Mid Module 4 Study Guide

1. In New York, state sales tax rates vary by county. In Allegany County, the sales tax rate is $8\frac{1}{2}\%$.

   a. A book costs $12.99, and a video game costs $39.99. Rounded to the nearest cent, how much more is the tax on the video game than the tax on the book?

   \[
   \begin{array}{|c|c|}
   \hline
   \text{Tax on book} & \text{Tax on video game} \\
   \hline
   \text{________} & \text{________} \\
   \hline
   \end{array}
   \]

   The tax on the video game is __________ more than the tax on the book.

   b. Using $b$ to represent the cost of an item in dollars \textit{before tax} and $t$ to represent the \textit{amount of sales tax} in dollars for that item, write an equation to show the relationship between $b$ and $t$. (Hint: Use sales tax rate of $8\frac{1}{2}\%$)

   _________ = ______________________________

   c. Using your equation, create a table that includes four possible pairs of solutions to the equation.

   \[
   \begin{array}{|c|c|}
   \hline
   \text{Cost of item (b)} & \text{Amount of sales tax (t)} \\
   \hline
   \text{______} & \text{______} \\
   \hline
   \text{______} & \text{______} \\
   \hline
   \text{______} & \text{______} \\
   \hline
   \end{array}
   \]
d. Graph the relationship from parts (b) and (c) in the coordinate plane. Include a title and appropriate scales and labels for both axes. Also label each point plotted.

e. Is the relationship proportional? Why or why not?
   Circle one: Yes or No because __________________________________________

   _________________________________________________________________

   _________________________________________________________________

   If it is proportional, what is the constant of proportionality? ______________
f. A customer returns an item to a toy store in Wyoming County. The toy store has another location in Allegany County, and the customer shops at both locations. The customer’s receipt shows $2.12 tax was charged on a $24.99 item. Was the item purchased at the Wyoming County store or the Allegany County store? Explain and justify your answer by showing your math work.

(Note: In Allegany County, the sales tax rate is 8 1/2% and in Wyoming County the sales tax rate is 7 1/2%)

The item was purchased in (circle one): Wyoming County or Allegany County

2. Amy is baking her famous pies to sell at the Town Fall Festival. She uses 32 ½ cups of flour for every 10 cups of sugar in order to make a dozen pies. Answer the following questions below.

   a. Write an equation representing the relationship between the number of cups of flour used, f, and the number of cups of sugar used, s, to make the pies. (Hint: use the format y = kx)

   b. Write the constant of proportionality as a percent. Explain what it means in the context of the situation.
   The constant of proportionality is __________ as a decimal which equals __________%.

   This means that _______________________________________________________________________

   _______________________________________________________________________

   _______________________________________________________________________

   c. To help sell more pies at the festival, Amy set the price for one pie at 40% LESS THAN what it would cost at her bakery. At the festival, she posts a sign that reads, “Amy’s Famous Pies—Only $9.00/Pie!” Using this information, what is the price of one pie at the bakery?

See reverse for #3
3. Imani wanted to raise her math grade from an 80 to a 93 in order to make High Honor Roll. She says that this represents a percent increase of approximately 16%. Do you agree with her? Why or why not?

Circle One: I agree  or  I do not agree  because ________________________________

_____________________________________________________________________________________

_____________________________________________________________________________________

_____________________________________________________________________________________

_____________________________________________________________________________________