Discussion Prompts (Optional After Calculation):

1. **Conceptual**
    - Were you surprised by how large the wing area needs to be?

    - How do these numbers help us understand the **limitations of animal flight** in real life?

2. **Application:**
    - What would Toothless' wings *look like* based on your calculation? As big as a glider? Bigger? Insert the picture of your sketch or drawing.

    - How would Hiccup need to *engineer* the wings to make this size work? What materials or shapes might help?

3. **Reflective:**
    - Why can't animals the size of an elephant just grow wings and fly?

    - What does this math tell us about the relationship between **biology** and **physics**?

Optional Student Activity Extension: Draw or Design Toothless

After estimating Toothless' wing area, students can:

- **Sketch or digitally design** Toothless with **realistically scaled wings**
- Label their drawing with:
    - Toothless' mass
    - Calculated wing area (in m^2 and ft^2)
    - Engineering additions (wing shape, tail rudder, etc.)
- Use tools like rulers, graph paper, or Canva/Google Slides for scaling.

Insert your sketch here:

Optional Scaffolded Worksheet Questions:

1. What is the mass of your reference animal?

2. What is the wing area of the reference animal?

3. What is Toothless' mass?

4. Use the formula to calculate the scaled-up wing area.

5. Describe how Toothless' wings compare to your reference animal.

6. What might be the **design and flight challenges** of having such large wings?