Math Review – Test #1

Revised October 2018

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. Listing agent Bob is affiliated with Managing Broker Lisa and lists a property for $389,900 at a commission rate of 6%. Selling agent Sally affiliated with Managing Broker Joe sells that property for $369,900. Lisa's firm pays a "co-op" fee of 50% of the gross fee to Joe's firm. Lisa and Bob are on a 60%/40% split with 60% going to Bob, and Joe and Sally are on a 70%/30% split with 70% going to Sally. How much did Managing Broker Joe retain in the end?

4. A property is 210 feet deep with 85 feet of frontage. If 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	x.60	x .40	-389.20
$248	$583.80	$389.20	**$194.60 more**
$973			

Question #2 Solution: (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 2 lots
= 18,750 total square footage

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

Question #3 Solution:

$369,900 Sales price
X .06 Commission rate
$22,194 Gross fee
X .50 Co-op split
$11,097 Co-of fee
X .30 % retained by Joe
$3,329.10 $ retained by Joe

Question #4 Solution:

Step 1: Calculate total square footage 210' X 85' = 17,850 sq. ft. total area

Step 2: Calculate per sq. ft. portion of price
17,850
X $15.75
$281,137.50

Step 3: Calculate frontage premium
$300
X 85 feet of frontage
$25,500 frontage premium

Step 4: Calculate total price
$281,137.50 cost per sq. ft.
+ $25,500 frontage premium
$306,637.50 total price

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

#5 Solution cont.
(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
÷ 130,680 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' X 25' = 5000 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
- $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. 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.

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	or 12.5% 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.

$300,000	Original Value
X1.125	
$ 337,500	Appreciated value is 112.5% of the original value