute the fundamental leading P/E ratio of the firm SunBeams. She knows the retention ratio, the required rate of return on the stock and the worth of the dividend in dollars. Which of the following is *most likely* to be needed to help Angelica compute the leading P/E ratio?
- A. Expected constant growth rate of dividends.
 - B. Earnings per share.
 - C. Share price.
33. Chris Rogers forecasted that Android Inc. shall pay its first dividend two years from now worth \$1.50. For the year after that, it has been forecasted that a dividend of \$2.20 shall be paid. This will grow at a constant growth rate of 5%. The risk-free rate is 4%, market risk premium is 6% and beta is 1.2. Which of the following is *most likely* to be the value of a share of Android?
- A. \$30.
 - B. \$36.
 - C. \$37.

LO.f: Identify characteristics of companies for which the constant growth or a multistage dividend discount model is appropriate.

34. In which phase of its lifecycle will it be *most appropriate* to value a company using the Gordon growth model?
- A. Growth.
 - B. Mature.
 - C. Decline.
35. Company ABC recently started giving dividends to their shareholders. According to analysts, this company has entered into growth phase. Which model would be *most suitable* to value company ABC?
- A. Gordon growth model.
 - B. Free cash flow to equity model.
 - C. Three-stage dividend discount model.
36. The Gordon Growth Model is best suited for valuing a common stock of a dividend paying company that:
- A. is mature and relatively stable under different economic conditions.
 - B. is young and growing at an increasing rate.
 - C. has a higher growth rate than the required return on its equity.
37. Emma is trying to evaluate the intrinsic value of the common stock of PQR Corporation. PQR is in a growth industry, moving towards mature phase. Which of the following is the *most appropriate* model to determine the intrinsic value of PQR?
- A. Gordon growth model.
 - B. Two-stage dividend discount model.
 - C. Three-stage dividend discount model.

LO.g: Explain the rationale for using price multiples to value equity, how the price to earnings multiple relates to fundamentals, and the use of multiples based on comparables.

38. The basic difference between P/E multiple based on comparables and fundamentals is that comparables-based P/E takes into account:
- A. future expected cash flows.
 - B. market data for other firms in the industry.
 - C. future earnings growth.
39. The rationale for using ratios such as price to earnings, price to sales, price to cash flow, and price to book value to predict stock returns is:
- A. low multiples are associated with higher future returns.
 - B. high multiples are associated with higher future returns.
 - C. multiples have very low correlation with higher future returns.

LO.h: Calculate and interpret the following multiples: price to earnings, price to an estimate of operating cash flow, price to sales, and price to book value.

40. For a growth company, which one of the following is correct?
- A. Trailing P/E will be higher than leading P/E.
 - B. Leading P/E will be higher than trailing P/E.
 - C. Both leading and trailing P/E will be equal.
41. A price to earnings ratio that is derived from the Gordon growth model is directly related to the:
- A. required rate of return.
 - B. growth rate.
 - C. dividend yield.
42. When dividend payout ratio increases, the forward P/E *most likely*:
- A. increases.
 - B. decreases.
 - C. might increase or decrease.
43. Which of the following is *most likely* correct with respect to forward P/E?
- A. $\frac{\text{Next year's price}}{\text{Current earnings}}$.
 - B. $\frac{\text{Next year's price}}{\text{Next year's earnings}}$.
 - C. $\frac{\text{Current price}}{\text{Next year's earnings}}$.
44. The P/S data for a few automobile companies 2009 is given. Based only this information, which stock is most overvalued?

| Company | P/S (2009) |
|----------------|------------|
| General Motors | 0.02 |
| Ford | 0.13 |
| Daimler | 0.17 |
| Nissan | 0.36 |

- A. General Motors.
 - B. Nissan.
 - C. Ford.
45. An analyst has gathered the following information for XYZ Corporation:
- Expected dividend per share = \$ 70
 - Expected earnings per share = \$ 100
 - Dividends are expected to grow at 6% per year indefinitely
 - The required rate of return is 11%
 - Based on the information provided, the P/E multiple for XYZ is *closest* to:

- A. 6.36.
- B. 14.
- C. 14.84.

46. An analyst gathers following information about two companies:

| | Company A | Company B |
|-----------------------------|-----------|-----------|
| Current price per share | 72 | 32 |
| Last year's EPS | 5.38 | 6.58 |
| Current year's expected EPS | 4.58 | 3.22 |

Which of the following statements is *most accurate*?

- A. B has higher trailing multiple than A.
- B. A has higher current expected multiple than B.
- C. B has higher trailing and current expected multiple than A.

47. An analyst gathers the following information about similar companies in a same sector:

| | X | Y | Z |
|-----|------|-------|------|
| P/S | 3.20 | 1.52 | 1.52 |
| P/B | 7.60 | 10.50 | 7.5 |

Which of the companies is *most likely* to be undervalued?

- A. X.
- B. Y.
- C. Z.

48. An investor gathers the following data to estimate the intrinsic value of a company's stock using the justified forward P/E approach:

Next year's earnings per share \$1.00

Return on equity 14%

Dividend payout ratio 40%

Required return on shares 12%

- A. 8.8.
- B. 9.7.
- C. 11.1.

49. An investor gathers the following data about a company:

Most recent year's dividend per share: \$1.15

Next year's estimate of earnings per share: \$3.00

Estimate of long-run return on equity (ROE): 15%

Estimate of long-run dividend payout ratio: 50%

Investors' required rate of return: 12%

The company's justified forward P/E is *closest* to:

- A. 11.1.
- B. 12.4.
- C. 13.3.

50. A fund manager compiles the following data on two companies:

| | Company A | Company B |
|----------------------------------|-----------|-----------|
| Return on assets | 8.6% | 8.0% |
| Return on equity | 12.1% | 11.3% |
| Dividend payout ratio | 0.35 | 0.30 |
| Required return on equity | 11.0% | 10.2% |
| Weighted average cost of capital | 11.8% | 11.7% |

Based on the information provided, the *most accurate* conclusion is that Company A's stock is more attractive relative to that of Company B's because of its:

- A. smaller P/E ratio.
- B. greater financial leverage.
- C. higher dividend growth rate.

51. Arcal Co.'s stock is selling at \$34 and has a P/E multiple of 14 on the basis of the current year's earnings. An analyst estimates that next year's earnings per share for Arcal Co. will be 5% higher and that the stock should be valued on a forward looking basis at the industry average P/E of 15. Based on the analyst's assessment, it is *most likely* that the stock is currently:

- A. fairly valued.
- B. overvalued.
- C. undervalued.

LO.i: Describe enterprise value multiples and their use in estimating equity value.

52. When is EV/EBITDA *least likely* used?

- A. When earnings are positive.
- B. For comparing companies with significant differences in capital structure.
- C. To evaluate the cost of a takeover.

53. An analyst has gathered following information about a textile company:

EV/EBITDA = 5.2

EBITDA = \$20,000,000

Market value of debt = \$72,000,000

Market value of equity = \$56,000,000

Book value of debt = \$65,000,000

Book value of equity = \$48,000,000

Cash for this textile company is *closest* to:

- A. \$ 16,000,000.
- B. \$ 24,000,000.
- C. \$ 9,000,000.

54. Teresa Alves, a fund manager, is comparing companies with significant difference in capital structures as potential investments for her equity portfolio. The multiple that she is *most likely* to utilize in this case is:
- A. EV/EBITDA.
 - B. Price-to-book ratio.
 - C. Price-to-earnings ratio.
55. An investor who wants to estimate the enterprise value multiple (EV/EBITDA) of a company has gathered the following data:
Market value of debt: \$6 million
Market capitalization: \$25 million
Cash and short-term investments: \$2.5 million
EBITDA: \$12 million
Firm's marginal tax rate: 30%
The company's EV/EBITDA multiple is *closest* to:
- A. 2.20.
 - B. 2.38.
 - C. 2.58.
56. An investor considering the enterprise value approach to valuation gathers the following data:
EBITDA: \$25 million
Value of debt: \$40 million
Value of preferred stock: \$12 million
Cash & marketable securities: \$3.5 million
Number of common shares outstanding: 7.5 million
Firm's tax rate: 30%
Appropriate EV/EBITDA multiple: 4x
The value per share of the company's common stock is *closest* to:
- A. \$4.37.
 - B. \$5.93.
 - C. \$6.87.
57. Suppose the following information is available about a company for the year 2012:

| | |
|---------------------------------|-------------|
| Price per share | \$15 |
| Shares outstanding | 1,000,000 |
| Market Value of Debt | \$750,000 |
| Cash and Short Term Investments | \$1,250,000 |
| Marginal Tax Rate | 40% |
| Market Value of Preferred Stock | \$500,000 |

The company has an EV/EBITDA ratio of 7.5. The EBITDA of the company is *closest* to:

- A. \$2,000,000.
- B. \$15,000,000.
- C. \$17,000,000.

LO.j: Describe asset-based valuation models and their use in estimating equity value.

58. An analyst wishes to determine the intrinsic value of a company that has goodwill and patents comprising more than 40% of total assets. Further, the analyst wants to focus on both the firm's capacity to pay dividends and the expected dividends. Considering the case, which of the following valuation models is the analyst *least likely* to utilize?
- Asset-based valuation model.
 - Free-cash-flow-to-equity model.
 - Gordon dividend growth model.
59. The market value of debt for a company can be calculated as enterprise value:
- minus market value of equity, plus market value of preferred stock and cash and investments.
 - plus market value of equity, market value of preferred stock, minus cash and investments.
 - minus market value of equity, market value of preferred stock, plus cash and investments.
60. An analyst gathers the following information about a company:
- | | |
|--|--|
| Balance Sheet | |
| Assets | Liabilities and Shareholders' Equity |
| Cash: \$5,000 | Accounts payable: \$12,000 |
| Accounts receivable: \$18,000 | Notes payable: \$25,000 |
| Inventory: \$55,000 | Long-term debt: \$50,000 |
| Net fixed assets 90,000 | Common shareholders' equity: \$81,000 |
| Total assets: \$168,000 | Total liabilities and equity: \$168,000 |
| Additional Information | |
| Number of outstanding shares: 5,000 | |
| Market value of long-term debt: \$55,000 | |
| Market value of accounts receivable and inventory: 80% of reported values | |
| Net fixed assets: 125% of reported value | |
| Accounts payable and notes payable: Same as the reported value | |
| Using asset-based valuation approach, the estimated value per share is <i>closest</i> to: | |
| <ol style="list-style-type: none"> \$16.20. \$16.78. \$16.95. | |

LO.k: Explain advantages and disadvantages of each category of valuation model.

61. Which of the following is *least likely* a disadvantage of using asset-based valuation model?
- Market values are hard to determine.
 - Impacted by economic conditions.
 - Does not account for intangible assets.
62. Which of the following is *least likely* an advantage of using price multiples valuation model?
- They can be used in time series and cross-sectional comparisons.
 - They can provide floor values.

C. They are readily available and widely used.

Solutions

1. A is correct. Since the market value is less than intrinsic value the stock is undervalued.
2. A is correct. For a security that is actively traded and followed it is unlikely that the intrinsic value differs substantially from the market value.
3. C is correct. The intrinsic value of a security is independent of the investor's holding period.
4. B is correct. Since the market value is more than intrinsic value the stock is overvalued.
5. C is correct. A decrease in the dividend payout ratio will decrease the cash expected to be distributed to shareholders. The Dividend discount model is the present value of the cash expected to be distributed to shareholders. Therefore a decrease in the dividend payout ratio will decrease the intrinsic value in a present value model.
6. B is correct. Since he is evaluating future cash flows he is most likely using a present-value model.
7. C is correct.
8. B is correct. FCFE increases with an increase in net borrowings—as can be seen from the formula given below:
$$\text{FCFE} = \text{CFO} - \text{FCInv} + \text{Net borrowing}.$$
9. B is correct. FCFE is a measure of the firm's dividend paying capacity.
10. A is correct. FCFE is a measure of a firm's dividend-paying capacity rather than expected dividends.
11. C is correct. FCFE model can be used if a stock pays a dividend, is expected to pay a dividend, or is not expected to pay a dividend.
12. A is correct. Using a financial calculator, calculate the present value as:

$$\text{FV} = \$20; \text{N} = 10; \text{PMT} = 1; \text{I/Y} = 8\%; \text{CPT PV} = \$15.97$$

Since the intrinsic value is less than the current market price, the preferred stock is overvalued.

13. A is correct. Quarterly dividend = $\frac{\$100 * 0.06}{4} = \1.5 a share;
 Quarterly required return = $15\%/4 = 3.75\%$
 Compute PV using a financial calculator:
 PMT = \$1.5; N = 12; FV = \$100; I = 3.75%; CPT PV = \$78.57.
14. B is correct.
 Dividend = 3.2% of 50 = 1.6
 Intrinsic value = $\frac{1.6}{0.0602} = 26.58$
15. C is correct. The investor will pay less for this share because of the risk that it might be called by the issuer.
16. C is correct.
 $V_0 = \frac{D_0}{r} = 100 * \frac{0.06}{0.095} = \$63.16.$
17. C is correct.

$$\text{Value of preferred stock} = \frac{\text{Dividend}}{\text{Required rate of return}}$$

$$56 = \frac{\text{Dividend}}{0.134}$$

$$\text{Dividend} = 7.504$$

$$\text{Dividend rate} = \frac{\text{Dividend}}{\text{Par value}} = \frac{7.504}{100} \approx 7.50\%$$
18. A is correct. Net profit margin = $\frac{\text{Net earnings}}{\text{Sales}}$
 Net earnings = Net profit margin * Sales;
 Dividends per share (“D_n”) = $\frac{\text{Net earnings} * \text{Payout ratio}}{\text{\# of outstanding shares}};$
 Therefore, $D_1 = \frac{\$150 \text{ million} * 0.10 * 0.40}{7.5 \text{ million}} = \0.80
 $D_2 = \$0.80 * (1 + 0.15) = \0.92
 $D_3 = \$0.80 * (1 + 0.15)^2 = \1.06
 $D_4 = \$0.80 * (1 + 0.15)^2 * (1 + 0.05) = \1.11
 $V_3 = \frac{1.11}{0.12 - 0.05} = 15.86$
 $V_0 = \frac{0.8}{1.12} + \frac{0.92}{1.12^2} + \frac{1.06}{1.12^3} + \frac{15.86}{1.12^3} = \13.49
19. C is correct. $g = b * \text{ROE}$; $b = \text{earnings retention rate} = (1 - \text{dividend payout ratio})$
 $D_1 = D_0(1 + g); V_0 = \frac{D_1}{r - g}$
 $b = 1 - 0.30 = 0.70; g = 0.70 * 15 = 10.5\%;$
 $D_1 = 1.50 (1.105) = \$1.6575;$
 $V_0 = \frac{1.6575}{0.18 - 0.105} = \22.10

20. B is correct. $\text{Growth} = \text{Retention Ratio} * \text{ROE} = 0.7 * 0.15 = 0.105$

$$\text{Justified Forward PE} = \frac{\text{Payout Ratio}}{r - g} = \frac{1 - 0.7}{0.12 - 0.105} = 20$$

21. B is correct.

Gamma:

$$\text{New Growth rate} = (1 - \text{payout ratio}) * \text{ROE} = (1 - 0.55) * 0.135 = 6.075\%$$

$$\text{New } \frac{P_0}{E_1} = \frac{p}{r - g} = \frac{0.55}{0.11 - 0.06075} = 11.17x$$

Therefore P/E ratio has decreased for Gamma from 12.59x to 11.17x.

Theta:

$$\text{New Growth rate} = (1 - \text{payout ratio}) * \text{ROE} = (1 - 0.40) * 0.15 = 9\%$$

$$\text{New } \frac{P_0}{E_1} = \frac{p}{r - g} = \frac{0.40}{0.11 - 0.09} = 20x$$

Therefore P/E ratio of Theta has increased from 14.29x to 20x.

22. C is correct.

23. B is correct. $12 = r + (1.5 * 6)$. $r = 3$.

24. B is correct. Intrinsic value via Gordon growth model $= \frac{1.25}{0.1132 - 0.04} = \$ 17.08$

25. C is correct. When dividend increases, numerator increases.

If the payout ratio increases, retention rate decreases and value of g decreases.

If g decreases, the denominator increases. As a result, the impact on value if dividend is increased cannot be determined with certainty.

26. A is correct. $V = \frac{3.5(1.05)}{0.07 - 0.05} = \text{EUR } 184$.

27. A is correct.

$$D_1 = 2.50(1.12) = 2.80$$

$$D_2 = 2.50(1.12)^2 = 3.14$$

$$D_3 = 2.50(1.12)^3 = 3.51$$

$$D_4 = 2.50(1.12)^4 = 3.93$$

Since D_4 will grow at 6% and the required return is 15%, the value at time 4 can be calculated at $\frac{3.93(1.06)}{0.15 - 0.06} = 46.28$. Combining this value at time 4 with the dividend at the end of 4 years, we have a total of 50.21.

We can now enter the following cash flows: $C01 = 2.80$, $C02 = 3.14$, $C03 = 3.51$, $C04 = 50.21$. For a discount rate of 15%, the present value is 35.82. Since the market price of 54 is much higher, the share is overvalued.

28. C is correct.

$$D_1 = 2.57(1.12) = 2.88$$

$$D_2 = 2.57(1.12)^2 = 3.22$$

$$D_3 = 2.57(1.12)^2(1.08) = 3.48$$

$$D_4 = 2.57(1.12)^2(1.08)(1.062) = 3.70$$

Since D_4 will grow at 6.2% and the required return is 7.2%, the value at time 4 can be calculated at $\frac{3.70(1.062)}{0.072 - 0.062} = 392.94$. Combining this value at time 4 with the dividend at the end of 4 years, we have a total of 396.64.

We can now enter the following cash flows: $C01 = 2.88$, $C02 = 3.122$, $C03 = 3.48$, $C04 = 396.64$. For a discount rate of 7.2%, the present value is 308.65.

29. B is correct.

$$V = \frac{5.3}{1.1} + \frac{5.618}{1.1^2} + \frac{5.96}{1.1^3} + \frac{70}{1.1^3} = 66.53$$

30. C is correct. Compounded annual growth rate over the period can be calculated using the following formula:

$$\text{Ending Value} = \text{Beginning Value} * (1 + \text{growth rate})^N$$

$$2.6 = 2.42 * (1 + g)^4$$

$$g = 1.81\%$$

Sustainable growth rate for 2013:

$$g = \text{ROE} * \text{Retention rate} = 0.14 * 0.38 = 5.32\%$$

$$\text{Average growth rate} = (5.32\% + 1.81\%) * 0.5 = 3.565\%$$

$$\text{Stock's intrinsic value by Gordon growth model} = \frac{D_1}{r - g}$$

$$= \frac{2.6 * 1.03565}{0.12 - 0.03565}$$

$$= \$31.92$$

31. C is correct. Required rate of return is assumed to be constant in the Gordon growth model and thus is not expected to change.

32. A is correct. The firm's fundamental leading P/E Ratio is given by:

$$\frac{\text{Expected dividend payout ratio}}{\text{Required rate} - \text{growth rate of dividends}}$$

Expected dividend payout ratio may be calculated by: $1 - \text{retention ratio}$.

Therefore, the only bit of information needed for computation is expected constant growth

rate of dividends.

33. A is correct.

Step 1: Compute the required rate of return.

$$R = R_f + \beta (\text{Market risk premium})$$

$$R = 4 + 1.2 (6) = 11.2\%$$

Step 2: Compute the worth of share at $t = 2$

Share price:

$$\frac{\text{Dividend}}{r - g} = \frac{2.2}{0.112 - 0.05} = \$35.48$$

Step 3: Compute the total of dividend and share worth.

$$\text{Total} = 35.48 + 1.5 = \$36.98$$

Step 4: Discount back using the required rate of return

$$= \frac{36.98}{1.112^2} = \$29.91$$

34. B is correct. The Gordon growth model is often used to value dividend paying companies in their mature phase since the dividend growth would also be stable in this phase. The growth of the dividend will be linked to the growth of the company which would be linked to the growth of the economy.
35. C is correct. Three-stage dividend discount model is used to value young companies entering the growth phase.
36. A is correct. Mature, relatively stable dividend paying stocks can be valued using Gordon Growth Model. This model is not applicable to companies that are just entering the growth phase or with higher growth rates than the required return on its equity.
37. B is correct. The two stage models are best used for companies that are transitioning from a growth stage to a mature stage.
38. B is correct. P/E multiple based on comparable take into account the P/E ratios of other comparable firms in the industry. Fundamentals-based P/E takes into account fundamental values related to the company such as: dividends, growth rate and required return.
39. A is correct. Many price multiples have been shown to be useful to predict stock returns, with low multiples associated with higher future returns.
40. A is correct. The trailing P/E will be higher as the earnings are higher in the future periods. So the leading P/E will be lower.
41. B is correct. A P/E ratio derived from Gordon growth model is directly related to growth rate and dividend payout ratio and inversely related to required rate of return.
42. C is correct. $P/E = \text{Payout Ratio} / (r - g)$. A higher payout ratio means that the numerator increases. However, a higher payout ratio also means that the retention ratio is lower and so the growth rate will be lower. (Remember that the growth rate is approximately equal to the retention ratio x ROE.) A lower growth rate implies that the denominator increases. Since both the numerator and denominator increase, the impact on the overall ratio is not very clear.
43. C is correct.

44. B is correct. Since Nissan is trading at the highest price per unit of sales, it is the most overpriced.

45. B is correct. $P/E = (70/100)/(0.11 - 0.06) = 14$

46. B is correct.

$$A's \text{ Trailing } P/E = \frac{72}{5.38} = 13.38$$

$$B's \text{ trailing } P/E = \frac{32}{6.58} = 4.86$$

$$A's \text{ current expected } P/E = \frac{72}{4.58} = 15.7$$

$$B's \text{ current expected } P/E = \frac{32}{3.22} = 9.94$$

47. C is correct. Z has lowest P/B and P/S ratio.

48. C is correct. Dividend growth rate = $(1 - \text{Payout ratio}) * ROE$;

$$\text{Justified forward } P/E: \frac{P_0}{E_1} = \frac{p}{r - g}$$

$$\text{Dividend growth rate} = (1 - 0.4) * 14\% = 8.4\%;$$

$$\text{Justified forward } P/E = \frac{0.4}{0.12 - 0.084} = 11.1x$$

49. A is correct.

$$\text{Justified forward } P/E: \frac{P_0}{E_1} = \frac{p}{r - g}$$

p = payout ratio = 50% (given);

r = required rate of return = 12% (given)

$$g = (1 - \text{Dividend payout ratio}) * ROE = (1 - 0.50) * 15 = 7.5\%$$

$$\frac{P_0}{E_1} = \frac{p}{r - g} = \frac{0.50}{0.12 - 0.075} = 11.1x$$

50. A is correct. From the computations shown below Company A's stock is more attractive because of its smaller P/E ratio than Company B's stock.

| | Company A | Company B |
|--------------------------|-------------------------------|----------------------------|
| Dividend growth rate (g) | $12.1 * (1 - 0.35) = 7.865\%$ | $11.3 (1 - 0.30) = 7.91\%$ |

| | |
|---|-----------------------------------|
| $P/E \text{ ratio} = \frac{\text{div.payout ratio}}{r - g}$ | |
| $\frac{0.35}{0.11 - 0.07865} = 11.2x$ | $\frac{0.3}{0.102 - 0.079} = 13x$ |

Financial leverage = (ROE/ROA)

$$\frac{12.1}{8.6} = 1.4x$$

$$\frac{11.3}{8.0} = 1.4x$$

51. C is correct. The stock is currently undervalued by \$4.25 as its intrinsic value is \$38.25 compared to the price of \$34: Next year's EPS = $\left(\frac{\$34}{14}\right) * 1.05 = \2.55 ; Intrinsic value = $\$2.55 * 15 = \38.25 .
52. A is correct. EV/ EBITDA is used when earnings are negative making P/E useless. EBITDA is usually positive.
53. B is correct.
 $EV = 5.2 * 20,000,000 = 104,000,000$
 $EV = MVD + MVE - \text{Cash}$
 $\text{Cash} = 72,000,000 + 56,000,000 - 104,000,000 = 24,000,000$
54. A is correct. The EV/EBITDA approach is most useful when comparing companies with significant differences in capital structure. EBITDA is computed prior to payment to any of the company's financial stakeholders and is not impacted by the amount of debt leverage.
55. B is correct. Enterprise value (EV) = Market capitalization + MV of debt + MV of preferred stock – Cash and short-term investments.
 $EV = 25 + 6 - 2.5 = 28.5$; $\frac{EV}{EBITDA} = \frac{28.5}{12} = 2.38$.
56. C is correct. First, compute the enterprise value (EV) from EBITDA * EV/EBITDA multiple. Then determine market capitalization (value of equity) using the following expression. Finally, compute the value per share.
 $EV = 25 * 4 = 100 \text{ million}$
 $EV = \text{Market capitalization} + \text{MV of preferred stock} + \text{MV of debt} - \text{Cash and investments}$
 $\text{Market capitalization} = EV - \text{MV of Preferred stock} - \text{MV of debt} + \text{Cash and investments}$
 $\text{Market capitalization} = 100 - 12 - 40 + 3.5 = 51.5 \text{ million}$
 $\text{Value per share} = \frac{\text{Market capitalization}}{\text{Number of outstanding shares}}$
 $\text{Value per share} = \frac{51.5}{7.5} = \6.87
57. A is correct. Enterprise Value = Market Cap + MV of Debt + MV of Preferred Stock – Cash and Short Term Investments = $(15 * 1000000) + 750000 + 500000 - 1250000 = \$15,000,000$
 $\frac{EV}{EBITDA} = 7.5$; $EBITDA = \frac{EV}{7.5} = \frac{15,000,000}{7.5} = \$2,000,000$
58. A is correct. An asset-based valuation model is not appropriate considering the high proportion of intangibles (goodwill and patents) in the firm's assets.
59. C is correct.
60. B is correct. Market value of assets: $5000 + (18000 + 55000) * 0.8 + 90000 * 1.25 = 175900$
 Market value of liabilities: $12000 + 25000 + 55000 = 92000$

Estimated value per share: $\frac{175900 - 92000}{5000} = \16.78

61. B is correct. Changes in economic conditions have least impact on value calculated using asset based valuation approach.
62. B is correct. Providing floor values is an advantage of asset based model not price multiple model.