

# *Real Estate & REIT Modeling:*

## *– Quiz Questions*

### **Module 1 – Accounting, Overview & Key Metrics**

#### **1. How are REITs different from normal companies?**

- a. Unlike normal companies, REITs are not required to pay income taxes at the corporate level – assuming they satisfy certain requirements.
- b. REITs are required to pay out 90% of their taxable income in the form of dividends to maintain their status as REITs.
- c. Normal companies tend to use more leverage in their capital structure than REITs.
- d. At least 75% of a REIT's Total Assets must be related to real estate in order to maintain its status as a REIT (the exact percentage differs slightly by country).

#### **2. Which of the following statements are TRUE regarding Traditional REITs compared to UPREITs and DownREITs?**

- a. Most publicly traded REITs are structured as either UPREITs or DownREITs.
- b. In a DownREIT structure, the Partnership only owns new assets acquired and NOT existing assets.
- c. In an UPREIT structure, the Partnership owns all existing assets but not future assets that may be acquired.
- d. When calculating the diluted share count for Traditional REITs, you must also factor in the Operating Partnership (OP) units.
- e. In both the UPREIT and DownREIT structures, the Operating Partnership units granted to property owners can be traded in for cash or REIT shares after 1 year.

- 3. Consider an equity REIT vs. a mortgage REIT – which of the following answer choices represent DIFFERENCES between the Income Statements of these two different REITs?**
- a. With an equity REIT, most revenue will be derived directly from its real estate-related assets – whereas that is not necessarily the case for a mortgage REIT.
  - b. Equity REITs are likely to have significant gains and losses on their Income Statements due to frequent property sales, but gains and losses are rare for mortgage REITs.
  - c. While both types of REITs will have significant interest expense, for mortgage REITs interest will be the PRIMARY expense, whereas it will be a smaller percentage of the total expenses for equity REITs.
  - d. Most of an equity REIT's revenue will come from rental income on owned properties, whereas a mortgage REIT's revenue will come mostly from interest earned on its loans.
  - e. Equity REITs very often have line items for Income from Equity Investments and Net Income Attributable to Noncontrolling Interests, but these items are rare for mortgage REITs since partially owned companies/assets are less common.
- 4. TRUE OR FALSE: An equity REIT can grow its business by acquiring properties, developing new properties, renovating existing properties, and raising rents on existing properties, but disposing of existing properties would not help it grow because it would lose rental income from doing so.**
- a. True.
  - b. False.

5. For this question and the next 4 questions after this one, please refer to the screenshots of an equity REIT's 3 financial statements shown below in Figures 1.5 – 1.7:

Figure 1.5 – Income Statement

Equity REIT - Sample Income Statement			
(\$ in Millions Except Per Share Data)			
		Last Historical Year	Next Year
<b>Revenue:</b>			
Rental Income:		\$ 500	\$ 521
Miscellaneous Revenue & Fees:		20	20
<b>Total Revenue:</b>		<b>520</b>	<b>541</b>
<b>Expenses:</b>			
Property-Level Operating Expenses:		150	156
Property Taxes:		50	52
G&A and Corporate Overhead:		25	26
Amortization of Financing Fees:		5	5
Stock-Based Compensation:		5	5
Depreciation from Continuing Operations:		120	120
Net Interest Expense:		95	100
<b>Total Expenses:</b>		<b>450</b>	<b>463</b>
Earnings / (Loss) from Equity Investments:		5	5
Gain / (Loss) on Sale of Land:		5	10
<b>Income from Continuing Operations:</b>		<b>80</b>	<b>92</b>
<b>Discontinued Operations:</b>			
Income from Discontinued Operations:		5	5
Gain / (Loss) on Sale of Buildings and FF&E:		15	30
<b>Total Discontinued Operations:</b>		<b>20</b>	<b>35</b>
<b>Net Income:</b>		<b>\$ 100</b>	<b>\$ 127</b>
(Earnings) / Loss from Noncontrolling Interests:		(10)	(10)
<b>Net Income Attributable to Company:</b>		<b>\$ 90</b>	<b>\$ 117</b>
<b>Earnings Per Diluted Share:</b>			
Income from Continuing Operations:		\$ 0.70	\$ 0.82
Income from Discontinued Operations:		0.20	0.35
<b>Total Diluted EPS to Company:</b>		<b>\$ 0.90</b>	<b>\$ 1.17</b>
Weighted Average Diluted Shares:		100.0	100.0

Figure 1.6 – Balance Sheet

Equity REIT - Sample Balance Sheet				
(\$ in Millions)				
			Last Historical Year	Next Year
<b>Assets:</b>				
<b>Real Estate:</b>				
Land:			\$ 1,000	\$ 1,033
Buildings and Improvements:			3,800	3,925
Furniture, Fixtures & Equipment:			500	517
<b>Gross Real Estate Operating Assets:</b>			<b>5,300</b>	<b>5,475</b>
Less: Accumulated Depreciation:			(1,500)	(1,625)
<b>Net Operating Real Estate:</b>			<b>3,800</b>	<b>3,850</b>
Construction in Progress:			500	505
Land Held for Development:			300	305
Real Estate Assets Held for Sale:			200	190
<b>Total Real Estate, Net of Accumulated Depreciat</b>			<b>4,800</b>	<b>4,850</b>
Cash & Cash-Equivalents:			180	206
Investments in Equity Interests:			150	155
Capitalized Financing Fees:			20	15
Accounts Receivable, Net:			100	105
Prepaid Expenses & Other Assets:			150	145
<b>Total Assets:</b>			<b>\$ 5,400</b>	<b>\$ 5,476</b>
<b>Liabilities &amp; Equity:</b>				
Total Debt, Net of Discounts:			\$ 2,000	\$ 2,060
Accounts Payable:			100	105
Accrued Expenses & Other Liabilities:			200	190
<b>Total Liabilities:</b>			<b>2,300</b>	<b>2,355</b>
Redeemable Noncontrolling Interests:			100	90
<b>Equity:</b>				
Noncontrolling Interests:			100	110
Preferred Stock:			-	-
Common Stock & Additional Paid-In Capital:			3,300	3,415
Treasury Stock:			-	-
Retained Earnings:			(200)	(304)
Accumulated Other Comprehensive Loss:			(200)	(190)
<b>Total Equity:</b>			<b>\$ 3,000</b>	<b>\$ 3,031</b>
<b>Total Liabilities &amp; Equity:</b>			<b>\$ 5,400</b>	<b>\$ 5,476</b>

Figure 1.7 – Cash Flow Statement

Equity REIT - Sample Cash Flow Statement			
(\$ in Millions)			
		Last Historical Year	Next Year
<b>Operating Activities:</b>			
Net Income Attributable to Company:		\$ 90	\$ 117
<b>Adjustments to Net Income and Non-Cash Charges:</b>			
Depreciation from Continuing Operations:		120	120
Depreciation from Discontinued Operations:		5	5
Amortization of Financing Fees:		5	5
Stock-Based Compensation:		5	5
Noncontrolling Interest Earnings / (Loss):		10	10
Equity Interest (Earnings) / Loss:		(5)	(5)
(Gain) / Loss on Sale of Real Estate Assets:		(20)	(40)
<b>Changes in Operating Assets &amp; Liabilities:</b>			
(Increase) / Decrease in Accounts Receivable:		15	(5)
(Increase) / Decrease in Prepaid Expenses:		(5)	5
Increase / (Decrease) in Accounts Payable:		10	5
Increase / (Decrease) in Accrued Expenses:		10	(10)
<b>Cash Flow from Operations:</b>		<b>240</b>	<b>212</b>
<b>Investing Activities:</b>			
Development & Redevelopment:		(100)	(100)
Acquisitions of Real Estate Assets:		(100)	(100)
Maintenance Capital Expenditures:		(30)	(35)
Proceeds from Sale of Real Estate Assets:		100	100
(Increase) / Decrease in Construction in Progress:		(5)	(5)
(Increase) / Decrease in Land Held for Development:		(5)	(5)
(Increase) / Decrease in RE Assets Held for Sale:		10	10
<b>Cash Flow from Investing:</b>		<b>(130)</b>	<b>(135)</b>
<b>Financing Activities:</b>			
Debt Borrowings:		150	150
Repayment of Debt:		(100)	(90)
Issuance of Common Stock:		50	110
Repurchases of Common Stock:		-	-
Preferred Issuances / (Redemptions):		-	-
Redemption of Noncontrolling Interests for Cash:		-	(10)
Dividends Paid:		(200)	(210)
Distributions to DownREIT Unitholders:		(10)	(11)
<b>Cash Flow from Financing:</b>		<b>(110)</b>	<b>(61)</b>
FX Rate and Miscellaneous Changes:		10	10
<b>Cash Increase / (Decrease):</b>		<b>\$ 10</b>	<b>\$ 26</b>
Beginning Cash:		170	180
<b>Ending Cash:</b>		<b>\$ 180</b>	<b>\$ 206</b>

**Based on the screenshots shown above, CALCULATE the Funds from Operations (FFO) for the Last Historical Year.**

- a. Last Historical Year Funds from Operations = \$205 million.
- b. Last Historical Year Funds from Operations = \$200 million.
- c. Last Historical Year Funds from Operations = \$210 million.
- d. Last Historical Year Funds from Operations = \$235 million.

**6. Why do you subtract gains and add back losses when calculating Funds from Operations (FFO)? REITs are constantly buying and selling properties, so shouldn't gains and losses count as recurring, operationally-related items?**

- a. The question premise is false – Gains and Losses are non-recurring items that are not particularly common for REITs.
- b. Because Gains and Losses fluctuate greatly from year to year and it's hard to make solid projections for them over a 5-year period.
- c. Because you also subtract Income from Discontinued Operations when calculating FFO, so you need to adjust for gains and losses to make the calculation consistent.
- d. None of the above – you do NOT subtract gains or add back losses when calculating FFO.

**7. What is the purpose of calculating Adjusted Funds from Operations (AFFO), as compared to Funds from Operations (FFO)?**

- a. While FFO is intended to be an improvement over Net Income for REITs, it is still quite far apart from actual cash flow generated – so AFFO is intended to be a replacement for Free Cash Flow (FCF).
- b. While AFFO is not exactly a replacement for FCF, it does generally produce numbers that are closer to a REIT’s true cash flow.
- c. Many investors believe AFFO more accurately represents how much cash flow a REIT can generate on recurring basis, due to the adjustments for maintenance CapEx and other items.
- d. While you need to use Equity Value when calculating valuation multiples based on FFO, with AFFO you can use Enterprise Value – so it adds another perspective to the analysis.

**8. Based on the standard practices for calculating Adjusted Funds from Operations (AFFO), an analyst reviewing the REIT’s financial statements in the screenshots above may choose to calculate AFFO for the Last Historical Year in several different ways. Which of the following calculations are NOT commonly accepted ways to calculate AFFO in this case?**

- a.  $\text{AFFO} = \text{FFO} - \text{Maintenance CapEx} - \text{Gain / (Loss) on Sale of Land} + \text{Amortization of Financing Fees} + \text{Stock-Based Compensation} = \$200 \text{ million} - \$30 \text{ million} - \$5 \text{ million} + \$5 \text{ million} + \$5 \text{ million} = \$175 \text{ million}.$
- b.  $\text{AFFO} = \text{FFO} - \text{Maintenance CapEx} - \text{Gain / (Loss) on Sale of Land} + \text{Amortization of Financing Fees} + \text{Stock-Based Compensation} - \text{Development \& Redevelopment} - \text{Acquisitions} + \text{Proceeds from RE Asset Sales} = \$200 \text{ million} - \$30 \text{ million} - \$5 \text{ million} + \$5 \text{ million} + \$5 \text{ million} - \$100 \text{ million} - \$100 \text{ million} + \$100 \text{ million} = \$75 \text{ million}.$
- c.  $\text{AFFO} = \text{FFO} - \text{Maintenance CapEx} = \$200 \text{ million} - \$30 \text{ million} = \$170 \text{ million}.$
- d.  $\text{AFFO} = \text{FFO} - \text{Maintenance CapEx} - \text{Gain / (Loss) on Sale of Land} + \text{Amortization of Financing Fees} + \text{Stock-Based Compensation} + \text{Total Depreciation on RE-Related Assets} = \$200 \text{ million} - \$30 \text{ million} - \$5 \text{ million} + \$5 \text{ million} + \$5 \text{ million} + \$125 \text{ million} = \$300 \text{ million}.$

**9. The Equity Value / FFO multiple for the Last Historical Year was 15.1x, and the Equity Value / AFFO multiple was 17.3x. The historical Cap Rate for the REIT's entire property portfolio in the Last Historical Year was 5.7%. Based on this information, what might you conjecture about the REIT's valuation?**

- a. The REIT may be UNDERVALUED (subject to further research and due diligence).
- b. The REIT may be OVERVALUED (subject to further research and due diligence).
- c. The REIT may be VALUED APPROPRIATELY (subject to further research and due diligence).
- d. You cannot make any initial conjectures because more information is required to determine the "Cap Rate Implied by Stock Price" and the "Historical Cap Rate Based on Cost."

**10. Consider the following answer choices, each of which attempts to define a key term used in Real Estate Development models. Which of these definitions are CORRECT?**

- a. Hard Costs represent the cost of buying the raw materials for the property, physically excavating the ground, and then constructing the building.
- b. Hard Costs are the LEAST expensive of the 5 major real estate development expense categories, since labor always costs more than the building materials.
- c. Land Acquisition Costs represents the cost of buying the land in the beginning of the development process, as well as paying for broker fees and permits.
- d. Soft Costs represent the cost of paying for architects, designers, lawyers, and engineers to design the building.
- e. In terms of the construction timeline, Soft Costs are paid out BEFORE any of the other key real estate development expense categories.



**11. Which of the following statements regarding the “Loan-to-Cost” (LTC) Ratio and financing methods for property development are TRUE?**

- a. The LTC Ratio tells you how much debt vs. equity you will use to finance the property development.
- b. To determine the appropriate LTC Ratio, you would look at comparable property developments and speak with banks and lenders to determine how much debt they are willing to commit.
- c. Aside from the 5 major categories of real estate development expenses, a developer also needs to account for other ‘hidden fees,’ such as capitalized interest expense and operating deficit payments, when determining the total amount of debt and equity required.
- d. Typically, “Developer Equity” – i.e. cash that the developer itself contributes – comprises the highest percentage of funding for a new property development.
- e. Similar to the leverage ratio in leveraged buyout models, it is unusual for a property development to be financed with more than 50% debt – such a high debt load increase the risk, so lenders will rarely commit to such projects.

**12. Which of the following statements are TRUE regarding the calculation of Net Operating Income (NOI) and its interpretation when it is used to analyze both individual properties and REITs?**

- a. Conceptually, NOI serves a function similar to EBITDA but it is for properties rather than normal companies.
- b. Like EBITDA, NOI is ‘capital-structure neutral’ and thus it EXCLUDES the Net Interest Expense altogether.
- c. One method of calculating NOI is as follows:  $\text{NOI} = \text{Potential Property Income} - \text{Vacancy Allowance} - \text{Operating Expenses} - \text{Property Taxes}$ .
- d. Unlike with EBITDA, when you’re calculating NOI it is critical to subtract Depreciation since it is a major expense for properties and reflects the annual allocation of CapEx spending.
- e. To get as close to “true cash flow generating ability” as possible, you should subtract both Maintenance CapEx AND Growth CapEx when calculating NOI.

**13. Which of the following statements regarding Net Operating Income (NOI) and Cap Rates as they relate to valuation are TRUE?**

- a. Cap Rates are the reciprocal of valuation multiples, and they measure approximately how much you can earn for each dollar you invest in the property.
- b. One way to calculate the Cap Rate is:  $\text{Cap Rate} = \frac{\text{12-Month Forward Stabilized NOI}}{\text{Gross Real Estate Operating Assets}}$ .
- c. A higher Cap Rate corresponds to a more highly-valued (and possibly overvalued) property and indicates that it may be a pricey investment.
- d. Cap Rates are the best way to value real estate since they are the industry-standard metric and data on Cap Rates is widely available in all geographies.

14. For this question and the next 4 questions, please review the screenshots shown below in Figures 1.14 – 1.16 for a simplified apartment development model:

Figure 1.14 – Apartment Complex Development – Model Assumptions

Model Input and Assumptions - Gekko Apartments			
Building / Construction Name:	Gekko Apartments	Blue indicates hard-coded numbers and inputs.	
Construction Year:	1/1/20XX	Black indicates formulas or text.	
Units:	1,000	Green indicates links from other worksheets.	
Months in Year:	12	Circularity Breaker:	No
Lot and Unit Assumptions - Gekko Apartments			
Lot Square Meters:	25,000 sq. m.	<b>Annual Property Income Statement:</b>	
Minimum Square Meters Per Unit:	100 sq. m.		
Apartment Units:	250	Gross Potential Annual Apartment Revenue:	\$ 22,500,000
Average Apartment Unit Size:	100 sq. m.	Gross Potential Annual Parking Revenue:	720,000
Average Monthly Rent Per Square Meter:	\$ 75.00	Less: Vacancy Allowance:	(1,625,400)
Average Monthly Parking Fees Per Spot:	\$ 120.00	<b>Annual Net Revenue:</b>	<b>21,594,600</b>
Average Monthly Rent Per Unit:	\$ 7,500	Annual Operating Expenses:	750,000
Monthly Operating Expenses Per Unit:	\$ 250.00	Annual Property Taxes:	360,000
Monthly Property Taxes Per Unit:	120.00	<b>Total Property-Level Expenses:</b>	<b>1,110,000</b>
<b>Total OpEx and Taxes Per Unit:</b>	<b>\$ 370.00</b>	<b>Current Year Net Operating Income:</b>	<b>\$ 20,484,600</b>
Required Parking Spots Per Unit:	2.0	Pre-Construction # Months:	3
Parking Spots:	500	Construction Start Month:	4
Assumed Vacancy Rate at Stabilization:	7.0%	Construction # Months:	6
Pre-Construction Phase:	1	Rental Period Start Month:	10
Construction Phase:	2		
Post-Construction Phase:	3		

Figure 1.15 – Apartment Complex Development – Transaction Assumptions

Project Cost Assumptions - Gekko Apartments			
<b>Project Costs:</b>	<b>Per Unit:</b>	<b>Total:</b>	<b>Debt &amp; Equity Assumptions:</b>
Hard Costs and FF&E:	\$ 175,000	\$ 43,750,000	Loan to Cost (LTC) Ratio: 80.0%
Soft Costs:	30,000	7,500,000	Debt Interest Rate: 6.5%
Land Acquisition Costs:	83,000	20,750,000	Required Equity: 20.0%
Capitalized Interest:		1,062,006	
<b>Total Project Cost:</b>		<b>\$ 73,062,006</b>	Loan Amount: \$ 58,449,604
			Equity Amount: 14,612,401
Sale Assumptions & Output - Gekko Apartments			
Years to Stabilized NOI:		1.0	Annual Maintenance CapEx Per Unit: \$ 200.00
Annual Revenue Inflation:		3.0%	Stabilized NOI After Maintenance CapEx: \$ 21,047,638
Annual Expense Inflation:		3.0%	Yield on Cost: 28.8%
Property Sale Capitalization Rate:		7.0%	
Gross Sale Value:		\$ 300,680,543	
Less: Selling Costs:	4.0%	(12,027,222)	
Less: Pay Off Debt Principal:		(58,449,604)	
<b>Net Sale Proceeds:</b>		<b>\$ 230,203,717</b>	

Figure 1.16 – Construction Timeline & Financial Statements

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1																		
2		<b>Compressed Construction Timeline - Gekko Apartments</b>																
3																		
4																		
5	Month:					1	2	3	4	5	6	7	8	9	10	11	12	
6	Phase (1 = Pre, 2 = Construction, 3 = Post):					1	1	1	2	2	2	2	2	2	3	3	3	
7																		
8	Gross Potential Monthly Apartment Revenue:					\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,875,000	\$ 1,875,000	\$ 1,875,000	
9	Gross Potential Monthly Parking Revenue:					-	-	-	-	-	-	-	-	-	60,000	60,000	60,000	
10	Less: Vacancy Allowance:					-	-	-	-	-	-	-	-	-	(135,450)	(135,450)	(135,450)	
11	<b>Monthly Net Revenue:</b>					-	-	-	-	-	-	-	-	-	<b>1,799,550</b>	<b>1,799,550</b>	<b>1,799,550</b>	
12																		
13	Monthly Operating Expenses:					-	-	-	-	-	-	-	-	-	62,500	62,500	62,500	
14	Monthly Property Taxes:					-	-	-	-	-	-	-	-	-	30,000	30,000	30,000	
15	<b>Monthly Expenses:</b>					-	-	-	-	-	-	-	-	-	<b>92,500</b>	<b>92,500</b>	<b>92,500</b>	
16																		
17	<b>Net Operating Income:</b>					\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	<b>\$ 1,707,050</b>	<b>\$ 1,707,050</b>	<b>\$ 1,707,050</b>	
18																		
19	<b>Project Construction Costs:</b>																	
20	Hard Costs and FF&E:					-	-	-	7,291,667	7,291,667	7,291,667	7,291,667	7,291,667	7,291,667	-	-	-	
21	Soft Costs:					-	-	-	1,250,000	1,250,000	1,250,000	1,250,000	1,250,000	1,250,000	-	-	-	
22	Land Acquisition Costs:					6,916,667	6,916,667	6,916,667	-	-	-	-	-	-	-	-	-	
23	<b>Total Construction Costs:</b>					<b>6,916,667</b>	<b>6,916,667</b>	<b>6,916,667</b>	<b>8,541,667</b>	<b>8,541,667</b>	<b>8,541,667</b>	<b>8,541,667</b>	<b>8,541,667</b>	<b>8,541,667</b>	-	-	-	
24																		
25	Ending Debt Balance:					-	-	6,154,267	14,752,556	23,397,546	32,089,490	40,828,643	49,615,262	58,449,604	58,449,604	58,449,604	58,449,604	
26	Capitalized Interest:			6.5%		-	-	16,668	56,623	103,323	150,277	197,487	244,952	292,676	-	-	-	
27																		
28	<b>Funds Required:</b>					<b>6,916,667</b>	<b>6,916,667</b>	<b>6,933,334</b>	<b>8,598,289</b>	<b>8,644,990</b>	<b>8,691,944</b>	<b>8,739,153</b>	<b>8,786,619</b>	<b>8,834,342</b>	-	-	-	
29																		
30																		
31	Equity Draw:			Max Draw:		6,916,667	6,916,667	=MIN(H\$28,\$D31-SUM(\$E31:G31))	-	-	-	-	-	-	-	-	-	
32	Debt Draw:					-	-	6,154,267	8,598,289	8,644,990	8,691,944	8,739,153	8,786,619	8,834,342	-	-	-	
33																		
34	<b>Equity Investor Returns:</b>																	
35	Equity Invested:					(6,916,667)	(6,916,667)	(779,068)	-	-	-	-	-	-	-	-	-	
36	Net Sale Proceeds:					-	-	-	-	-	-	-	-	-	-	-	-	230,203,717
37	<b>Net Cash Flow to Equity Investors:</b>					<b>(6,916,667)</b>	<b>(6,916,667)</b>	<b>(779,068)</b>	-	-	-	-	-	-	-	-	-	<b>230,203,717</b>
38																		
39																		
40																		

Which of the following answer choices give the **CORRECT** formula for calculating “Funds Required” in row 28 in Figure 1.16 above, **AND** properly describe the **RATIONALE** for this formula? **NOTE:** There may be more than one correct formula and more than one correct rationale / explanation for the formula.

- a. =IF (Capitalized Interest + Total Construction Costs – Net Operating Income > 0, Capitalized Interest + Total Construction Costs – Net Operating Income, 0)
- b. =IF (Capitalized Interest + Total Construction Costs – Net Operating Income > 0, 0, Capitalized Interest + Total Construction Costs – Net Operating Income)
- c. =MAX(Capitalized Interest + Total Construction Costs – Net Operating Income, 0)
- d. With this formula, you’re determining whether the property’s NOI can cover its construction costs and capitalized interest expense – if it can, use it do so; otherwise, draw on more debt or equity to pay for those expenses.
- e. None of the above – “Funds Required” cannot be calculated with a simple IF statement or MIN/MAX formula, and the rationale has nothing to do with the equity and debt draw calculations.

15. In cell H31 of the screenshot shown in Figure 1.16 above, you’ll see the formula for the “Equity Draw,” which is: =MIN(H\$28, \$D31 – SUM(\$E31:G31)). Which of the following answer choices **CORRECTLY** describe the rationale for this formula?

- a. The formula contains a SUM function to ensure that we do NOT draw on a cumulative amount of Equity that exceeds the maximum available Equity Draw.
- b. The sum of the Equity Draw and Debt Draw in any month is equal to “Funds Required” in that same month.
- c. The horizontal summation over the full 12 months for the Equity Draw and the Debt Draw will be equal to the Maximum Draw for Equity and the Maximum Draw for Debt, respectively.
- d. The formula uses a MIN function to draw on the total amount of “Funds Required” in the form of equity, or, if that would cause the cumulative equity draw to exceed the maximum allowable amount, it draws on the maximum allowable equity amount, and then uses debt for the remainder of the funds required.

**16. Which of the following explanations below CORRECTLY explains why interest expense is often capitalized in real estate development projects?**

- a. Interest expense is capitalized in real estate development projects due to the “Time Value of Money” principal – paying out less in upfront cash expenses in the beginning helps investors realize a higher IRR upon exit.
- b. It has to do with the typical covenants of real estate debt, which prohibit cash payments of interest expense under certain conditions.
- c. Interest expense is capitalized in real estate development projects only until the property starts generating NOI – up until that stage, there are no funds available to pay interest with, so capitalizing it is the only option.
- d. None of the above – rarely, if ever, is the interest expense capitalized in real estate development models because PIK interest is only an option with certain types of mezzanine and high-yield debt used in traditional LBOs.

**17. If we disable circular references (see the “Circularity Breaker” option in Figure 1.14 above) for the capitalized interest calculation – so that only the ending debt balance from the prior month, rather than the average debt balance over the current month and the prior month, is used to calculate monthly interest expense – will the TOTAL cumulative interest paid over this 12-month period go up or down?**

- a. Disabling circular references will cause the total interest paid to INCREASE.
- b. Disabling circular references will cause the total interest paid to DECREASE.
- c. Disabling circular references will cause the total interest paid to REMAIN THE SAME.
- d. More information is required to determine this because it depends on the funding requirements of the property.

**18. The model shown in the screenshots above is a SIMPLIFIED model intended to teach you the concepts behind real estate development. What are some of the PROBLEMS with the way we have set up our model as it is shown in Figures 1.14 – 1.16 above?**

- a. The construction timeline is far too short – it should be more like 3-5 years (or more) rather than 1 year.
- b. The model does not account for cash interest paid, but instead assumes that all the interest expense is capitalized until the end of the project.
- c. The Operating Expenses and Property Taxes should start earlier on in the model, since they are owed even before tenants move in and start paying rent.
- d. The LTC Ratio of 80% is far too high for this type of property, and we should adjust that down to 50% or less instead.
- e. The NOI Margin for this property is too high – NOI Margins for apartment complexes are typically in the 60-70% range, not the ~95% figure shown here.