Math Review – Test #1

Revised August- 2020

- 1. Seller A and Buyer B have agreed to share all closing costs with A paying 60% and B paying 40%. If the title insurance is \$500, document preparation and recording fees are \$225 and miscellaneous expenses are \$248, how much more will A pay than B?
- 2. A buyer purchased two lots, each 75 feet by 125 feet for a total of \$76,000. What was the price per square foot?
- 3. Hooterville Realty's commission schedule for listed properties is: 6% of the first \$200,000 of sale price, then 4% of the next \$300,000, then 2% thereafter. The firm offers 60% of their gross fee as a "co-op" fee to other firms that are members of their local board of Realtors and retains the balance. A property was listed for \$575,000. An offer of \$525,000 was submitted by another broker from a member firm, to which the seller countered at \$550,000 which was accepted. At closing, what was the fee Hooterville retained after paying the "co-op" fee?
- 4. A property is 210 feet deep with 85 feet of frontage. If it is sold for \$15.75 per square foot plus a premium of \$300 per frontage foot, what would the sale price be?
- 5. A rectangular parcel priced at \$7.75 per square foot sells for \$96,875. If the parcel is 62.5 feet deep, what is the price per front foot?
- 6. A three acre parcel was purchased for \$86,000. The owner's neighbor wants to purchase a 25ft X 200 ft strip of that land. If the owner sells that strip for a 10% profit, what would it sell for?
- 7. A brokerage firm has all of their brokers on a 100% commission plan. The broker's monthly desk cost is \$1,500 and there is a \$150 per transaction fee to cover administrative costs. The firm also deducts any marketing/advertising fees from any earned commissions. This month the broker had 4 closings earning the following commissions: \$12,400, \$4,450, \$6,785 and \$1,750. If the broker's marketing costs totaled \$2,225 this month, what would the broker's net earnings be for this month?

- 8. Which of the following sales would utilize the most leverage?
 - a. \$500,000 sale price with an 85% LTV
 - b. \$400,000 sale price with 10% down payment
 - c. \$300,000 sale price with an 85% LTV
 - d. \$100,000 sale price with \$5,000 down payment
- 9. Stephanie bought her home 4 years ago for \$300,000 and borrowed \$210,000 at that time. Over that time, her home has appreciated 12.5%, and she has reduced her mortgage balance by \$48,000. What is her current equity?

Question #1 Solution:

\$500	\$973	\$973	\$583.80
\$225	<u>x.60</u>	<u>x .40</u>	<u>-\$389.20</u>
\$ <u>248</u>	\$583.80	\$389.20	\$194.60 more than "B"
= \$973			

<u>Question #2 Solution</u>: (note: there are two lots, one of the likely wrong answers would be the result if calculating it with only one lot)

Step 1: 75' x 125' = 9,375 square feet per lot
$$x = 18,750$$
 total square footage

Step 2: \$76,000 ÷ 18,750 = \$4.05 per square footage

Question #3 Solution: The sale price was \$550,000 so the fee will based off of the that, you then apply the appropriate amount (or tier) of the sales price to the commission rate for that "tier." The first tier is any amount between \$0 and \$200,000 of sales price @ 6%, the next tier is from \$200,001 to \$500,000 which would be the next \$300,000 @ 4%, and then the last tier is any amount over \$500,000 @ 2%.

Sales Price
$$$550,000$$

to $$500,000$
to $$300,000$ @ $4\% = $12,000$
 $$200,000$
to $$200,000$ @ $6\% = $12,000$
 $$25,000$ Gross Fee $$25,000$ Gross Fee $$25,000$ Hooterville $$10,000$ Hooterville's share of commission

Question #4 Solution:

Step 1: Calculate total square footage
$$210^{\circ}$$
 X $85^{\circ} = 17,850$ sq. ft. total area

Question #5 Solution:

Step 1: Calculate total area

\$96,875 total price

÷ \$7.75 price per square foot

= 12,500 total square footage

Step 2: Calculate frontage

12,500 total square footage

÷ 62.5' depth

= 200' frontage

(note: so long as the parcel is square or rectangular, length X width or depth X frontage = total area, so total area divided by one side = the other side, thus total area divided by depth = frontage)

Step 3: Calculate price per front foot

\$96,875 total price

÷ 200 front or frontage feet

= \$484.38 price per front foot or frontage foot

Question #6 Solution:

Step 1: Calculate square footage of three acres

43,560 square feet in an acre

X 3

130,680 sq. ft. in 3 acres

Step 2: Calculate price per square foot

\$86,000 price

÷ <u>130,680</u> total area

= \$.658 price per sq. ft.(note: take to 3rd decimal place)

Step 3: Calculate area or square footage of strip of land

 $200' \times 25' = 5000 \text{ sq.ft.}$

Step 4: Calculate price of strip at original cost

5,000 area or square footage of strip

X \$.658 price per sq. ft.

= \$3,290 price of strip at original cost

Step 5: Add 10% profit

\$3,290 original cost of strip

X 1.10 inflate to 110% of cost

= \$3,619.00 price w/ 10% profit or 110% of cost

(note, you could multiply by 10% then add to original)

Question #7 solution:

Step 1: Calculate the gross commissions earned
\$12,400
\$4,450
\$6,785

+\$1,750 Commissions
=\$25,385 Total/Gross commissions earned

Step 2: Deduct/subtract desk cost, transaction/administration fees, and marketing fees

\$25,385 - Gross commissions earned that month
- \$1,500 - Monthly desk cost
- \$600 - Transaction fees (4 closings X \$150 each)
- \$2,225 - Marketing fees
= \$21,060 Net earnings for the month

ANSWER QUESTION #8: Note: Leverage is the use of borrowed money

The answer is "d". Leverage is the use of debt. A \$100,000 sale with a \$5,000 down payment uses 95% leverage, i.e. a 95% LTV (Loan to Value). This is the most leverage as a percentage of the sale price of the 4 choices. It's not the dollar amount of debt, it's the percentage of borrowed money or "leverage" used. The highest LTV.

Answer Question #9: Note: (Equity is current value less total debt)

\$300,000	Original value	\$210,000 Original loan balance	\$337,500 Current value
X .125	X12.5% appreciation	\$48,000 Principal reduction	-\$162,000 Current debt
= \$37,500	appreciation	\$162,000 Current loan balance	= \$175,500 Equity
+ \$300,000	original value	·	
= \$337,500	appreciated value		

OR: as an alternate approach to finding the appreciated value. This approach saves a step and takes you right to the appreciated value, which is 112.5% of the original value.

\$300,000 Original Value

X1.125

\$337,500 Appreciated value is 112.5% of the original value