

Module 4 Review

1. Your parents took your family out to dinner. Your parents wanted to give the waiter an 18% tip. The restaurant is located in a county where the sales tax is 6.5%. If the total amount of the dinner was \$42.00 (before tax and tip), what is the new total after these are taken into consideration? Solve the problem using 2 different methods. Explain why these are equivalent.

Method 1: $(42)(0.065) = \$2.73$

$$42 + 2.73 = 44.73$$

$$44.73(0.18) = \$8.05$$

$$44.73 + 8.05 = \mathbf{\$52.78}$$

Method 2: $(42)(1.065) = \$44.73$

$$44.73(1.18) = \mathbf{\$52.78}$$

These are equivalent because Method 1 found the amount of the tax and tip and added these onto the previous total to get the new total. Method 2 adds the tax and the tip directly (similar to a markup where the percentage is added to 100%). They both arrive at the same answer.

2. A scientist took an experimental measurement and got 10.4 mL. The actual measurement was 9.7 mL. What is the percent error?

$$\text{Percent error} = \frac{|a-x|}{x} * 100$$

$$(|10.4 - 9.7|/9.7) * 100 = \mathbf{7.2\%}$$

Another scientist took an experimental measurement of a different volume and got 58.5 mL. The actual measurement was 61.1 mL. What is the percent error?

$$\text{Percent error} = (|58.5 - 61.1|/61.1) * 100 = \mathbf{4.3\%}$$

Explain why the first measurement, which was “off” by less had a larger percent error.

The first measurement is dealing with smaller quantities, so there is less room for error than in the second measurement which has larger quantities.

Name: _____ **ANSWER KEY** _____ Date: _____

3. Kelly deposits \$350 into a savings account. The savings account accrues interest at a flat rate of 1.05% per month. How much will the account be worth in 7 months?

$$I = Prt$$

$$I = (350)(0.0105)(7) = \$25.73$$

$$\text{Balance} = \text{Principal} + \text{Interest}$$

$$\text{Balance} = 350 + 25.73 = \mathbf{\$375.73}$$

Miranda deposits \$275 into a savings account that accrues interest at a flat rate of 1.30% per month. Whose account is worth more after 7 months, Miranda's or Kelly's?

$$I = (275)(0.013)(7) = \$25.03$$

$$\text{Balance} = 275 + 25.03 = \mathbf{\$300.03}$$

Kelly's is worth more

4. Evan sells skateboards in his store. He marks up the prices by 40% of what he pays for them. If he purchases a gold series skateboard for \$128.92, how much will he charge for the skateboard in his store?

$$\text{Selling price} = (1 + m)(\text{whole})$$

$$\text{Selling price} = (1 + 0.4)(128.92) = \mathbf{\$180.49}$$

He then has a spring sale and marks down the price for the same skateboard by 40%. Does he sell the skateboard for more or less than what he paid for it? Why isn't the price the same as what he bought it for?

$$\text{Selling price} = (1 - 0.4)(180.49) = \mathbf{\$108.29}$$

He sells the skateboard for less than what he paid for it. The price is not the same as what he bought it for because there is a different starting (whole) price.

4 possible reasons why a store may markup prices:

- **Labor**
- **Advertising**
- **Supply/Demand**
- **Utilities (electricity, A/C, heating, water etc.)**
- **Transportation**
- **Rent/Mortgage**