Lesson 12 Practice Problems

1. Which is larger: the number of meters across the Milky Way, or the number of cells in all humans? Explain or show your reasoning.

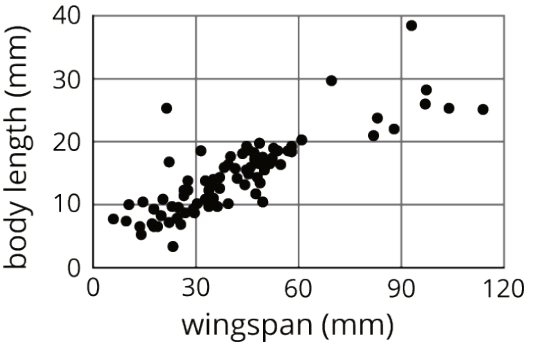
   Some useful information:

   - The Milky Way is about 100,000 light years across.
   - There are about 37 trillion cells in a human body.
   - One light year is about 10^{16} meters.
   - The world population is about 7 billion.

2. Ecologists measure the body length and wingspan of 127 butterfly specimens caught in a single field.

   a. Draw a line that you think is a good fit for the data.

   b. Write an equation for the line.



   c. What does the slope of the line tell you about the wingspans and lengths of these butterflies?

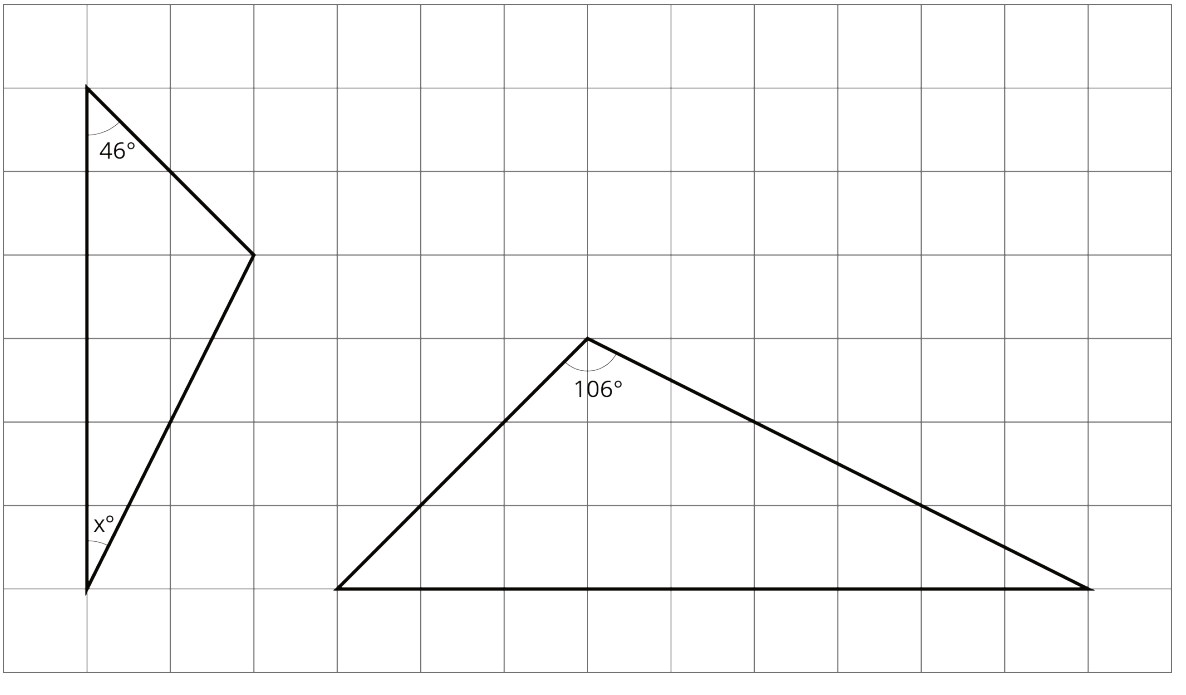
(From Unit 6, Lesson 5.)

3. Diego was solving an equation, but when he checked his answer, he saw his solution was incorrect. He knows he made a mistake, but he can't find it. Where is Diego's mistake and what is the solution to the equation?

$$\begin{aligned} -4(7-2x) &= 3(x+4) \\ -28-8x &= 3x+12 \\ -28 &= 11x+12 \\ -40 &= 11x \\ -\frac{40}{11} &= x \end{aligned}$$

(From Unit 4, Lesson 5.)

4. The two triangles are similar. Find x.



(From Unit 2, Lesson 7.)