0.4   Prelude: Order of Operations

Practice exercises

On each problem, write down what you enter into your calculator and don't forget to write the units on your final answer. Challenge yourself to use one-line calculations. You are welcome to calculate the answer step-by-step to check.

1. *Story also appears in 1.2 #4, 2.1 #4, and 4.2 #2*

   (a) A mug of coffee costs \$3.45 at Juan's favorite cafe. If Juan orders 25 coffees each month, how much will he pay (total) for the month?

   $$3.45 \times 25 = \boxed{\$86.25}$$

   (b) The cafe offers a deal each month, where if you buy their \$10 discount card, then you only pay \$2.90 per mug of coffee during the month. If Juan buys the discount card and orders 25 coffees, how much will he pay (total) for the month?

   $$10 + 2.90 \times 25 = \boxed{\$82.50}$$

   (c) Comparing answers to parts (a) and (b) is it worthwhile for Juan to buy the card? Discuss.

   ### Sure. Juan will save almost \$4.

2. "Rose gold" is a mix of gold and copper.

   Story also appears in 2.3 #2 and 4.1 Exercises

   (a) If we mix 2 grams of gold with 2 grams of copper, what is the percentage of gold in the resulting alloy?

   $$\underset{\text{gold}}{2} \div \underset{\text{total}}{(2+2)} \times 100 = \boxed{50\%} \quad \ddot\smile$$

   (b) If instead we mix 2 grams of gold with 7 grams of copper, what is the percentage of gold in the resulting alloy?

   $$\underset{\text{gold}}{2} \div \underset{\text{total}}{(2+7)} \times 100 = 22.2222... \approx \boxed{22\%}$$

3. *Stories also appear in 4.3 #3*

    (a) Vanessa's doctor put her on a sensible diet and exercise plan to get her back to a healthy weight. She currently weighs 213 pounds. She will need to lose an average of 1.25 pounds a week to reach her goal weight in a year. What is her goal weight? Use 1 year = 52 weeks.

$$213 - 1.25 \times 52 = \boxed{148 \text{ pounds}}$$

    (b) Since she has been pregnant, Zoe has gained the recommended 1/2 pound per week. She weighed 153 at the start of her pregnancy. What does she weigh now at 30 weeks pregnant?

$$153 + 1 \div 2 \times 30 = \boxed{168 \text{ pounds}}$$

4. *Stories also appear in 4.3 #3*

    (a) Jerome has gained weight since he took his power training to the next level ten weeks ago, at the rate of around 1 pound a week. He is now 198 pounds. What was his original weight?

$$? + 10 \times 1 = 198$$
$$198 - 10 \times 1 = \boxed{188 \text{ pounds}}$$

note: going back in time so would have weighed <u>less</u>

    (b) After the past 6 weeks of terrible migrane headaches, Carlos is down to 158 pounds. He has lost 4 pounds a week. What did Carlos weigh when 6 weeks ago?

$$? - 6 \times 4 = 158$$
$$158 + 6 \times 4 = \boxed{182 \text{ pounds}}$$

note: going back in time so would have weighed <u>more</u>