

FIL 260 – Trefzger  
Solutions – Real Estate Appraisal Homework Exercises

Please submit a scanned or photographed copy of your carefully hand-written solutions to the Topic 6 homework problems. (If you take photographs of individual pages with your phone or other device, please paste all of the pictures into a single Word file in the correct order before submitting. DO NOT submit multiple individual photographs; that kind of submission is very difficult for the instructor to grade.) Solutions are provided below – but think as you work; the assignment is not a copying exercise. Upload your submission to Reggie Net if you can, or attach it to an e-mail to the instructor if you can not. You do not have to provide comments, but the computational steps should be complete – you are earning credit for working the problems carefully to be better prepared for the exam. Points will be taken off for cutting corners. Due date and time are shown with the assignment information on Reggie Net.

1. Bulldog Bank has ordered an appraisal of a house at 303 Beagle Avenue in the Canine Hills Subdivision, in connection with Joanne and Jack Russell’s application for a loan. Characteristics of the subject property and three comparables the appraiser has identified as “pretty good” are as shown in the grid below. The appraiser feels that the following adjustments are warranted:

- Values in Canine Hills and the nearby area have risen steadily by approximately 4% over the previous year;
- A larger corner lot in this neighborhood is worth approximately \$12,000 more than a standard interior lot;
- Having a finished basement adds approximately \$4,000 to the value of a home in this area;
- Being of only average condition rather than the more typical good condition reduces value by \$5,000;
- A third garage stall adds approximately \$10,000 to a Canine Hills home’s value;
- Having a patio rather than a deck reduces value in Canine Hills by approximately \$2,000;
- Comparable 2’s slightly larger home size increases the property’s value by approximately \$3,000; and
- Comparable 3’s considerably larger size, which includes an extra bedroom and a full third bathroom, increases the property’s value by approximately \$24,000.

	SUBJECT PROPERTY	COMPARABLE SALE 1	COMPARABLE SALE 2	COMPARABLE SALE 3
Street Address	303 Beagle	304 Airedale	305 Chihuahua	306 Dachsund
Proximity to Subject		4 Blocks West	1 Block East	3 Blocks East
Data Source		Multiple Listing Service	Appraiser's Own Records	Multiple Listing Service
Sale Price		\$240,500	\$242,100	\$265,900
<u>Feature</u>		<u>Description</u> <u>Adjustment</u>	<u>Description</u> <u>Adjustment</u>	<u>Description</u> <u>Adjustment</u>
Date of Sale	Current Date	2 Weeks Ago	1 Year Ago	6 Months Ago
Financing	Conventional	Conventional	Conventional	Conventional
Location	Canine Hills Subdiv.	Canine Hills	Canine Hills	Canine Hills
Property Interest	Fee Simple	Fee Simple	Fee Simple	Fee Simple
Site	120 x 150 Interior	120 x 150 Interior	150 x 150 Corner	120 x 150 Interior
Design/Style	Two-Story	Two-Story	Two-Story	Two-Story
Siding	Brick/Vinyl	Brick/Vinyl	Brick/Vinyl	Brick/Vinyl
Above-Ground Room Count	7 / 3 / 2.5	7 / 3 / 2.5	7 / 3 / 2.5	8 / 4 / 3
Gross Living Area	2,250 Sq. Ft.	2,250 Sq. Ft.	2,300 Sq. Ft.	2,600 Sq. Ft.
Basement	Full, Unfinished	Full, Finished	Full, Unfinished	Full, Unfinished
Garage/Carport	2-Car Attached	2-Car Attached	2-Car Attached	3-Car Attached
Quality of Construction	Good	Good	Good	Good
Actual Age	17 Years	16 Years	18 Years	16 Years
Condition	Good	Average	Good	Good
Functional Utility	Average	Average	Average	Average
Heating/Cooling	Forced Air/Cent AC	Similar	Similar	Similar
Porch/Patio/Deck	Deck	Deck	Deck	Patio
Other				
Net Adjustment				
Adjusted Sales Price				

(No adjustment should be made for Comparable 1's sale date since it was so recent, and no adjustments for location or age are needed because the comparables all are in the same subdivision, within a few blocks of the subject, and all very close in age.) Use the Sales Comparison Approach, and the "squared adjustment weighting technique" explained in our Topic 6 outline, to estimate the subject property's indicated market value.

Answer: Start with a few "eyeball" observations. Comp 2 is better than the subject in having a more valuable lot and a little more square footage, and Comp 3 is better in having more rooms with the accompanying extra square footage plus a larger garage; when the comp is better than the subject we subtract to get the subject's indicated value. But since the subject property is selling in today's higher priced market we add to the Comp 2 and 3 selling prices to get an idea of what they would sell for today, and thus what the subject is worth now. Adjustments we should see (or something close, for the sale dates) are as shown below:

	<u>SUBJECT PROPERTY</u>	<u>COMPARABLE SALE 1</u>	<u>COMPARABLE SALE 2</u>	<u>COMPARABLE SALE 3</u>
Street Address	303 Beagle	304 Airedale	305 Chihuahua	306 Dachsund
Proximity to Subject		4 Blocks West	1 Block East	3 Blocks East
Data Source		Multiple Listing Service	Appraiser's Own Records	Multiple Listing Service
Sale Price		\$240,500	\$242,100	\$265,900
<u>Feature</u>		<u>Description</u> <u>Adjustment</u>	<u>Description</u> <u>Adjustment</u>	<u>Description</u> <u>Adjustment</u>
Date of Sale	Current Date	2 Weeks Ago	1 Year Ago \$9,700	6 Months Ago \$5,300
Financing	Conventional	Conventional	Conventional	Conventional
Location	Canine Hills Subdiv.	Canine Hills	Canine Hills	Canine Hills
Property Interest	Fee Simple	Fee Simple	Fee Simple	Fee Simple
Site	120 x 150 Interior	120 x 150 Interior	150 x 150 Corner (\$12,000)	120 x 150 Interior
Design/Style	Two-Story	Two-Story	Two-Story	Two-Story
Siding	Brick/Vinyl	Brick/Vinyl	Brick/Vinyl	Brick/Vinyl
Above-Ground Room Count	7 / 3 / 2.5	7 / 3 / 2.5	7 / 3 / 2.5	8 / 4 / 3
Gross Living Area	2,250 Sq. Ft.	2,250 Sq. Ft.	2,300 Sq. Ft. (\$3,000)	2,600 Sq. Ft. (\$24,000)
Basement	Full, Unfinished	Full, Finished (\$4,000)	Full, Unfinished	Full, Unfinished
Garage/Carport	2-Car Attached	2-Car Attached	2-Car Attached	3-Car Attached (\$10,000)
Quality of Construction	Good	Good	Good	Good
Actual Age	17 Years	16 Years	18 Years	16 Years
Condition	Good	Average \$5,000	Good	Good
Functional Utility	Average	Average	Average	Average
Heating/Cooling	Forced Air/Cent AC	Similar	Similar	Similar
Porch/Patio/Deck	Deck	Deck	Deck	Patio \$2,000
Other				
Net Adjustment		\$1,000	(\$5,300)	(\$26,700)
Adjusted Sales Price		\$241,500	\$236,800	\$239,200

Be sure you understand why the adjustments are positive or negative in particular cases. We expect that Comparable 3's buyer paid such a high price because the house provides more desirable bedroom, bathroom, and garage services than other houses in the area generally seem to offer (so subtract the applicable values to make Comp 3 look like the subject property). But we would expect it to sell for even more if it sold today, since prices have been rising steadily by about 4% per year (so add approximately 2% of the sale price, and also add \$2,000 to make Comp 3 look more like the subject since it has the less desired patio and not the nicer deck the subject has).

So based on appropriate adjustments to the three comparables the subject property seems to be worth something in the \$236,800 - \$241,400 range, and an argument could be made for just taking an average, i.e., assigning equal weights to the three:  $(\$236,800 + \$239,200 + \$241,500) \div 3 = \$717,500 \div 3 = \$239,167$ , perhaps rounded to \$239,200 - which is exactly the subject property's market value as indicated by Comparable 3 (the median indicated value). But we might prefer to assign more weight to a comparable if it seems stronger compared to the others; Comp 1 might seem especially strong because it sold just two weeks ago, while Comp 2 might seem strong in being just a block away from the subject.

But a more logical method assigns a relative ranking to a comparable based on both the number of adjustments made (the more things adjusted for, the less the comp seems like the subject) and the sizes of the adjustments (an appraiser might be fairly confident that a simple deck adds \$2,000 more to value than a patio, but not very confident that a complicated bedroom/bath combo adds \$24,000). So our "squared adjustment weighting technique" penalizes a comp for adjustments that are greater in number and/or larger in size. We address the size issue by squaring each adjustment, to magnify its impact on the weighting computation. Squaring also causes equal treatment for positive and negative adjustments. It would make no sense to say we adjusted a comparable +\$45,000 because it was a much smaller residence but then adjusted -\$45,000 because it had a more desirable location, and conclude that it is a perfect comparable because the adjustments net to \$0!! No, that would be a very questionable comparable, with two really big adjustments involving features whose true values might be very difficult to ascertain.

Adjustments across all three comps are: -\$4,000, +\$5,000 (both for Comp 1); +\$9,700, -\$12,000, -\$3,000 (all for Comp 2); and +\$5,300, -\$24,000, -\$10,000, +\$2,000 (all for Comp 3). Taking a decimal fraction of each adjustment (to keep relationships proportional but the numbers more manageable) and then squaring each, we get  $(-4)^2 + 5^2 + 9.7^2 + (-12)^2 + (-3)^2 + 5.3^2 + (-24)^2 + (-10)^2 + 2^2 = 16 + 25 + 94.09 + 144 + 9 + 28.09 + 576 + 100 + 4 = 996.18$ . There are 3 comparables, so  $(n - 1) = (3 - 1) = 2$ , and our denominator will be  $(2)(996.18) = 1,992.36$ . [If you squared the 24,000 you would have 576,000,000; much easier to work with 576.]

The weight for Comp 1 has, as its numerator, all the adjustments made to Comps 2 and 3 (recall that Comp 1 is "good," in this relative ranking scheme, to the extent Comps 2 and 3 are "bad"). A less desirable comparable is one with adjustments that are more numerous and/or larger in size. So if Comps 1 and 2 are responsible for a smaller proportion of the total adjustments, then Comp 3 is relatively not as good and will get less weighting. In fact, in this example Comp 3 has many and large adjustments, so it should end up getting the lowest weighting. Let's compute its weight first, since we can do the three in any order.

$$\text{Comp \#3's weighting is } \frac{16+25+94.09+144+9}{(2)(996.18)} = 288.09/1,992.36 = .1446$$

$$\text{Comp \#2's weighting is } \frac{16+25+28.09+576+100+4}{(2)(996.18)} = 749.09/1,992.36 = .3760$$

$$\text{Comp \#1's weighting is } \frac{94.09+144+9+28.09+576+100+4}{(2)(996.18)} = 955.18/1,992.36 = .4794$$

(Note that the weights sum to 100%. Comp 3 gets a low weighting because of the big \$24,000 adjustment, relating to the 576 shown above, while Comp 1 with only two small adjustments gets a high weighting, almost half.) The indicated value of the subject property therefore is  $(.4794)(\$241,500) + (.3760)(\$236,800) + (.1446)(\$239,200) = \$115,775.10 + \$89,036.80 + \$34,588.32 = \$239,400$ .

Yes, we might round it, perhaps to \$239,500 or \$240,000, depending on the prices we actually observe in this area. Admittedly the three indicated values are all so close, less than 2% apart, that the benefit of jumping through this weighting scheme hoop could be questioned; averaging the three indicated values (equal weights) gave us \$239,200 and our more complex weighting scheme provided \$239,400. Since we were just weighting the comparables it was obvious that any final value would have to be less than \$241,500 and more than \$236,800. (In a real live, real-world appraisal your indicated values after adjusting the comps might not come out that closely unless you doctored the numbers to make it happen - real estate markets are inefficient, so sales prices always have some inconsistent elements.) Our "squared adjustment weighting" tool offers logic and consistency in assigning weights that too often are arrived at with intuition/gut feeling alone.

2. A large parcel of real estate near downtown Reggieville is zoned for commercial use. But at this time there is an older duplex (two-unit residential property) on the lot that people are paying rent to live in. A landlord looking to buy an older duplex of this quality in a similar location would be willing to pay as much as \$122,000. If the land were vacant it could be sold to a commercial developer for \$135,000. But the land is not vacant, and it would cost \$9,500 to demolish the structure and make the land ready to build on. What is the property's highest and best use (HBU)? What would HBU be if a residential landlord would pay up to \$129,000?

*Answer: HBU is the use, from among those physically and legally possible, and reasonably probable, that maximizes the property's value. A residential landlord competing against other potential buyers would pay a price as high as \$122,000 to buy the duplex and continue renting it out. A competing commercial developer would pay as much as \$135,000 to get the land if it were vacant. But it is not vacant; there will be a \$9,500 cost to tear down the duplex. So a commercial user will bid up to \$135,000 - \$9,500 = \$125,500 for the property "as-is," expecting to*

spend \$9,500 for demolition, after which \$135,000 will have been invested for a vacant lot ready to build a commercial building on. The highest & best use of the site is not its current use (the duplex), but rather commercial development. The market value of the site with the duplex to be demolished is \$125,500 (more than the \$122,000 someone would pay to keep it in its current residential use), and the structure contributes - \$9,500 to the property value.

But what if the duplex were in a little better shape, such that a residential landlord would pay a price as high as \$129,000? Then we would respond as follows. The highest and best use of the site, if it were vacant, is commercial development (value of \$135,000). But it is not vacant, and the value as improved is higher (at \$129,000) than it would be if the site were put to commercial use and the developer were willing to pay only \$125,500 (while holding back \$9,500 to cover demolition costs). So the site's highest and best use for now, under these circumstances, would be its current use: the duplex. The value of the land would be \$125,500, with the improvements contributing \$3,500 to the property value.

3. You are asked to estimate the market value of a vacant lot in Hook Slice Acres residential subdivision. This parcel is 110 feet wide and 130 feet deep, and is not located on the golf course that Hook Slice Acres surrounds. You find information on three reasonably similar lots in the same subdivision that have sold somewhat recently in arm's length transactions. Comparable 1, which is 100 feet wide and 130 feet deep and also is not on the golf course, was sold just one week ago for \$89,000. Comparable 2, also 100 feet wide and 130 feet deep, and also not on the golf course, was sold approximately a year ago for \$82,000. Finally Comparable 3, which is 90 feet wide and 130 feet deep and has direct frontage on the golf course, was sold six months ago for \$95,000. Using the sales comparison approach with proper adjustments, estimate the subject lot's market value.

Answer: This is actually kind of a fun "bad example" problem similar to one in a well-known textbook (the authors seem unaware that it is a bad example). We will make the adjustments based on the limited information given, as the book authors expected with their example, but will also look at the logical issues that arise.

First, compute the comparables' *unadjusted* prices per square foot - not always the best measure of land value, because values may not increase in a linear manner for example, but it is a unit of comparison we will use. For #1 it is  $\$89,000 \div (100 \times 130) = \$89,000 \div 13,000 = \$6.85$ ; for #2 it's  $\$82,000 \div (100 \times 130) = \$82,000 \div 13,000 = \$6.31$ ; and for #3 it's  $\$95,000 \div (90 \times 130) = \$95,000 \div 11,700 = \$8.12$ .

Second, figure out appropriate per-square-foot adjustment amounts with matched-pair analysis. Note that Comps 1 and 2 are identical in all important identified characteristics, except Comp 2 sold a year ago (we treat Comparable 1's one-week

difference as reflecting current market conditions) for \$7,000 less. On a per-square-foot basis it's  $\$7,000 \div 13,000 = \$.54$ . So we assume that Comparable 2 would sell today for  $\$6.31 + \$.54 = \$6.85$  per square foot.

[Yes, there is circular logic here by the ton. A statistician would have a cow; there are no degrees of freedom - having both of these comparables gives us no more information than if we had only one. (For example, if Comp 1 had sold for just \$84,000 last week with Comp 2 still selling for \$82,000 a year ago, Comp 1's indicated value per square foot would be  $\$84,000 \div 13,000 = \$6.46$  per square foot, and we would show the adjustment of  $\$2,000 \div 13,000 = \$.15$  - which added to Comp 2's unadjusted price/square foot is  $\$6.31 + .15 = \$6.46$ .) The two adjusted prices per square foot come out the same no matter what the initial values are. It is possible that, in reality, property values have generally been *falling* in this area, and that what really happened was that Comp 2's prior owner was just really anxious to sell. Therein lies the problem with matched pairs. To have any confidence at all in these figures, we would want to find supporting evidence in several other such pairs of transactions.]

Then we extend this same questionable logic in assuming that Comp 3 is now worth \$.27 more per square foot (half of \$.54, since there is a half-year time difference) than it was six months ago. That brings its adjusted price, for the moment, to  $\$8.12 + \$.27 = \$8.39$  per square foot. But now we score another point on the circular logic scale: we assume that because Comp #1 is worth \$6.85 per square foot today, Comp #3 is worth \$8.39 (\$1.54 per square foot more than Comp #1) only because it is right on the golf course. So we adjust the \$8.39 downward by - you guessed it - \$1.54 per square foot, leaving us with  $\$8.39 - \$1.54 = \$6.85$  as the subject property's indicated value/square foot based on Comp #3. Now all three comps show adjusted prices indicating a value per square foot for lots off the golf course in this neighborhood of \$6.85. It looks impressive to have three exactly equal figures, but the entire analysis is based on the price Comp #1 sold for - no additional, independent information is provided by the inclusion of Comps #2 and #3.

Under this highly questionable analysis, the subject property's indicated value is  $(110 \times 130) = 14,300$  square feet  $\times$  \$6.85 per square foot = \$97,955 (perhaps rounded to \$98,000). But again, we would feel comfortable using this matched pair technique only if we could find additional pairs of sales to support our analysis.

For further support of why the reasoning above is flawed consider this example. An appraiser finds the following recent transactions in the same neighborhood that occurred at about the same time. Houses 1 and 2 differed only in that house 2 had

an extra bathroom; it sold for \$15,000 more than house 1, so matched pair analysis provides one data point of evidence that an extra bathroom for that type of home in that neighborhood is worth \$15,000. House 3 differed from house 1 in having an extra bathroom and a finished basement, and it sold for \$20,000 more, so if we can conclude that a bathroom is worth \$15,000 it follows that having the basement finished is worth \$5,000. So for future reference can we be confident that a bathroom in that area is worth \$15,000 and basement finish worth \$5,000?

NO!! The entire analysis is based on the assumption that the \$15,000 bathroom adjustment is correct, meaning that the single observed \$15,000 price difference involving houses 1 and 2 was a close reflection of market realities, and not just a fluke. What if house 2 had instead sold for \$18,000 more than house 1 while house 3 still sold for \$20,000 more? Then the indication across the three transactions would be that a bathroom is worth \$18,000 and thus a finished basement worth \$2,000 - the basement finish's indicated value all ties back to what the bathroom is deemed to be worth, with no independent input about the basement. This shows why it is important, in using matched pair analysis, to find numerous independent transactions that all show similar price differences for the same property feature (if several different sales pairs with "extra bathroom" as the only substantial difference had prices differing from \$14,000 to \$16,000 we would be much more confident in attributing a \$15,000 value to an extra bathroom in future appraisals).

4. You are appraising a small apartment complex that is several years old. A local contractor estimates the cost today of constructing buildings that are similar in size and general amenities to be \$1,150,000. You believe that the structures suffer from \$57,000 in curable physical deterioration (cost to complete some needed roof repairs, painting, and caulking), and that general aging has left the buildings with incurable physical deterioration equal to 9% of the expected cost of new replacements. You also believe there is \$45,000 in incurable functional obsolescence from the lack of a place to put laundry facilities on site. There is no locational obsolescence, as the surrounding neighborhood consists primarily of small apartment properties. If you estimate the land value to be \$218,000, what is your estimate of the property's market value under the Cost Approach?

Answer: This is a pretty simple cost approach example. Our estimate of the improvements' value is the expected cost to build similar new structures, minus the loss in value we attribute to those improvements showing some age and having, in this example, poor design features (\$45,000 is the appraiser's estimate of the present value of the stream of lost revenue from never being able to have coin-operated washers on the property and from tenants offering lower rents because of the reduced service/having to drive to laundry facilities). So the buildings should be worth  $\$1,150,000 - \$57,000 - (.09 \times \$1,150,000) - \$45,000 = \$944,500$ . Then add the site value to get an estimated market value for the entire property:

$\$944,500 + \$218,000 = \$1,162,500$ . This indicated value might be rounded to  $\$1,160,000$  or  $\$1,163,000$  or some other value that reflects the types of price figures observed in negotiations for this type of real estate in the specified local market. Note that curable and incurable depreciation are subtracted in the same manner from cost to construct; the only difference is that curable items are likely to be repaired/replaced soon, whereas the owner will just live with incurable items.

5. You are asked to appraise a 32,000 square foot warehouse in Redbird Heights, home to a number of small warehouses that are generally similar in age and size. This subject property generated \$295,500 in gross rental revenue for its owner in the most recent year. You choose three recent warehouse sales to use as comparables in computing a gross income multiplier. 28,000 square foot Warehouse A generated \$257,000 in gross rental income in the most recent year, and it sold recently for \$1,320,000. Warehouse B, with 34,250 square feet of area and gross income in the most recent year of \$315,000, sold for \$1,588,750; and Warehouse C, 32,500 square feet in size and with \$276,000 in recent annual gross income, sold for \$1,375,000. What is the subject property's indicated market value, based on gross income multiplier analysis?

*Answer: Gross income multiplier (GIM) is the relationship between a year's gross rental income and the market value, for properties of a given type in a particular market area. (We might use gross rather than the more-preferred net income as an indicator of income-producing real estate's market value if we can identify rent levels but are not confident in our ability to measure the expenses an efficient property manager would incur. But the subject and comparables should all be sufficiently similar that we could infer that their unknown operating expenses would follow similar proportional patterns.) We compute GIM's based on recent comparables sold in arm's length transactions/no unusual conditions, in which we know the selling price (our best measure of a comp's market value) and gross rent collected in the most recent year by the property's owner. Based on Comp A we feel the applicable GIM is  $\$1,320,000 \div \$257,000 = 5.1362$ ; based on Comp B we estimate this relationship to be  $\$1,588,750 \div \$315,000 = 5.0437$ , and with Comp C we estimate it to be  $\$1,375,000 \div \$276,000 = 4.9819$ . (We could try to break the numbers down on a per square foot basis, but here we note warehouse sizes primarily to show a tendency for larger buildings to have higher gross incomes.)*

The three indicated GIM's average to  $(5.1362 + 5.0437 + 4.9819) \div 3 = 5.0539$ . Now we apply this gross income-to-value relationship to the subject property; the indicated value is  $5.0539 \times \$295,500 = \underline{\$1,493,427}$ , maybe rounded to  $\$1,493,000$  or  $\$1,490,000$  or some other value. Rounding depends on the transaction prices actually observed in that market; the appraiser has to determine whether people tend to bargain over \$500, \$1,000, or \$10,000 when buying this type of property.



6. Now assume that the appraiser in the previous problem puts effort into determining operating expense information for the three recently sold comparable warehouses, because she fears that the subject property would be more expensive to operate than the three comparables would be. The resulting stabilized net operating income measures for the three are \$148,750 for A; \$177,500 for B; and \$158,860 for C. The subject warehouse property's stabilized NOI should be \$162,140. Compute the net income multiplier (and its reciprocal, the overall capitalization rate) indicated by these transactions and estimate the subject property's market value with direct Net Income Capitalization analysis.

Answer: Here we base our analysis on a net (specifically, net operating income or NOI), rather than gross, income measure. (NOI is the amount of money we think will remain, after operating expenses like repairs and snow removal and set-asides for replacing aging equipment are met, for compensating the lenders and owners who put up the money to buy the property.) The net income multiplier (or its reciprocal, the overall capitalization rate) is the relationship between a year's NOI and market value, for properties of a given type in a particular market area. We do not claim to know why this relationship exists; we simply believe that if we observe it consistently then it must reflect the end point of informed buyers' thought process. Based on Comp A we feel that this relationship is  $\$1,320,000 \div \$148,750 = 8.8740$ ; based on Comp B we estimate it to be  $\$1,588,750 \div \$177,500 = 8.9507$ ; and per Comp C we have  $\$1,375,000 \div \$158,860 = 8.6554$ .

So now we apply this income-to-value relationship; an averaging of the three shows  $(8.8740 + 8.9507 + 8.6554) \div 3 = 8.8267$ . Applying this net income multiplier (NIM) to the to the subject property's \$162,140 NOI figure yields a market value estimate of  $\$162,140 \times 8.8267 = \underline{\$1,431,161}$ . We would round this figure to \$1,400,000 or \$1,430,000 or some other figure, depending on what seems appropriate based on previously observed transaction prices in the market. We could instead divide the subject property's NOI by the NIM's reciprocal, the capitalization rate ( $1 \div 8.8267 = .1133$ ), and get the same answer:  $\$162,140 \div .1133 = \underline{\$1,431,068}$  (a slight difference from above because the NIM figure was rounded to four decimal places).

Note that the indicated value of the subject property is somewhat lower here when we take expenses into account (using stabilized net operating income in this question rather than gross income in the previous example as our income measure). Recall that the appraiser had worried that the subject is a more-expensive-than-average property to operate. If that is the case, then we would get an artificially high value estimate if we ignored the high relative expenses by basing the income-to-value relationship on gross rental income. Using a net income measure forces a recognition of those higher expenses, and thus brings down the value estimate. Here we see why appraisers prefer to use net, rather than gross, income measures when reliable expense information is available.

7. Think of a house you know reasonably well. (It does not have to be your family's home, and all you need identify when you hand the assignment in is the town where the house is located.) Find the estimated value on three web sites that provide free estimates without requiring you to give e-mail or other contact information; at the time of this writing EZhouseprices, Fast Expert, HomeGain, and Trulia are among sites that require you to tell them things about yourself. Sites that give a value estimate (or at least value range) while asking only for the property address, at the time of this writing, include Bank of America Real Estate Center, Chase Mortgage Services, ForSaleByOwner, Penny Mac, Realtor.com, Redfin, Re/Max, Rocket Homes, Zillow (Eppraisal, Nerd Wallet, and Trulia just give the Zillow "Zestimate"), and Zip Realty. Some show pictures; neat but kind of scary from a privacy standpoint. There may be houses for which some sites lack information, so you may have to try a second or third choice of subject house. Then write a *brief* paragraph summarizing the following:

- the value, or value range, each site provided (do not print out and hand in web pages),
- whether the sites you used seem to do a good job of estimating what you perceive the true market value to be,
- how the estimate was determined, if clearly explained on the site (if not then just say that it is not clear), and
- whether you find these sites to be *useful* informational tools or more a form of entertainment. •