Name: _____ Date: _Jan 28_ Hour: _2nd_

Unit 5 Day 5: Multiplying and Dividing in Scientific Notation

Focus Question: How do I multiply and divide numbers in scientific notation?

A. Review
decimal right 3
1. The number 7.2×10^3 is written in ___scientific___ ___notation___. In standard form it is ___1200___.

2. Perform each of the following

   a. $2x^4 \cdot 3x^6$
   $2 \cdot 3 x^{4+6} = \boxed{6x^{10}}$

   b. $\dfrac{10y^6}{2y^4}$ $\dfrac{10}{2} y^{6-4} = \boxed{5y^2}$

For each word problem below, indicate how you know to multiply. Then find the answer in both scientific notation and standard form.

1. In 2016, it cost $0.08 to make a nickel. The US made 1.54656×10^9 nickels in 2016. How much money did the US loose by making nickels?

___multiply___ b/c I know what 1 is worth & I know how many there are.

$0.03 \cdot 1.54656 \times 10^9 = \$46,396,800..$ ← standard

OR

4.63968×10^7 ← sci. not.

2. The average American eats 11.7 pounds of chocolate in a year. How much chocolate is consumed in America each year? (Use an approximate number for the US population.)
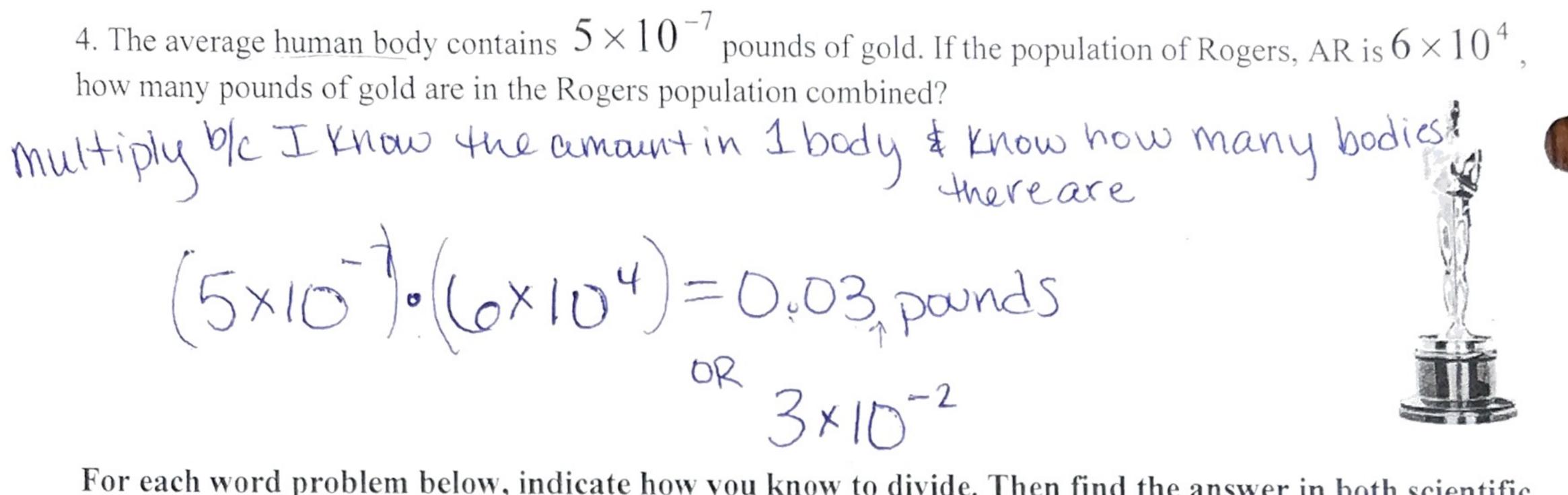
United States population

$328,949,721 \approx 330,000,000$

multiply b/c I know 1 person eats 11.7 pounds & I know how many people there are.

$11.7 \cdot 330,000,000 = 3,861,000,000$ pounds

OR

$3.861E9$

3. The average woman speaks $2.5 \cdot 10^4$ words a day. There are approximately $3 \cdot 10^9$ women on the planet earth. How many words are spoken by all the women on the planet in one day?

4. The average human body contains 5×10^{-7} pounds of gold. If the population of Rogers, AR is 6×10^4, how many pounds of gold are in the Rogers population combined?

multiply b/c I know the amount in 1 body & know how many bodies there are

$$(5 \times 10^{-7}) \cdot (6 \times 10^4) = 0.03 \text{ pounds}$$

OR

$$3 \times 10^{-2}$$

For each word problem below, indicate how you know to divide. Then find the answer in both scientific notation and standard form.

5. There are 1.5×10^{10} pieces of pizza eaten every year in America. How many slices does a single American eat? (Use an approximate number for the US population.) Divide b/c pizza

1 person

United States population

$$328,949,721 \approx 330,000,000$$

$$\frac{(1.5 \times 10^{10})}{330,000,000} \approx 45 \leftarrow \text{standard}$$

OR

$$4.5 \times 10^1 \leftarrow \text{sci. not.}$$

6. Over the course of a career, a high school drop-out makes $\$8.5 \times 10^5$ and a college graduate makes $\$2.55 \times 10^6$. How many times more money does a college graduate earn than a high school drop-out?

$$\frac{\text{dropout} \cdot ??}{\text{dropout}} = \frac{\text{college}}{\text{dropout}} \quad \frac{(2.55 \times 10^6)}{(8.5 \times 10^5)} = 3 \quad \leftarrow \text{stnd}$$

OR

$$3 \times 10^0$$

7. A space shuttle must travel 1.75×10^4 miles per hour to stay in orbit. Mars is 1.4×10^8 miles from earth. How long would it take to get to Mars? 8,000 hrs. $\approx$ 333 days