

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	<u>x .60</u>	<u>x .40</u>	<u>-389.20</u>
\$248	\$583.80	\$389.20	<u>\$194.60 more</u>
\$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 : $75' \times 125' = 9,375$ square feet per lot **Step 2:** $\$76,000 \div 18,750 = \4.05 per square foot
 x 2 lots
= 18,750 total square footage

Question #3 Solution:

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

Question #4 Solution:

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

Step 2: Calculate per sq. ft. portion of price

17,850
<u>X \$15.75</u>
\$281,137.50

Step 3: Calculate frontage premium

\$300
<u>X 85</u> feet of frontage
\$25,500 frontage premium

Step 4: Calculate total price

\$281,137.50	cost per sq. ft.
<u>+ \$25,500</u>	frontage premium
\$306,637.50	total price

Question #5 Solution:

Step 1: Calculate total area

\$96,875	total price
<u>÷ \$7.75</u>	price per square foot
= 12,500	total square footage

Step 2: Calculate frontage

12,500	total square footage
<u>÷ 62.5'</u>	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

$$\begin{array}{r} \$96,875 \text{ total price} \\ \div \underline{200} \text{ front or frontage feet} \\ = \$484.38 \text{ price per front foot or frontage foot} \end{array}$$

Question #6 Solution:

Step 1: Calculate square footage of three acres

$$\begin{array}{r} 43,560 \text{ square feet in an acre} \\ \underline{\times 3} \\ 130,680 \text{ sq. ft. in 3 acres} \end{array}$$

Step 2: Calculate price per square foot

$$\begin{array}{r} \$86,000 \text{ price} \\ \div \underline{130,680} \text{ total area} \\ = \$.658 \text{ price per sq. ft. (note: take to 3}^{\text{rd}} \text{ decimal place)} \end{array}$$

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

$$\begin{array}{r} 5,000 \text{ area or square footage of strip} \\ \underline{\times \$.658} \text{ price per sq. ft.} \\ = \$3,290 \text{ price of strip at original cost} \end{array}$$

Step 5: Add 10% profit

$$\begin{array}{r} \$3,290 \text{ original cost of strip} \\ \underline{\times 1.10} \text{ inflate to 110\% of cost} \\ = \$3,619.00 \text{ price w/ 10\% profit or 110\% of cost} \end{array}$$

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

Question #7 solution:

Step 1: Calculate the gross commissions earned

$$\begin{array}{r} \$12,400 \\ \$4,450 \\ \$6,785 \\ \underline{+\$1,750} \text{ Commissions} \\ =\$25,385 \text{ Total/Gross commissions earned} \end{array}$$

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

$$\begin{array}{r} \$25,385 \text{ Gross commissions earned} \\ - \$1,500 \text{ - Monthly desk cost} \\ - \$600 \text{ - Transaction fees (4 closings X \$150 each)} \\ \underline{- \$2,225 \text{ - Marketing fees}} \\ = \$21,060 \text{ Net earnings for the month} \end{array}$$

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
<u>X .125</u>	or 12.5% appreciation	<u>-\$48,000</u>	Principal reduction	<u>-\$162,000</u>	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
<u>X1.125</u>	
\$ 337,500	Appreciated value is 112.5% of the original value