CHAPTER 1

Comparable Companies Analysis

1) Using the information provided for Gasparro Corp., complete the questions regarding fully diluted shares outstanding

General Information	
Company Name	Gasparro Corp.
Ticker	JDG
Stock Exchange	Nasdaq
Fiscal Year Ending	Dec-31
Moody's Corporate Rating	Ba2
S&P Corporate Rating	BB
Predicted Beta	1.30
Marginal Tax Rate	*25.0%*

(shares in millions)

Assumptions	
Current Share Price	$50.00
Basic Shares Outstanding	98.50

Options/Warrants		
Tranche	Number of Shares	Exercise Price
Tranche 1	1.250	$10.00
Tranche 2	1.000	30.00
Tranche 3	0.500	40.00
Tranche 4	0.250	60.00

a. Calculate Gasparro Corp.'s in-the-money options/warrants

b. Calculate proceeds from in-the-money options/warrants

c. Calculate net new shares from the options/warrants

d. Calculate fully diluted shares outstanding

2) Using the prior answers and information, as well as the balance sheet data below, calculate Gasparro's equity value and enterprise value

($ in millions, except per share data)

Assumptions	
Current Share Price	$50.00
52-week High Price	62.50
52-week Low Price	40.00
Dividend Per Share (MRQ)	0.25

Balance Sheet Data		
	2018A	9/30/2019
Cash and Cash Equivalents	$75.0	$100.0
Accounts Receivable	625.0	650.0
Inventories	730.0	750.0
Prepaids and Other Current Assets	225.0	250.0
Total Current Assets	**$1,655.0**	**$1,750.0**
Property, Plant and Equipment, net	1,970.0	2,000.0
Goodwill and Intangible Assets	775.0	800.0
Other Assets	425.0	450.0
Total Assets	**$4,825.0**	**$5,000.0**
Accounts Payable	275.0	300.0
Accrued Liabilities	450.0	475.0
Other Current Liabilities	125.0	150.0
Total Current Liabilities	**$850.0**	**$925.0**
Total Debt	1,875.0	1,850.0
Other Long-Term Liabilities	500.0	500.0
Total Liabilities	**$3,225.0**	**$3,275.0**
Noncontrolling Interest	-	-
Preferred Stock	-	-
Shareholders' Equity	1,600.0	1,725.0
Total Liabilities and Equity	**$4,825.0**	**$5,000.0**
Balance Check	*0.000*	*0.000*

a. Calculate equity value

b. Calculate enterprise value

3) Using the information provided for Gasparro, complete the questions regarding non-recurring items

Non-recurring Items

$25.0 million pre-tax gain on the sale of a non-core business in Q4 2018
$30.0 million pre-tax inventory valuation charge in Q2 2019 related to product obsolescence
$15.0 million pre-tax restructuring charge in Q3 2019 related to severance costs

($ in millions, except per share data)

Reported Income Statement

	Fiscal Year Ending December 31,			Prior Stub	Current Stub	LTM
	2016A	2017A	2018A	9/30/2018	9/30/2019	9/30/2019
Sales	**$3,750.0**	**$4,150.0**	**$4,500.0**	**$3,375.0**	**$3,600.0**	**$4,725.0**
COGS (incl. D&A)	2,450.0	2,700.0	2,925.0	2,200.0	2,350.0	3,075.0
Gross Profit	**$1,300.0**	**$1,450.0**	**$1,575.0**	**$1,175.0**	**$1,250.0**	**$1,650.0**
SG&A	750.0	830.0	900.0	675.0	720.0	945.0
Other Expense / (Income)	-	-	-	-	-	-
EBIT	**$550.0**	**$620.0**	**$675.0**	**$500.0**	**$530.0**	**$705.0**
Interest Expense	110.0	105.0	102.0	75.0	73.0	100.0
Pre-tax Income	**$440.0**	**$515.0**	**$573.0**	**$425.0**	**$457.0**	**$605.0**
Income Taxes	110.0	128.8	143.3	106.3	114.3	151.3
Noncontrolling Interest	-	-	-	-	-	-
Preferred Dividends	-	-	-	-	-	-
Net Income	**$330.0**	**$386.3**	**$429.8**	**$318.8**	**$342.8**	**$453.8**
Effective Tax Rate	*25.0%*	*25.0%*	*25.0%*	*25.0%*	*25.0%*	*25.0%*
Weighted Avg. Diluted Shares	100.0	100.0	100.0	100.0	100.0	100.0
Diluted EPS	**$3.30**	**$3.86**	**$4.30**	**$3.19**	**$3.43**	**$4.54**

Cash Flow Statement Data

	Fiscal Year Ending December 31,			Prior Stub	Current Stub	LTM
	2016A	2017A	2018A	9/30/2018	9/30/2019	9/30/2019
Cash From Operations	400.0	450.0	500.0	360.0	380.0	520.0
Capital Expenditures	170.0	185.0	200.0	150.0	155.0	205.0
% sales	*4.5%*	*4.5%*	*4.4%*	*4.4%*	*4.3%*	*4.3%*
Free Cash Flow	**$230.0**	**$265.0**	**$300.0**	**$210.0**	**$225.0**	**$315.0**
% margin	*6.1%*	*6.4%*	*6.7%*	*6.2%*	*6.3%*	*6.7%*
FCF / Share	**$2.30**	**$2.65**	**$3.00**	**$2.10**	**$2.25**	**$3.15**
Depreciation & Amortization	155.0	165.0	175.0	125.0	125.0	175.0
% sales	*4.1%*	*4.0%*	*3.9%*	*3.7%*	*3.5%*	*3.7%*

a. Calculate adjusted LTM gross profit for Gasparro, assuming the $30.0 million inventory charge is added back to COGS

b. Calculate adjusted LTM EBIT

c. Calculate adjusted LTM EBITDA

d. Calculate adjusted LTM net income

4) Using the prior answers and information, complete the questions regarding Gasparro's LTM return on investment ratios

a. Calculate return on average invested capital

b. Calculate return on average equity

c. Calculate return on average assets

d. Calculate implied annual dividend per share

5) Using the prior answers and information, complete the questions regarding Gasparro's LTM credit statistics

   a. Calculate debt-to-total capitalization

   b. Calculate total debt-to-EBITDA

   c. Calculate net debt-to-EBITDA

   d. Calculate EBITDA-to-interest expense

   e. Calculate (EBITDA – capex)-to-interest expense

   f. Calculate EBIT-to-interest expense

6) Using the prior answers and information, calculate Gasparro's trading multiples

($ in millions, except per share data)

Trading Multiples				
	LTM 9/30/2019	NFY 2019E	NFY+1 2020E	NFY+2 2021E
EV / Sales	A)	1.4x	1.3x	1.2x
Metric		$5,000.0	$5,350.0	$5,625.0
EV / EBITDA		B)	6.6x	6.3x
Metric		$950.0	$1,025.0	$1,075.0
EV / EBIT		8.8x	C)	7.8x
Metric		$765.0	$825.0	$865.0
P/E		9.8x	9.1x	D)
Metric		$5.10	$5.50	$5.75
FCF Yield		*7.5%*	*8.3%*	E)
Metric		$375.0	$415.0	$455.0

a. Calculate Gasparro Corp.'s LTM enterprise value-to-sales

b. Calculate 2019E enterprise value-to-EBITDA

c. Calculate 2020E enterprise value-to-EBIT

d. Calculate 2021E P/E

e. Calculate 2021E FCF yield

7) Using the prior answers and information, calculate Gasparro's growth rates

Growth Rates				
	Sales	**EBITDA**	**FCF**	**EPS**
Historical				
1-year ('17-'18)	**A)**	*5.1%*	*13.2%*	*6.4%*
2-year CAGR ('16-'18)	*9.5%*	**B)**	*14.2%*	*11.6%*
Estimated				
1-year ('18-'19E)	*11.1%*	*15.2%*	**C)**	*24.1%*
2-year CAGR ('18-'20E)	*9.0%*	*11.5%*	*17.6%*	**D)**

a. Calculate Gasparro's historical one-year sales growth

b. Calculate historical two-year EBITDA compounded annual growth rate

c. Calculate estimated one-year FCF growth

d. Calculate estimated two-year EPS CAGR

8) Using the information provided for ValueCo's peers, complete the questions regarding LTM profitability margins

($ in millions, except per share data)

	LTM Financial Statistics					LTM Profitability Margins			
Company	Sales	Gross Profit	EBITDA	EBIT	Net Income	Gross Profit (%)	EBITDA (%)	EBIT (%)	Net Income (%)
BuyerCo	$6,559.6	$2,328.7	$1,443.1	$1,279.1	$852.5	A)	22%	20%	13%
Sherman Co.	5,894.6	1,945.2	1,047.0	752.2	507.2	33%	B)	13%	9%
Pearl Corp.	4,284.5	1,585.3	838.7	624.5	393.4	37%	20%	C)	9%
Gasparro Corp.									
Kumra Inc.	3,186.7	922.4	665.3	505.9	306.4	29%	21%	16%	D)
Mean						**32%**	E)	**16%**	**10%**
Median						**36%**	**20%**	F)	**10%**

a. Calculate BuyerCo's gross profit margin

b. Calculate Sherman Co.'s EBITDA margin

c. Calculate Pearl Corp.'s EBIT margin

d. Calculate Kumra Inc.'s net income margin

e. Calculate the mean EBITDA margin

f. Calculate the median EBIT margin

9) Using the information below, calculate the LTM leverage and coverage ratios for ValueCo's peers

($ in millions, except per share data)

LTM Financial Data

Company	Debt	Shareholders' Equity	Cash	Int. Exp.	Capex	EBITDA	EBIT
BuyerCo	$2,200.0	$2,480.0	$400.0	$142.4	$196.8	$1,443.1	$1,279.1
Sherman Co	3,150.0	2,359.0	649.0	76.0	235.8	1,047.0	752.2
Pearl Corp.	1,500.0	2,559.6	868.1	100.0	128.5	838.7	624.5
Kumra Inc.	891.2	2,687.6	481.3	60.3	143.4	665.3	505.9

	LTM Leverage Ratios			LTM Coverage Ratios		
Company	Debt / Tot. Cap. (%)	Debt / EBITDA (x)	Net Debt / EBITDA (x)	EBITDA / Int. Exp. (x)	EBITDA - Cpx/ Int. (x)	EBIT / Int. Exp. (x)
BuyerCo	A)	1.5x	1.2x	10.1x	8.8x	9.0x
Sherman Co.	57%	B)	2.4x	13.8x	10.7x	9.9x
Pearl Corp.	37%	1.8x	C)	8.4x	7.1x	6.2x
Gasparro Corp.						
Kumra Inc.	25%	1.3x	0.6x	D)	E)	F)
Mean	**44%**	G)	**1.4x**	**10.5x**	**8.4x**	**8.2x**
Median	**47%**	**1.8x**	**1.2x**	H)	**8.7x**	**8.4x**

a. Calculate BuyerCo's debt-to-total capitalization

b. Calculate Sherman Co.'s debt-to-EBITDA ratio

c. Calculate Pearl Corp.'s net debt-to-EBITDA ratio

d. Calculate Kumra Inc.'s EBITDA-to-interest expense ratio

e. Calculate Kumra Inc.'s (EBITDA – capex)-to-interest expense ratio

f. Calculate Kumra Inc.'s EBIT-to-interest expense ratio

g. Calculate the mean debt-to-EBITDA leverage ratio

h. Calculate the median EBITDA-to-interest expense ratio

10) Using the information below, calculate the LTM valuation multiples for ValueCo's peers

($ in millions, except per share data)

LTM Financial Data

Company	Sales	EBITDA	EBIT	EPS
BuyerCo	$6,559.6	$1,443.1	$1,279.1	$6.09
Sherman Co.	5,894.6	1,047.0	752.2	3.62
Pearl Corp.	4,284.5	838.7	624.5	5.21
Kumra Inc.	3,186.7	665.3	505.9	3.33

	Current			Enterprise Value /			Price /
Company	Share Price	Equity Value	Enterprise Value	LTM Sales	LTM EBITDA	LTM EBIT	LTM EPS
BuyerCo	$70.00	$9,800.0	$11,600.0	A)	8.0x	9.1x	11.5x
Sherman Co.	40.00	5,600.0	8,101.0	1.4x	B)	10.8x	11.0x
Pearl Corp.	68.50	5,171.8	5,803.7	1.4x	6.9x	C)	13.1x
Gasparro Corp.							
Kumra Inc.	52.50	4,851.6	5,344.6	1.7x	8.0x	10.6x	D)
Mean				**1.5x**	**E)**	**9.8x**	**12.4x**
Median				**1.4x**	**7.7x**	**9.4x**	**F)**

a. Calculate BuyerCo's enterprise value-to-sales multiple

b. Calculate Sherman Co.'s enterprise value-to-EBITDA multiple

c. Calculate Pearl Corp.'s enterprise value-to-EBIT multiple

d. Calculate Kumra Inc.'s P/E multiple

e. Calculate the mean enterprise value-to-EBITDA multiple

f. Calculate the median P/E ratio

11) Using the information below, calculate ValueCo's implied valuation ranges using the company's LTM EBITDA

($ in millions, except per share data)

EBITDA	Financial Metric	Multiple Range			Implied Enterprise Value		Less: Net Debt	Implied Equity Value		Fully Diluted Shares	Implied Share Price	
LTM	$700	7.0x	–	8.0x	A)	– A)	(1,500)	B)	– B)	80	C)	– C)

a. Calculate ValueCo's implied enterprise value range

b. Calculate ValueCo's implied equity value range

c. Calculate ValueCo's implied share price range

12) Using the information below, calculate ValueCo's implied valuation ranges using the company's LTM net income

($ in millions, except per share data)

Net Income	Financial Metric	Multiple Range			Implied Equity Value			Fully Diluted Shares	Implied Share Price		
LTM	$300	11.0x	–	13.0x	A)	–	A)	80	B)	–	B)

a. Calculate ValueCo's implied equity value range

b. Calculate ValueCo's implied share price range

13) Which of the following is the correct order of steps to complete comparable companies analysis?

I. Locate the necessary financial information
II. Select the universe of comparable companies
III. Spread key statistics, ratios, and trading multiples
IV. Determine valuation
V. Benchmark the comparable companies

A. II, I, III, V, IV
B. I, II, III, IV, V
C. II, I, III, IV, V
D. III, I, IV, V, II

14) All of the following are business characteristics that can be used to select comparable companies EXCEPT

A. Products and services
B. Distribution channels
C. Return on investment
D. Sector

15) All of the following are financial characteristics that can be used to select comparable companies EXCEPT

A. Credit profile
B. Growth profile
C. Profitability
D. Geography

16) Which of the following are key business characteristics to examine when screening for comparable companies?

I. Sector
II. Return on investment
III. End markets
IV. Distribution channels
V. Return on assets

A. I and III
B. II and IV
C. I, III, and IV
D. I, II, III, IV, and V

17) Which of the following are key financial characteristics to examine when screening for comparable companies?

I. Customers
II. Profitability
III. Growth profile
IV. Credit profile
V. End markets

A. II and III
B. II, III, and IV
C. I, II, and IV
D. II, III, and V

18) End markets refer to the

A. Market into which a company sells its products and services
B. Medium through which a company sells its products and services to the end user
C. End users of a product or service
D. Stores that distribute a company's product or service

19) Distribution channels refer to the

A. Market into which a company sells its products and services
B. Medium through which a company sells its products and services to the end user
C. End users of a product or service
D. Stores that distribute a company's product or service

20) Which of the following is NOT a financial statistic to measure the profitability of a company?

A. Gross profit
B. EBITDA margin
C. EBIT margin
D. Equity value

21) Which of the following is NOT a source for locating financial information for comparable companies?

A. 10-K
B. 13-D
C. Investor Presentations
D. Equity Research

22) Which of the following is the correct calculation for fully diluted shares outstanding when used in trading comps?

A. "Out-of-the money" options and warrants + "in-the-money" convertible securities
B. Basic shares outstanding + "in-the-money" options and warrants + "in-the-money" convertible securities
C. "In-the-money" options and warrants + "in-the-money" convertible securities
D. Basic shares outstanding + "out-of-the money" options and warrants

23) Which methodology is used to determine additional shares from "in-the-money" options and warrants when determining fully diluted shares?

A. Treasury Stock Method
B. "If-Converted" Method
C. Net Share Settlement Method
D. "In-the-Money" Method

24) Calculate the company's equity and enterprise value, respectively, using the information below

($ in millions, except per share data; shares in millions)

Assumptions	
Current Share Price	$20.00
Fully Diluted Shares	50.0
Total Debt	250.0
Preferred Stock	35.0
Noncontrolling Interest	15.0
Cash and Cash Equivalents	50.0

A. $1,000.0 million; $1,250.0 million
B. $1,000.0 million; $1,350.0 million
C. $1,700.0 million; $1,915.0 million
D. $1,700.0 million; $1,350.0 million

25) Calculate fully diluted shares using the information below

($ in millions, except per share data; shares in millions)

Assumptions	
Current Share Price	$25.00
Basic Shares Outstanding	200.0
Exercisable Options	20.0
Weighted Average Exercise Price	$10.00

A. 150.4 million
B. 200.5 million
C. 212.0 million
D. 220.0 million

26) Calculate fully diluted shares using the information below

($ in millions, except per share data; shares in millions)

Assumptions	
Current Share Price	$40.00
Basic Shares Outstanding	300.0
Exercisable Options	10.0
Weighted Average Exercise Price	$26.00

A. 295.4 million
B. 300.0 million
C. 303.5 million
D. 310.0 million

27) If a company has an enterprise value of $1,000 million and equity value of $1,150 million, what is the company's net debt?

A. $250 million
B. ($250) million
C. $150 million
D. ($150) million

28) What is the most conservative (most dilutive scenario) way to treat options and warrants when calculating fully diluted shares outstanding?

A. Use all outstanding "in-the-money" options and warrants
B. Use all exercisable "in-the-money" options and warrants
C. Ignore all "in-the-money" options and warrants
D. Ignore all outstanding "in-the-money" options and warrants

29) Which type of "in-the-money" options may be excluded from the calculation of fully-diluted shares outstanding in comparable companies analysis?

A. Exercisable
B. Net share settled
C. Outstanding, but not exercisable
D. If-Converted

30) Calculate fully diluted outstanding shares using the information below

($ in millions, except per share data; shares in millions)

Assumptions	
Company	
Current Share Price	$45.00
Basic Shares Outstanding	250.0
Convertible	
Amount Outstanding	$300.0
Conversion Price	$30.00

A. 200.5 million
B. 253.8 million
C. 260.0 million
D. 265.5 million

31) Calculate fully diluted shares using the information below

($ in millions, except per share data; shares in millions)

Assumptions	
Current Share Price	$30.00
Basic Shares Outstanding	350.0
Exercisable Options	10.0
Weighted Average Exercise Price	$15.00
Convertible Amount Outstanding	$250.0
Convertible Conversion Price	$20.00

A. 325.0 million
B. 355.3 million
C. 363.5 million
D. 367.5 million

Use the information below to answer the next two questions

($ in millions, except per share data; shares in millions)

Assumptions	
Current Share Price	$30.00
Conversion Price	22.50
Convert Amount Outstanding	$225.0

32) Using the if-converted method, calculate net new shares

A. 2.5
B. 5.0
C. 10.0
D. 12.5

33) Using the net share settlement method, calculate net new shares

A. 2.5
B. 5.0
C. 10.0
D. 12.5

34) What is the formula for calculating enterprise value?

A. Equity value + total debt
B. Equity value + total debt + preferred stock + noncontrolling interest – cash
C. Equity value + total debt – preferred stock – noncontrolling interest – cash
D. Equity value + total debt + preferred stock + noncontrolling interest + cash

35) All else being constant, how does enterprise value change if a company raises equity and uses the entire amount to repay debt?

A. Stays constant
B. Increases
C. Decreases
D. Not enough information to answer the question

36) Show the necessary adjustments and pro forma amounts if a company issues $200.0 million of equity and uses the proceeds to repay debt (excluding fees and expenses).

($ in millions)

Capital Structure	Actual 2018	Adjustments +	Adjustments -	Pro forma 2018
Equity Value	$1,200.0			
Plus: Total Debt	750.0			
Plus: Preferred Stock	100.0			
Plus: Minority Interest	50.0			
Less: Cash and Cash Equivalents	(100.0)			
Enterprise Value	**$2,000.0**			

37) Which company below has a higher gross profit margin?

($ in millions)

Company A	
Revenue	$400.0
COGS	250.0

Company B	
Revenue	$1,000.0
COGS	550.0

A. Company A
B. Company B
C. Same margin for both companies
D. Not enough information to answer the question

38) Using the information below, calculate the CAGRs for the 2016–2018 and 2018–2020 periods

	Fiscal Year Ending December 31,						
	2016A	2017A	2018A	CAGR ('16 - '18)	2019E	2020E	CAGR ('18 - '20)
Diluted EPS	$1.35	$1.60	$1.80		$2.00	$2.20	
% growth		*18.5%*	*12.5%*		*11.1%*	*10.0%*	

A. 15.5% and 10.6%
B. (13.4%) and (9.3%)
C. 13.4% and 9.3%
D. 13.0% and 9.0%

39) Which of the following is NOT a metric used to measure a company's growth?

A. Long-term EPS growth rate
B. Historical EPS CAGRs
C. EBITDA margins
D. y/y sales growth rates

40) Calculate the company's return on invested capital (ROIC)

($ in millions)

Assumptions	
EBIT	$150.0
Net Debt	275.0
Shareholders' Equity	475.0
Accounts Payable	35.0
Accounts Receivable	50.0

A. 19.1%
B. 20.0%
C. 24.7%
D. 30.0%

41) Calculate the company's return on equity (ROE)

($ in millions)

Assumptions	
EBIT	$150.0
Net Income	85.0
Net Debt	300.0
Shareholders' Equity	315.0

A. 10.0%
B. 10.4%
C. 27.0%
D. 29.1%

42) Calculate the company's return on assets (ROA)

($ in millions)

Assumptions	
EBIT	$200.0
Net Income	150.0
Net Debt	250.0
Shareholders' Equity	450.0
Total Assets	625.0

A. 19.4%
B. 22.4%
C. 24.0%
D. 25.2%

43) Calculate the company's debt-to-total capitalization

($ in millions)

Assumptions	
Debt	$200.0
Preferred Stock	195.0
Noncontrolling Interest	50.0
Equity	675.0
Cash	100.0

A. 17.9%
B. 19.7%
C. 20.5%
D. 23.0%

44) When calculating an interest coverage ratio, which of the following is NOT used in the numerator?

A. Net income
B. EBIT
C. EBITDA
D. (EBITDA – capex)

45) Ratings of Aaa, Aa1, and Aa2 belong to which ratings agency?

A. S&P
B. Moody's
C. Fitch
D. SEC

46) Which of the following ratings is investment grade?

A. Ba1
B. BB+
C. BB-
D. BBB-

47) What is the Moody's equivalent of B+?

A. B1
B. B2
C. Ba1
D. Baa1

48) Calculate LTM 9/30/2019 sales given the information below

($ in millions)

Sales Data	
YTD 9/30/2019 Sales	$1,600.0
YTD 9/30/2018 Sales	1,450.0
YTD 9/30/2017 Sales	1,375.0
2018 Sales	2,250.0
2017 Sales	2,000.0

A. $1,900.7 million
B. $2,000.5 million
C. $2,100.0 million
D. $2,400.0 million

49) Calculate LTM 12/31/2018 sales given the information below

($ in millions)

Sales Data	
YTD 6/30/2019 Sales	$2,500.0
YTD 6/30/2018 Sales	2,350.0
YTD 6/30/2017 Sales	2,150.0
2018 Sales	4,250.0
2017 Sales	4,000.0

A. $2,500.0 million
B. $4,250.0 million
C. $4,000.0 million
D. $4,500.0 million

50) Calendarize the 4/30/2018 sales figure so it can be used alongside companies reporting on a calendar year basis

($ in millions)

Sales Data	
FY 4/30/2019E Sales	$1,650.0
FY 4/30/2018A Sales	1,500.0
FY 4/30/2017A Sales	1,350.0

A. $1,050.5 million
B. $1,550.0 million
C. $1,600.0 million
D. $1,655.5 million

51) Calculate adjusted net income, EBITDA, and EPS, respectively, assuming $50 million of D&A, and adjusting for the $10.0 million restructuring charge as well as an inventory write-down of $5 million

($ in millions, except per share data)

Income Statement	
	Reported 2018
Sales	**$1,000.0**
Cost of Goods Sold	625.0
Gross Profit	**$375.0**
Selling, General & Administrative	230.0
Restructuring Charges	10.0
Operating Income (EBIT)	**$135.0**
Interest Expense	35.0
Pre-tax Income	**$100.0**
Income Taxes @ 25%	25.0
Net Income	**$75.0**
Weighted Average Diluted Shares	30.0
Diluted Earnings Per Share	$2.50

A. $75.0 million, $185.0 million, $2.88
B. $86.3 million, $200.0 million, $2.88
C. $88.8 million, $200.0 million, $2.50
D. $88.8 million, $100.0 million, $2.50

52) The P/E ratio is equivalent to

A. Equity value/net income
B. Enterprise value/net income
C. Enterprise value/EBITDA
D. Share price/free cash flow

53) Which of the following is not an appropriate valuation multiple?

A. Enterprise value/EBITDA
B. Enterprise value/EBIT
C. Enterprise value/net income
D. Enterprise value/sales

54) Which of the following is not an appropriate valuation multiple?

A. Equity value/EBITDA
B. Enterprise value/EBITDAR
C. Equity value/book value
D. Enterprise value/resources

55) If a company has noncontrolling interest, which statement contains the data needed to calculate enterprise value?

A. Income statement
B. Balance sheet
C. Cash flow statement
D. Management discussion & analysis

56) The two most generic and widely used valuation multiples are

I. Enterprise value/EBITDA
II. EBITDA/interest expense
III. Total debt/EBITDA
IV. P/E

A. I and III
B. I and IV
C. II and III
D. II and IV

57) What is the premise behind comparable companies analysis?

58) Two companies are very similar in terms of business characteristics, but they are currently trading at substantially different multiples. What discrepancies in financial characteristics could explain this situation?

59) All else being equal, which company would be expected to trade at a higher multiple—a heavily leveraged company or one with moderate to low leverage? Why?

60) Why are comparable companies sometimes tiered into different groups?

61) Match the SEC forms with their formal name

10-K	Proxy statement
10-Q	Annual report
8-K	Current report
DEF14A	Quarterly report

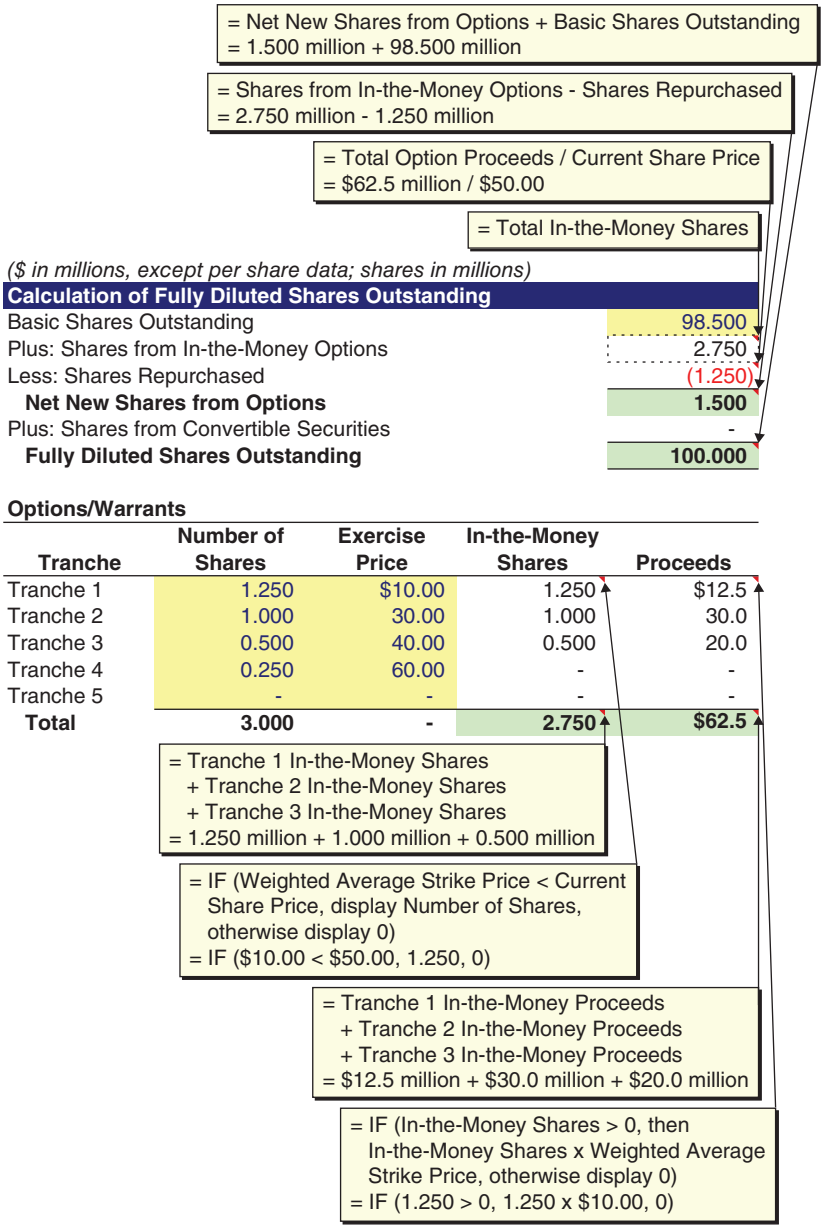
62) Match the valuation multiples with the sector that employs them

Enterprise value/reserves	Retail
Enterprise value/EBITDAR	Financial institutions
Enterprise value/subscriber	Metals & mining
Price/Book	Media

63) What are some of the benefits of using comparable companies analysis?

64) What are some of the considerations when using comparable companies analysis?

1) Calculation of fully diluted shares outstanding



a. 2.75 million. The total number of in-the-money options/warrants is calculated by adding the in-the-money shares from the tranches which have an exercise price lower than the current share price of $50.00. (1.250 million shares + 1.000 million shares + 0.500 million shares)

b. $62.5 million. The total proceeds from in-the-money options/warrants is calculated by adding the proceeds from the tranches which have an exercise price lower than the current share price of $50.00. ($12.5 million + $30.0 million + $20.0 million)

c. 1.50 million. Under the TSM, the $62.5 million of potential proceeds received by Gasparro is used to repurchase shares that are currently trading at $50.00. Therefore, the number of shares repurchased is 1.25 million ($62.5 million / $50.00) of the options. To calculate net new shares, the shares repurchased are subtracted from the total number of in-the-money options/warrants. (2.75 million shares – 1.25 million shares)

d. 100.0 million. Fully diluted shares are calculated as net new shares plus basic shares outstanding. (98.5 million shares + 1.50 million shares)

2) Calculation of equity value and enterprise value

($ in millions, except per share data; shares in millions)

Selected Market Data		
Current Price	12/20/2019	$50.00
% of 52-week High		*80.0%*
52-week High Price	7/19/2019	62.50
52-week Low Price	4/5/2019	40.00
Dividend Per Share (MRQ)		0.25
Fully Diluted Shares Outstanding		100.000
Equity Value		**$5,000.0**
Plus: Total Debt		1,850.0
Plus: Preferred Stock		-
Plus: Noncontrolling Interest		-
Less: Cash and Cash Equivalents		(100.0)
Enterprise Value		**$6,750.0**

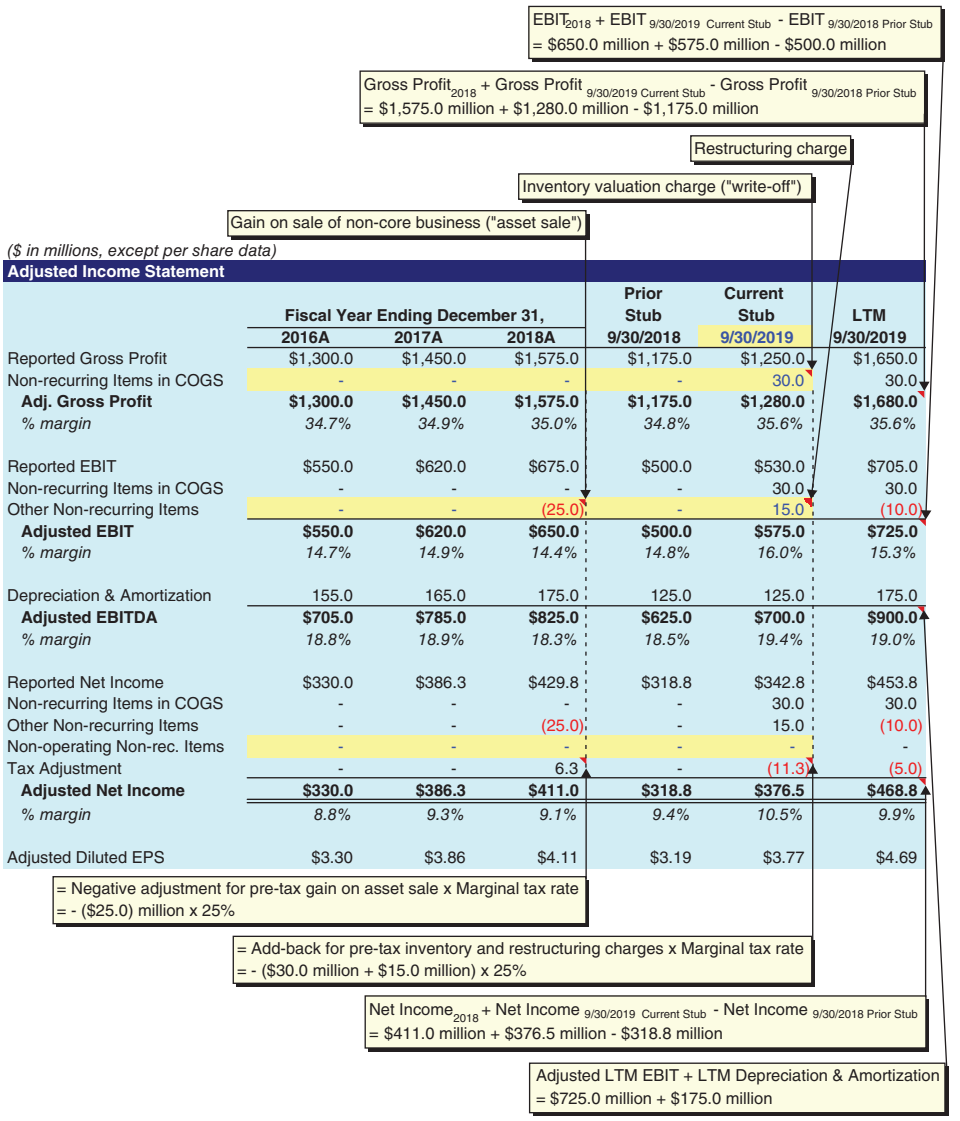
= Equity Value + Total Debt - Cash
= $5,000.0 million + $1,850.0 million - $100.0 million

= Current Share Price x Fully Diluted Shares Outstanding
= $50.00 x 100.0 million

a. $5,000.0 million. Equity value is calculated by multiplying fully diluted shares by the current share price. (100.0 million shares × $50.00)

b. $6,750.0 million. Enterprise value is calculated as equity value plus total debt less cash and cash equivalents. ($5,000.0 million + $1,850.0 million – $100.0 million)

3) Adjusting for one-time and non-recurring items



($ in millions, except per share data)

Adjusted Income Statement

	Fiscal Year Ending December 31,			Prior Stub	Current Stub	LTM
	2016A	2017A	2018A	9/30/2018	9/30/2019	9/30/2019
Reported Gross Profit	$1,300.0	$1,450.0	$1,575.0	$1,175.0	$1,250.0	$1,650.0
Non-recurring Items in COGS	-	-	-	-	30.0	30.0
Adj. Gross Profit	**$1,300.0**	**$1,450.0**	**$1,575.0**	**$1,175.0**	**$1,280.0**	**$1,680.0**
% margin	*34.7%*	*34.9%*	*35.0%*	*34.8%*	*35.6%*	*35.6%*
Reported EBIT	$550.0	$620.0	$675.0	$500.0	$530.0	$705.0
Non-recurring Items in COGS	-	-	-	-	30.0	30.0
Other Non-recurring Items	-	-	(25.0)	-	15.0	(10.0)
Adjusted EBIT	**$550.0**	**$620.0**	**$650.0**	**$500.0**	**$575.0**	**$725.0**
% margin	*14.7%*	*14.9%*	*14.4%*	*14.8%*	*16.0%*	*15.3%*
Depreciation & Amortization	155.0	165.0	175.0	125.0	125.0	175.0
Adjusted EBITDA	**$705.0**	**$785.0**	**$825.0**	**$625.0**	**$700.0**	**$900.0**
% margin	*18.8%*	*18.9%*	*18.3%*	*18.5%*	*19.4%*	*19.0%*
Reported Net Income	$330.0	$386.3	$429.8	$318.8	$342.8	$453.8
Non-recurring Items in COGS	-	-	-	-	30.0	30.0
Other Non-recurring Items	-	-	(25.0)	-	15.0	(10.0)
Non-operating Non-rec. Items	-	-	-	-	-	-
Tax Adjustment	-	-	6.3	-	(11.3)	(5.0)
Adjusted Net Income	**$330.0**	**$386.3**	**$411.0**	**$318.8**	**$376.5**	**$468.8**
% margin	*8.8%*	*9.3%*	*9.1%*	*9.4%*	*10.5%*	*9.9%*
Adjusted Diluted EPS	$3.30	$3.86	$4.11	$3.19	$3.77	$4.69

a. $1,680.0 million. To calculate adjusted LTM gross profit, first add back the $30.0 million non-recurring product obsolescence charge to COGS for the current stub 9/30/2019 period. LTM gross profit is then calculated by taking the full prior fiscal year's gross profit, adding the YTD gross profit for the current year period ("current stub"), and then subtracting

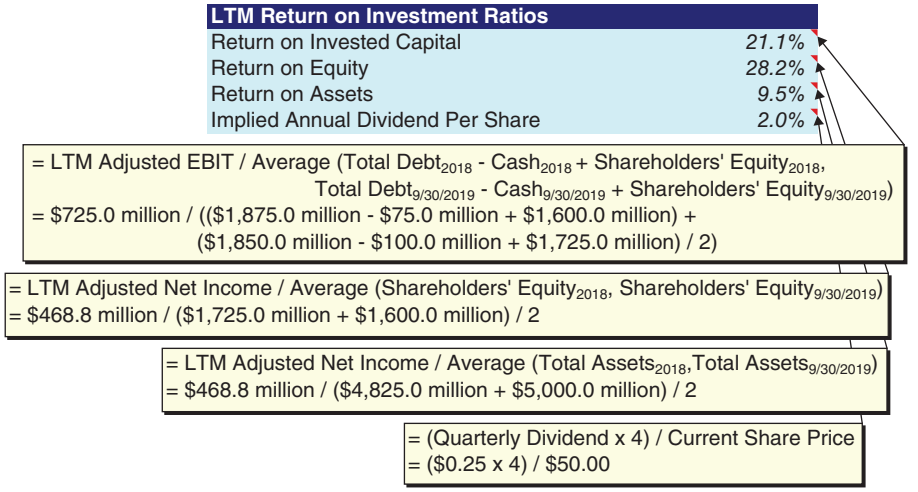
the YTD gross profit from the prior year ("prior stub"). ($1,575.0 million + $1,280.0 million – $1,175.0 million)

b. $725.0 million. To calculate adjusted LTM EBIT, first add back the $15.0 million restructuring charge and back out the $25.0 million gain on asset sale for the current stub 9/30/2019 period and fiscal year 2018 period, respectively. Next, the LTM statistic is calculated in the same manner as shown in 3(a). ($650.0 million + $575.0 million – $500.0 million)

c. $900.0 million. To calculate adjusted LTM EBITDA, add LTM depreciation and amortization to LTM EBIT. ($725.0 million + $175.0 million)

d. $468.8 million. To calculate adjusted LTM net income, first add back the full non-recurring charges to net income. Then, to make the tax adjustment, multiply the full add back amount by Gasparro's marginal tax rate. Next, the LTM statistic is calculated in the same manner as shown in 3(a). ($411.0 million + $376.5 million – $318.8 million)

4) Return on investment ratios



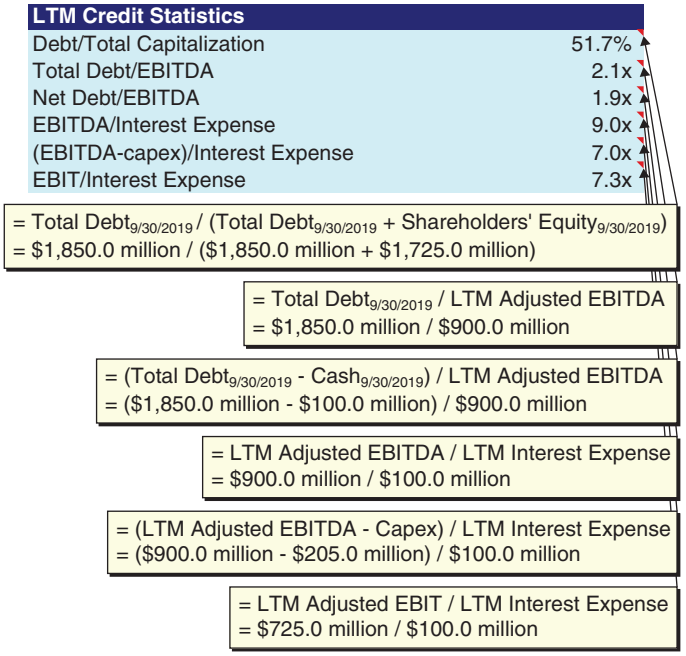
a. 21.1%. Return on invested capital is calculated as LTM adjusted EBIT divided by the average of total invested capital (sum of debt and shareholders' equity less cash). ($725.0 million / (($1,875.0 million – $75.0 million + $1,600.0 million) + ($1,850.0 million – $100.0 million + $1,725.0 million) / 2))

b. 28.2%. Return on equity is calculated as LTM adjusted net income divided by average shareholders' equity. (($468.8 million / ($1,725.0 million + $1,600.0 million) / 2))

c. 9.5%. Return on assets is calculated as LTM adjusted net income divided by average assets. ($468.8 million / ($4,825.0 million + $5,000.0 million) / 2)

d. 2.0%. Implied average divided per share is calculated as the most recent quarterly dividend multiplied by four and divided by the current share price. (($0.25 × 4) / $50.00)

5) Credit statistics



a. 51.7%. Debt-to-total capitalization is calculated as debt divided by total capitalization. ($1,850.0 million / ($1,850.0 million + $1,725.0 million))

b. 2.1x. Total debt-to-EBITDA is calculated as total debt divided by LTM adjusted EBITDA. ($1,850.0 million / $900.0 million)

c. 1.9x. Net debt-to-EBITDA is calculated as net debt (total debt less cash) divided by LTM adjusted EBITDA. (($1,850.0 million – $100.0 million) / $900.0 million)

d. 9.0x. EBITDA-to-interest expense is calculated as LTM adjusted EBITDA divided by LTM interest expense. ($900.0 million / $100.0 million)

e. 7.0x. (EBITDA – capex)-to-interest expense is calculated as LTM adjusted EBITDA less capex divided by LTM interest expense. (($900.0 million – $205.0 million) / $100.0 million)

f. 7.3x. EBIT-to-interest expense is calculated as LTM adjusted EBIT divided by LTM interest expense. ($725.0 million / $100.0 million)

6) Trading multiples

($ in millions, except per share data)

Trading Multiples

	LTM 9/30/2019	NFY 2019E	NFY+1 2020E	NFY+2 2021E
EV / Sales	1.4x	1.4x	1.3x	1.2x
Metric	$4,725.0	$5,000.0	$5,350.0	$5,625.0
EV / EBITDA	7.5x	7.1x	6.6x	6.3x
Metric	$900.0	$950.0	$1,025.0	$1,075.0
EV / EBIT	9.3x	8.8x	8.2x	7.8x
Metric	$725.0	$765.0	$825.0	$865.0
P/E	10.7x	9.8x	9.1x	8.7x
Metric	$4.69	$5.10	$5.50	$5.75
FCF Yield	*6.3%*	*7.5%*	*8.3%*	*9.1%*
Metric	$315.0	$375.0	$415.0	$455.0

= Enterprise Value / LTM Sales
= $6,750.0 million / $4,725.0 million

= Current Share Price / 2021E EPS
= $50.00 / $5.75

= Enterprise Value / 2019E EBITDA
= $6,750.0 million / $950.0 million

= Enterprise Value / 2020E EBIT
= $6,750.0 million / $825.0 million

= 2021E Free Cash Flow / Equity Value
= $455.0 million / $5,000.0 million

a. 1.4x. Enterprise value-to-LTM sales is calculated as enterprise value divided by LTM sales. ($6,750.0 million / $4,750.0 million)

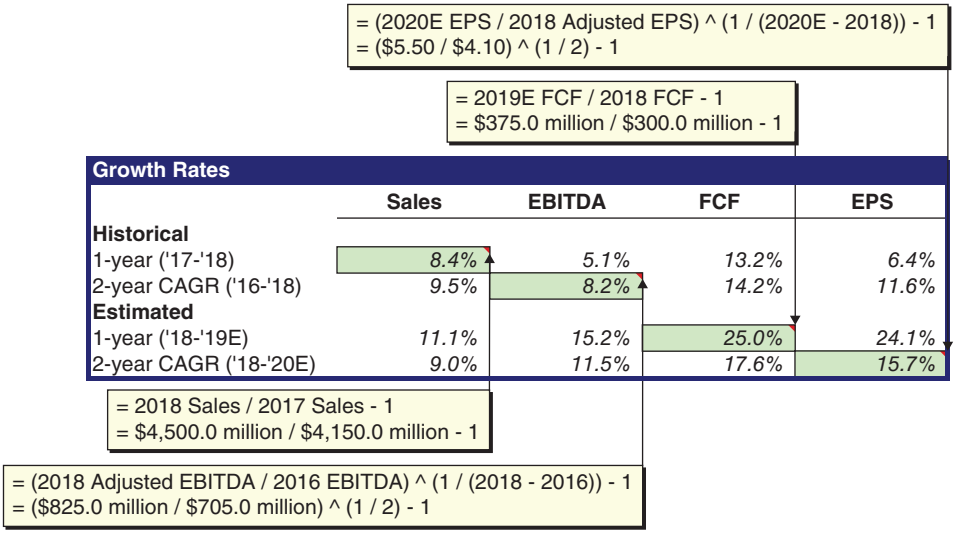
b. 7.1x. Enterprise value-to-NFY EBITDA is calculated as enterprise value divided by 2019E EBITDA. ($6,750.0 million / $950.0 million)

c. 8.2x. Enterprise value-to-NFY+1 EBIT is calculated as enterprise value divided by 2020E EBIT. ($6,750.0 million / $825.0 million)

d. 8.7x. Price/NFY+2 EPS is calculated as the current share price divided by 2021E EPS. ($50.00 / $5.75)

e. 9.1%. FCF Yield (NFY+2 Free cash flow-to-equity value) is calculated as 2021E Free cash flow divided by equity value. ($455.0 million / $5,000.0 million)

7) Growth rates



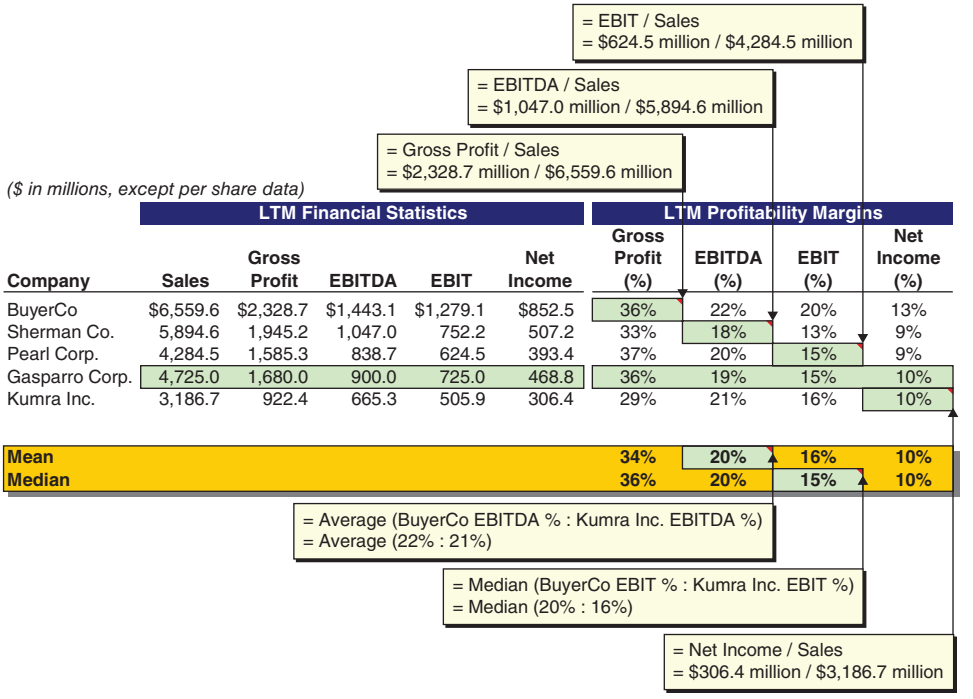
a. 8.4%. One-year historical sales growth is calculated as 2018A sales divided by 2017A sales, minus one. ($4,500 million / $4,150 million – 1)

b. 8.2%. Two-year historical EBITDA CAGR is calculated using the following formula: ((2018A Adjusted EBITDA / 2016A EBITDA) ^ (1 / (2018A – 2016A)) – 1). (($825.0 million / $705.0 million) ^ (1 / 2) – 1)

c. 25.0%. One-year estimated FCF growth is calculated as 2019E FCF divided by 2018A FCF, minus one. ($375.0 million / $300.0 million – 1)

d. 15.7%. Two-year estimated EPS CAGR is calculated using the following formula: ((2020E EPS / 2018A Adjusted EPS) ^ (1 / (2020E – 2018A)) – 1) (($5.50 / $4.10) ^ (1 / 2) – 1)

8) Benchmarking financial statistics and profitability ratios



a. 35.5%. Gross profit margin is calculated as gross profit divided by sales. ($2,328.7 million / $6,559.6 million)

b. 17.8%. EBITDA margin is calculated as EBITDA divided by sales. ($1,047.0 million / $5,894.6 million)

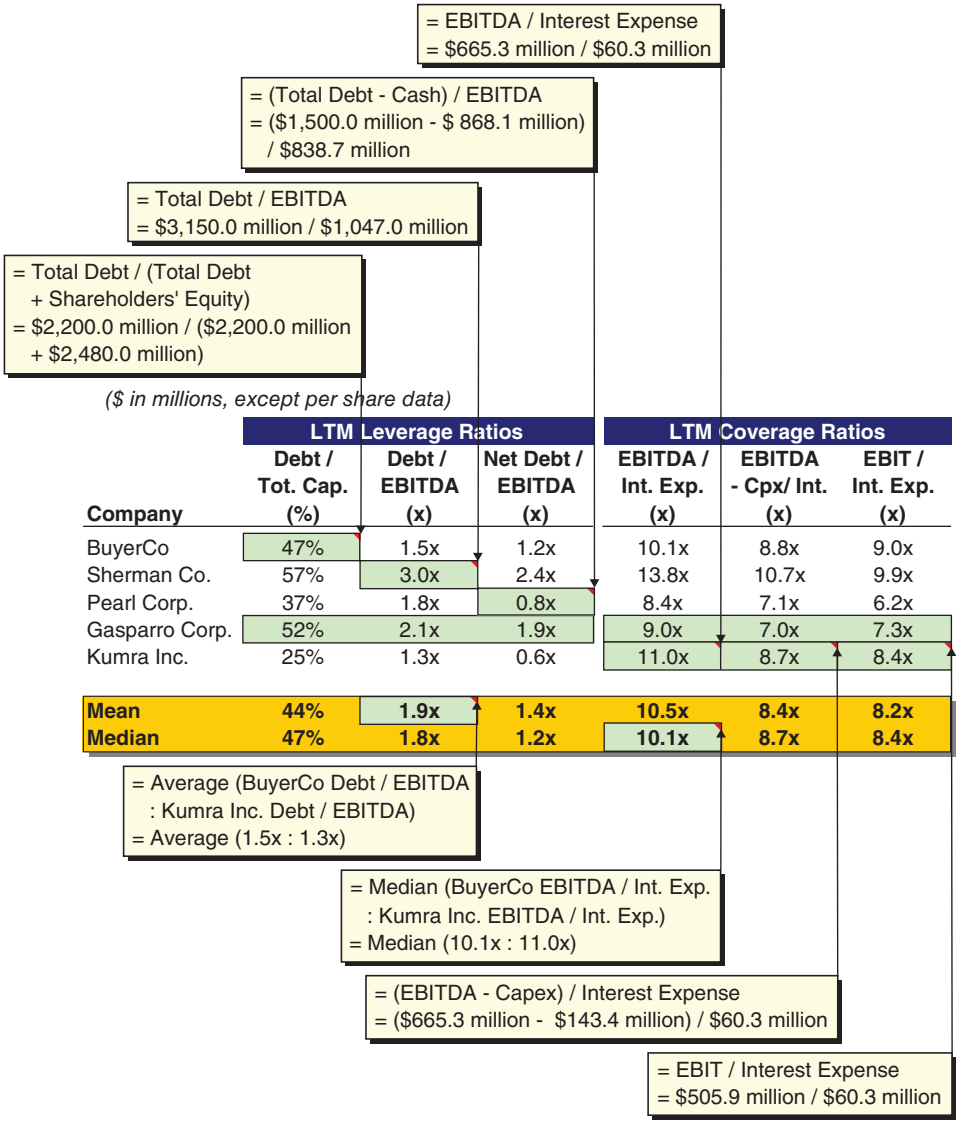
c. 14.6%. EBIT margin is calculated as EBIT divided by sales. ($624.5 million / $4,284.5 million)

d. 9.6%. Net income margin is calculated as net income divided by sales. ($306.4 million / $3,186.7 million)

e. 19.9%. The mean EBITDA margin for the comparable companies is calculated by taking the average of the EBITDA margins for the comparable companies.

f. 15.3%. The median EBIT margin for the comparable companies is calculated by taking the median of the EBIT margins for the comparable companies.

9) Benchmarking leverage and coverage ratios



a. 47.0%. Debt-to-total capital is calculated as total debt divided by debt plus market capitalization. ($2,200.0 million / ($2,200.0 million + $2,480.0 million))

b. 3.0x. Debt-to-EBTIDA is calculated as total debt divided by EBITDA. ($3,150.0 million / $1,047.0 million)

c. 0.8x. Net debt-to-EBITDA is calculated as total debt minus cash divided by EBTIDA. (($1,500.0 million – $868.1 million) / $838.7 million)

d. 11.0x. EBITDA-to-interest expense is calculated as EBITDA divided by interest expense. ($665.3 million / $60.3 million)

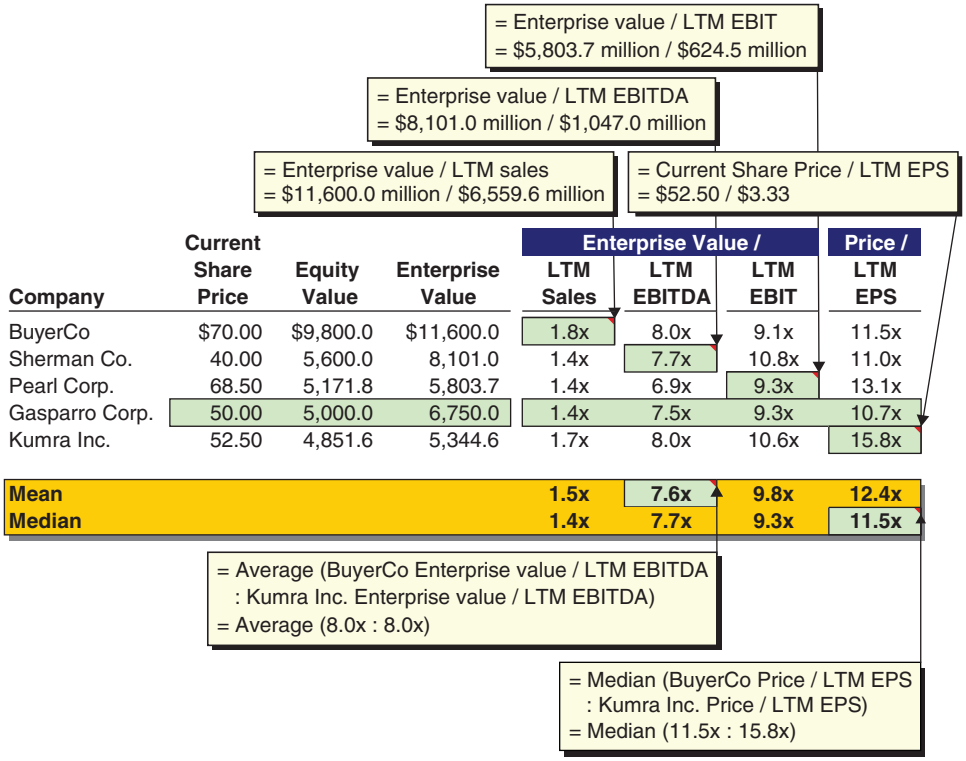
e. 8.7x. (EBITDA – capex)-to-interest expense is calculated as EBITDA minus capital expenditures divided by interest expense. (($665.3 million – $143.4 million) / $60.3 million)

f. 8.4x. EBIT-to-interest expense is calculated as EBIT divided by interest expense. ($505.9 million / $60.3 million)

g. 1.9x. The mean debt-to-EBITDA ratio for the comparable companies is calculated by taking the average of the debt-to-EBITDA ratios for the comparable companies.

h. 10.1x. The median EBITDA-to-interest expense ratio for the comparable companies is calculated by taking the median of the EBITDA-to-interest expense ratios for the comparable companies.

10) Comparable companies analysis



a. 1.8x. Enterprise value-to-LTM sales is calculated as enterprise value divided by LTM sales. ($11,600.0 million / $6,559.6 million)

b. 7.7x. Enterprise value-to-LTM EBITDA is calculated as enterprise value divided by LTM EBITDA. ($8,101.0 million / $1,047.0 million)

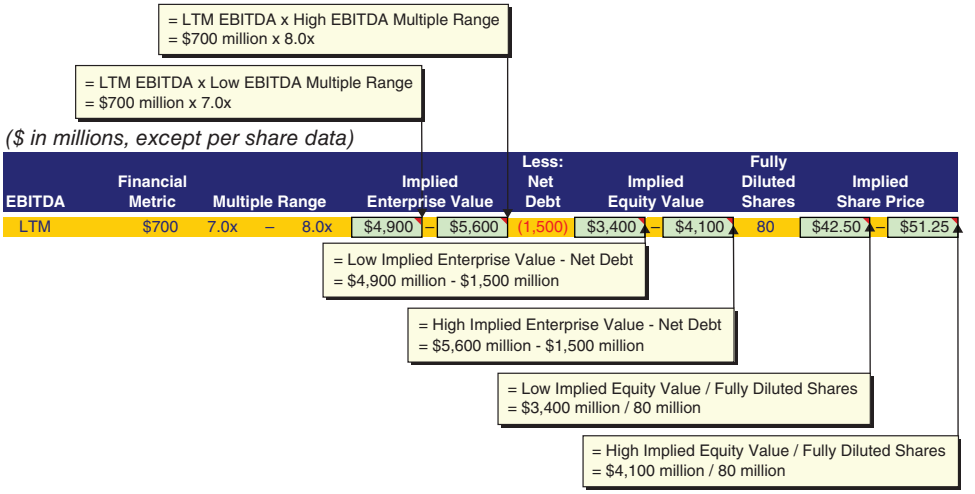
c. 9.3x. Enterprise value-to-LTM EBIT is calculated as enterprise value divided by LTM EBIT. ($5,803.7 million / $624.5 million)

d. 15.8x. Price-to-LTM EPS is calculated as the current share price divided by LTM EPS. ($52.50 / $3.33)

e. 7.6x. The mean enterprise value-to-LTM EBITDA multiple for the comparable companies is calculated by taking the average of the enterprise value-to-LTM EBITDA multiples for the comparable companies

f. 11.5x. The median price-to-LTM EPS multiple for the comparable companies is calculated by taking the median of the price-to-LTM EPS multiples for the comparable companies.

11) Implied valuation ranges using LTM EBITDA



a. $4,900 million. Low implied enterprise value is calculated as LTM EBITDA multiplied by the low EBITDA multiple range. ($700 million × 7.0x)

   $5,600 million, High implied enterprise value is calculated as LTM EBITDA multiplied by the high EBITDA multiple range. ($700 million × 8.0x)

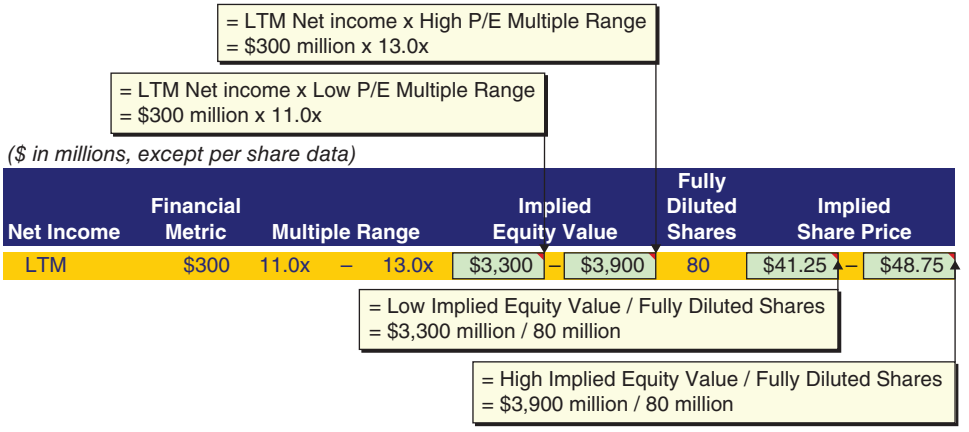
b. $3,400 million. Low implied equity value is calculated as low implied enterprise value minus net debt. ($4,900 million – $1,500 million)

   $4,100 million High implied equity value is calculated as high implied enterprise value minus net debt. ($5,600.0 million – $1,500 million)

c. $42.50. Low implied share price is calculated as low implied equity value divided by fully diluted shares. ($3,400 million / 80 million)

   $51.25. High implied share price is calculated as high implied equity value divided by fully diluted shares. ($4,100 million / 80 million)

12) Implied valuation ranges using LTM net income



a. $3,300 million. Low implied equity value is calculated as LTM net income multiplied by the low P/E multiple range. ($300 million × 11.0x)

$3,900 million. High implied equity value is calculated as LTM net income multiplied by the high P/E multiple range. ($300 million × 13.0x)

b. $41.25. Low implied share price is calculated as low implied equity value divided by fully diluted shares. ($3,300 million / 80 million shares)

$48.75. High implied share price is calculated as high implied equity value divided by fully diluted shares. ($3,900 million / 80 million shares)

13) A. The correct order is:

I. Select the universe of comparable companies
II. Locate the necessary financial information
III. Spread key statistics, ratios, and trading multiples
IV. Benchmark the comparable companies
V. Determine valuation

14) C. Although all four characteristics can be used to determine the universe of comparable companies, return on investment is a financial characteristic, not a business characteristic.

Business Profile

- Sector
- Products and Services
- Customers and End Markets
- Distribution Channels
- Geography

15) D. Although all four characteristics can be used to determine the universe of comparable companies, geography is a business characteristic, not a financial characteristic.

Financial Profile

- Size
- Profitability
- Growth Profile
- Return on Investment
- Credit Profile

16) C. Sector, end markets, and distribution channels are key business characteristics to examine when screening for comparable companies.

17) B. Profitability, growth profile, and credit profile are key financial characteristics to examine when screening for comparable companies.

18) A. A company's end markets refer to the broad underlying markets into which it sells its products and services. For example, a plastics manufacturer may sell into several end markets, including automotive, construction, consumer products, medical devices, and packaging. End markets need to be distinguished from customers. For example, a company may sell into the housing end market, but to retailers or suppliers as opposed to homebuilders.

19) B. Distribution channels are the medium through which a company sells its products and services to the end user. Companies that sell primarily to the wholesale channel, for example, often have significantly different organizational and cost structures from those selling directly to retailers or end users. Selling to a superstore or value retailer requires a physical infrastructure, sales force, and logistics that may be unnecessary for serving the professional or wholesale channels. Some companies sell at several levels of the distribution chain, such as wholesale, retail, and direct-to-customer.

20) D. In addition to gross profit, EBITDA margin, and EBIT margin, net income margin can also be used to determine the profitability of a company.

21) B. A Schedule 13-D is required when an investor, or group of investors, acquires more than 5% of a company's shares. A Schedule 13-D does not contain relevant financial information for comparable companies.

22) B. Fully diluted shares outstanding are calculated as basic shares outstanding + "in-the-money" options and warrants + "in-the-money" convertible securities. Only "in-the-money" options, warrants, and convertible securities are included in the calculation for comparable companies analysis.

23) A. The incremental shares represented by a company's "in-the-money" options and warrants are calculated in accordance with the treasury stock method (TSM). "In-the-money" convertible and equity-linked securities are calculated in accordance with the "if-converted" method or net share settlement (NSS), where appropriate.

24) A. Equity value ("market capitalization") is the value represented by a given company's basic shares outstanding plus "in-the-money" stock options warrants, and convertible securities—collectively, "fully diluted shares outstanding." Enterprise value ("total enterprise value" or "firm value") is the sum of all ownership interests in a company and claims on its assets from both debt and equity holders. It is defined as equity value + total debt + preferred stock + noncontrolling interest – cash and cash equivalents.

= Current Share Price x Fully Diluted Shares
= $20.00 x 50.0 million

($ in millions)

Calculation of Enterprise Value	
Equity Value	$1,000.0
Plus: Total Debt	250.0
Plus: Preferred Stock	35.0
Plus: Noncontrolling Interest	15.0
Less: Cash and Cash Equivalents	(50.0)
Enterprise Value	**$1,250.0**

= Equity Value + Total Debt + Preferred Stock
+ Noncontrolling Interest - Cash and Cash Equivalents
= $1,000.0 million + $250.0 million + $35.0 million +
$15.0 million - $50.0 million

25) C. As shown below, the 20 million options are in-the-money as the exercise price of $10.00 is lower than the current share price of $25.00. This means that the holders of the options have the right to buy the company's shares at $10.00 and sell them at $25.00, thereby realizing the $15.00 differential. Under the TSM, it is assumed that the $10.00 of potential proceeds received by the company is used to repurchase shares that are currently trading at $25.00. Therefore, the number of shares repurchased is 8 million. To calculate net new shares, the 8 million shares repurchased are subtracted from the 20 million options, resulting in 12 million. These new shares are added to the company's basic shares outstanding to derive fully diluted shares of 212.0 million.

($ in millions, except per share data; shares in millions)

Calculation of Fully Diluted Shares Using the TSM	
Options Proceeds	$200.0
/ Current Share Price	$25.00
Shares Repurchased from Option Proceeds	**8.0**
Shares from In-the-Money Options	20.0
Less: Shares Repurchased from Option Proceeds	(8.0)
Net New Shares from Options	**12.0**
Plus: Basic Shares Outstanding	200.0
Fully Diluted Shares Outstanding	**212.0**

= Exercisable Options x Exercise Price
= 20.0 million x $10.00

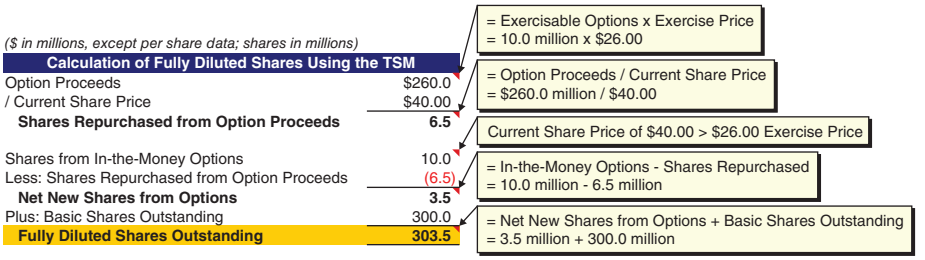
= Option Proceeds / Current Share Price
= $200.0 million / $25.00

Current Share Price of $25.00 > $10.00 Exercise Price

= In-the-Money Options - Shares Repurchased
= 20.0 million - 8.0 million

= Net New Shares from Options + Basic Shares Outstanding
= 12.0 million + 200.0 million

26) C. See calculation below:

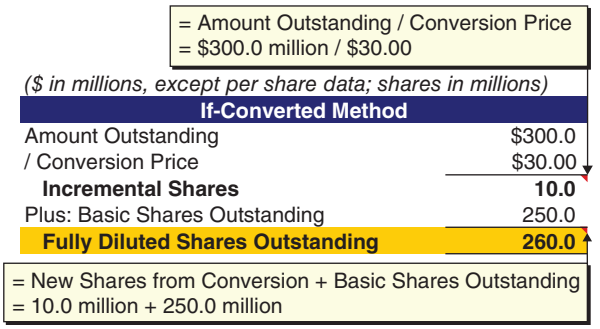


27) D. Net debt is subtracted from enterprise value to calculate implied equity value.

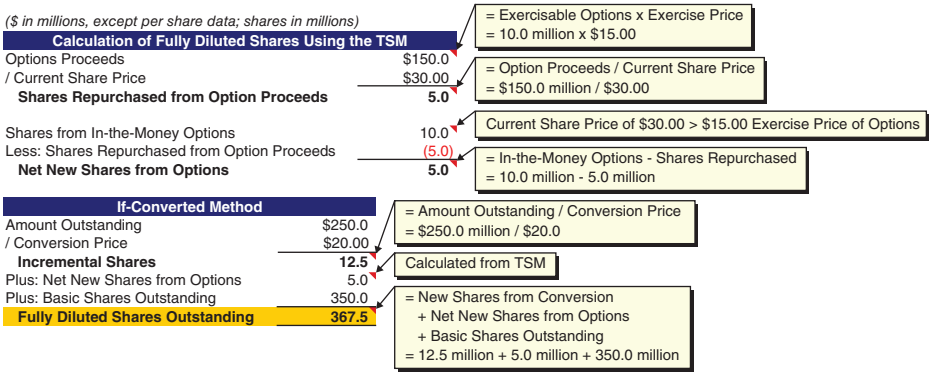
28) A. The most dilutive scenario would be to use all outstanding options and warrants.

29) C. Stock options become eligible to be converted into shares of common stock once their vesting period expires ("exercisable").

30) C. As the company's current share price of $45.00 is greater than the conversion price of $30.00, the $300 million convert is in-the-money. Therefore, the convert's amount outstanding is divided by the conversion price to calculate new shares of 10 million ($300 million / $30.00). The new shares from conversion are then added to the company's basic shares outstanding of 250 million to calculate fully diluted shares outstanding of 260 million.



31) D. See calculation below:



32) C. See calculation below:

($ in millions, except per share data; shares in millions)

If-Converted Method	
Amount Outstanding	$225.0
/ Conversion Price	$22.50
Incremental Shares	**10.0**

33) A. The net share settlement method ("NSS") calculation is performed by first multiplying the number of underlying shares in the convert of 10 million by the company's current share price of $30.00 to determine the implied conversion value of $300 million. The $75 million spread between the conversion value and par ($300 million – $225 million) is then divided by the current share price to determine the number of incremental shares from conversion of 2.5 million ($75 million / $30.00).

($ in millions, except per share data; shares in millions)

Net Share Settlement	
Amount Outstanding	$225.0
/ Conversion Price	$22.50
Incremental Shares	**10.0**
x Current Share Price	$30.00
Total Conversion Value	**$300.0**
Less: Par Value of Amount Outstanding	(225.0)
Excess Over Par Value	**$75.0**
/ Current Share Price	$30.00
Incremental Shares – NSS	**2.5**

= Excess Over Par Value / Current Share Price
= $50.0 million / $20.00

= Total Conversion Value - Par Value of Amt. Out.
= $200.0 million - $150.0 million

= Incremental Shares x Current Share Price
= 10.0 million x $20.00

= Amount Outstanding / Conversion Price
= $150.0 million / $15.00

34) B. The formula for calculating enterprise value is equity value + total debt + preferred stock + noncontrolling interest – cash.

35) A. As enterprise value is independent of capital structure, it remains constant regardless of changes in capital structure.

36) If a company issues equity and uses the proceeds to repay debt, the incremental equity value is offset by the decrease in debt on a dollar-for-dollar basis.

($ in millions)

Capital Structure				
	Actual	**Adjustments**		**Pro forma**
	2018	**+**	**-**	**2018**
Equity Value	$1,200.0	200.0		$1,400.0
Plus: Total Debt	750.0		(200.0)	550.0
Plus: Preferred Stock	100.0			100.0
Plus: Minority Interest	50.0			50.0
Less: Cash and Cash Equivalents	(100.0)			(100.0)
Enterprise Value	**$2,000.0**			**$2,000.0**

37) B. The gross profit margin for Company B is 45.0% while Company A has a gross profit margin of 37.5%. The calculation for gross profit margin is shown below.

$$\text{Gross Profit Margin} = \frac{\text{Gross Profit (Sales – COGS)}}{\text{Sales}}$$

38) A. See calculation below:

	Fiscal Year Ending December 31,						
	2016A	2017A	2018A	CAGR ('16 - '18)	2019E	2020E	CAGR ('18 - '20)
Diluted EPS	$1.35	$1.60	$1.80	*15.5%*	$2.00	$2.20	*10.6%*
% growth		*18.5%*	*12.5%*		*11.1%*	*10.0%*	

= (Ending Value / Beginning Value) ^ (1 / Ending Year - Beginning Year) - 1
= ($1.80 / $1.35) ^ (1 / (2018 - 2016)) - 1

= (Ending Value / Beginning Value) ^ (1 / Ending Year - Beginning Year) - 1
= ($2.20 / $1.80) ^ (1 / (2020 - 2018)) - 1

39) C. In assessing a company's growth profile, historical and estimated future growth rates for various financial statistics (e.g., sales, EBITDA, and earnings per share (EPS)) are examined at selected intervals. EBITDA margin, which measures a company's operating profitability, is not used to measure growth.

40) B. As shown below, return on invested capital (ROIC) utilizes a pre-interest earnings statistic in the numerator, such as EBIT, and a metric that captures both debt and equity in the denominator.

$$\text{ROIC} = \frac{\text{EBIT}}{\text{Average Net Debt + Equity}}$$

41) C. Return on equity (ROE) incorporates an earnings metric net of interest expense, such as net income, in the numerator and average shareholders' equity in the denominator. The calculation for ROE is shown below.

$$\text{Return on Equity} = \frac{\text{Net Income}}{\text{Average Shareholders' Equity}}$$

42) C. As shown below, return on assets (ROA) utilizes net income in the numerator and average total assets in the denominator.

$$\text{Return on Assets} = \frac{\text{Net Income}}{\text{Average Total Assets}}$$

43) A. Debt-to-total capitalization measures a company's debt as a percentage of its total capitalization (debt + preferred stock + noncontrolling interest + equity). The formula for debt-to-total capitalization is shown below.

$$\text{Debt-to-Total Capitalization} = \frac{\text{Debt}}{\text{Debt + Preferred Stock + Noncontrolling Interest + Equity}}$$

44) A. The numerator in an interest coverage ratio can be comprised of EBITDA, (EBITDA – capex), or EBIT, which are all financial statistics representing an operating cash flow metric. Net income does not fit this characteristic because it is net of interest expense and taxes.

$$\text{Interest Coverage Ratio} = \frac{\text{EBITDA, (EBITDA – Capex), or EBIT}}{\text{Interest Expense}}$$

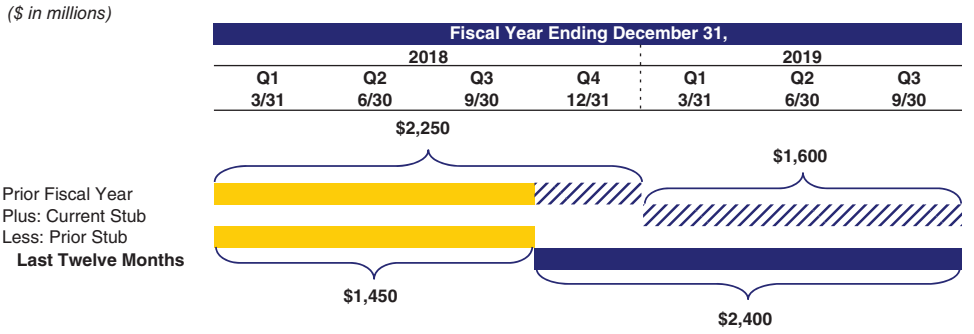
45) B. As the graphic below shows, Aaa, Aa1, and Aa2 are credit ratings assigned by Moody's.

	Moody's	S&P	Fitch	Definition
Investment Grade	**Aaa**	AAA	AAA	Highest Quality
	Aa1	AA+	AA+	Very High Quality
	Aa2	AA	AA	
	Aa3	AA-	AA-	
	A1	A+	A+	High Quality
	A2	A	A	
	A3	A-	A-	
	Baa1	BBB+	BBB+	Medium Grade
	Baa2	BBB	BBB	
	Baa3	BBB-	BBB-	
Non-Investment Grade	Ba1	BB+	BB+	Speculative
	Ba2	BB	BB	
	Ba3	BB-	BB-	
	B1	B+	B+	Highly Speculative
	B2	B	B	
	B3	B-	B-	
	Caa1	CCC+	CCC+	Substantial Risk
	Caa2	CCC	CCC	
	Caa3	CCC-	CCC-	
	Ca	CC	CC	Extremely Speculative / Default
	C	C	C	
	–	D	D	

46) D. BBB- is investment grade (see table in question #45).

47) A. The equivalent of B+ is B1 (see table in question #45).

48) D. LTM 9/30/2019 sales are calculated by taking $2,250.0 million (2018 FY Sales from 10-K), adding $1,600.0 million (2019 3Q YTD Sales from 10-Q), and then subtracting $1,450.0 million (2018 3Q YTD Sales from 10-Q).

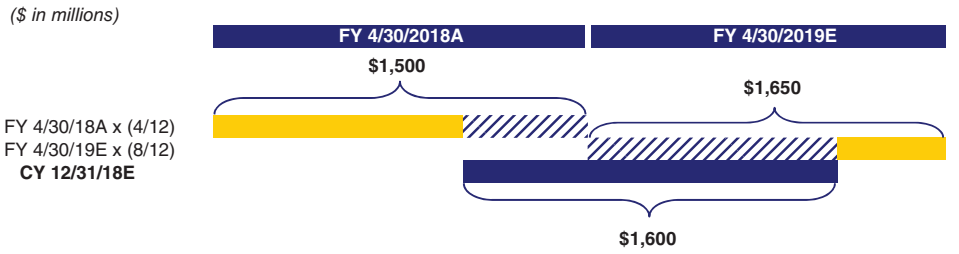


49) B. In this case, the most recent quarter is the fourth quarter of the company's fiscal year. Therefore, there is no LTM calculation as the full prior fiscal year (as reported) serves as the LTM period.

50) C. To calendarize 4/30/2018 sales, take year end 4/30/2018 sales and multiply the data by 4/12, the numerator pertaining to the month # in which the company's fiscal year ends. Next, take 4/30/2019 projected sales, and multiply the data by 8/12, the numerator pertaining to one minus the month # in which the company's fiscal year ends. The sum of these two formulas is estimated 12/31/2018 sales.

$$\text{Next Calendar Year (CY) Sales} = \frac{(\text{Month \#}) \times (\text{FYA Sales})}{12} + \frac{(12 - \text{Month \#}) \times (\text{NFY Sales})}{12}$$

Note: "Month #" refers to the month in which the company's fiscal year ends (e.g., the Month # for a company with a fiscal year ending April 30 would be 4). FYA = fiscal year actual and NFY = next fiscal year.



51) B. See calculation below

($ in millions, except per share data)

Income Statement

	Reported 2018	Adjustments +	Adjustments -	Adjusted 2018
Sales	**$1,000.0**			**$1,000.0**
Cost of Goods Sold	625.0		(5.0)	620.0
Gross Profit	**$375.0**			**$380.0**
Selling, General & Administrative	230.0			230.0
Restructuring Charges	10.0		(10.0)	-
Operating Income (EBIT)	**$135.0**			**$150.0**
Interest Expense	35.0			35.0
Pre-tax Income	**$100.0**			**$115.0**
Income Taxes @ 25%	25.0	3.8		28.8
Net Income	**$75.0**			**$86.3**
Operating Income (EBIT)	$135.0	15.0		$150.0
Depreciation & Amortization	50.0			50.0
EBITDA	**$185.0**			**$200.0**
Weighted Avg. Diluted Shares	30.0			30.0
Diluted EPS	$2.50			$2.88

Inventory write-down

= (Inventory write-down + Restructuring charge) x Marginal Tax Rate
= ($5 million + $10 million) x 25%

$15 million add-back of total non-recurring items

52) A. P/E is equal to equity value/net income.

$$\frac{\text{Share Price}}{\text{Diluted EPS}} \qquad \frac{\text{Equity Value}}{\text{Net Income}}$$

53) C. For enterprise value multiples, the denominator employs a financial statistic that flows to both debt and equity holders, such as sales, EBITDA, and EBIT. Thus, enterprise value/net income is incorrect because net income only flows to equity holders as it is net of interest expense.

54) A. Equity value-to-EBITDA is incorrect because its numerator, equity value, corresponds to a financial statistic that flows only to equity holders, such as net income or EPS. EBITDA flows to both equity and debt holders.

55) B. The balance sheet shows the cumulative amount of noncontrolling interest.

56) B. Enterprise value-to-EBITDA and Price-to-earnings (P/E) are the two most generic and widely used valuation multiples.

57) Similar companies provide a highly relevant reference point for valuing a given target due to the fact that they share key business and financial characteristics, performance drivers, and risks.

58) One of the companies could have higher profit margins, higher levels of projected growth, or less leverage; while the other company could have experienced management turnover, missed earnings estimates, or lost a major distributor.

59) Moderate to low leverage. Such a company has a lower risk of financial distress, coupled with a greater ability to grow both organically and through acquisitions.

60) Certain sub-groups are typically more appropriate than the entire universe for framing valuation (e.g., based on business model, size, and geography). This tiering requires a sufficient number of comparable companies to justify categorization.

61) See below

10-K	Annual report
10-Q	Quarterly report
8-K	Current report
DEF14A	Proxy statement

62) See below

Enterprise value/reserves	Metals & mining
Enterprise value/EBITDAR	Retail
Enterprise value/subscriber	Media
Price/Book	Financial institutions

63) Benefits of using comparable companies:

- *Market-based* – information used to derive valuation for the target is based on actual public market data, thereby reflecting the market's growth and risk expectations, as well as overall sentiment
- *Relativity* – easily measurable and comparable versus other companies
- *Quick and convenient* – valuation can be determined on the basis of a few easy-to-calculate inputs
- *Current* – valuation is based on prevailing market data, which can be updated on a daily (or intraday) basis

64) Considerations when using comparable companies:

- *Market-based* – valuation that is completely market-based can be skewed during periods of irrational exuberance or bearishness
- *Absence of relevant comparables* – "pure play" comparables may be difficult to identify or even non-existent, especially if the target operates in a niche sector, in which case the valuation implied by trading comps may be less meaningful
- *Potential disconnect from cash flow* – valuation based on prevailing market conditions or expectations may have significant disconnect from the valuation implied by a company's projected cash flow generation (e.g., DCF analysis)
- *Company-specific issues* – valuation of the target is based on the valuation of other companies, which may fail to capture target-specific strengths, weaknesses, opportunities, and risks