

Name: Key

Date: \_\_\_\_\_

## End of Module 4 Study Guide

### PART ONE

You may use a calculator for this part of the study guide.

1. Kara works at a fine jewelry store and earns commission on her total sales for the week. Her weekly paycheck was in the amount of \$6,500, including her salary of \$1,000.

a. How much money does Kara earn in commission per week? \$5500

$$6500 - 1000 = 5500$$

b. If Kara's sales for the week totaled \$45,000, express her rate of commission as a percent, rounded to the nearest whole number.

$$\text{Percent} = \frac{\text{Part}}{\text{Whole}} = \frac{5500}{45000} = 0.1\bar{2} = \boxed{12\%}$$

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2. Kacey and her three friends went out for lunch, and they wanted to leave a 15% tip. The receipt shown below lists the lunch total before tax and tip. The tip is on the cost of the food plus tax. The sales tax rate in Pleasantville is 8.75%.

- a. Use **MENTAL MATH** to estimate the approximate total cost of the bill including tax and tip to the nearest dollar. Explain how you arrived at your answer. Be sure to explain your **MENTAL MATH** strategies.

I think the bill would be about \$ 50.60. I found my answer by:

rounding the total to \$40. Then, I multiplied by 0.1 (10%) which is close to 8.75%. I got \$4 in tax. I added this to \$40 to get \$44. I know 10% of \$44 is \$4.40 and 5% is \$2.20. 10% + 5% = 15%. So \$4.40 + \$2.20 = \$6.60. So the total with tip and tax would be 44 + 6.60 = \$50.60

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- b. Find the **ACTUAL** total of the bill including tax and tip. If Kacey and her three friends split the bill equally, how much will each person pay including tax and tip?

$$\begin{aligned} \text{Markup} &= (1+m)\text{whole} \\ &= (1+0.0875)(38.96) \\ &= 42.37 \end{aligned}$$

$$\begin{aligned} m/u &= (1+0.15)(42.37) \\ &= 48.73 \end{aligned}$$

can also use Part = % · w

$$\begin{aligned} \text{Part} &= 0.0875(38.96) \\ &= 3.41 \\ 38.96 + 3.41 &= 42.37 \end{aligned}$$

The actual total cost of the bill is: \$48.73

$$\begin{aligned} \text{Part} &= (0.15)(42.37) \\ &= 6.36 \end{aligned}$$

The amount each person pays (including tax and tip) is: \$12.18

$$42.37 + 6.36 = 48.73$$

(BE SURE TO SHOW HOW YOU GOT YOUR ANSWER)

(rounded)

$$48.73 \div 4 = 12.1825$$

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3. Tierra, Cameron, and Justice wrote equations to calculate the amount of money in a savings account after one year with  $\frac{1}{2}\%$  interest paid annually on a balance of  $M$  dollars. Let  $T$  represent the total amount of money saved.

Tierra's Equation:  $T = 1.05M$

Cameron's Equation:  $T = M + 0.005M$

Justice's Equation:  $T = M(1 + 0.005)$

- a. The three students decided to see if their equations would give the same answer by using a \$100 balance. Find the total amount of money in the savings account using each student's equation. Show your work.  $M = 100$

Tierra:  $T = 1.05(100) = \$105$

Cameron:  $T = 100 + (0.005)(100) = \$100.50$

Justice:  $T = 100(1 + 0.005) = \$100.50$

- b. Explain why their equations will or will not give the same answer.

Their equations (circle one) will OR will not give the same answer because

Cameron & Justice's equations are equivalent (Cameron's is just a distributed version of Justice's)

Tierra however converted  $\frac{1}{2}\%$  to a decimal incorrectly.  $\frac{1}{2}\% = \frac{1}{2}/100 = 0.005$ , not  $0.05$