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Bone Crusher Design Worksheet

Research Questions

1. What are some possible complications that might arise from surgical repair?
2. What challenges do biomedical engineers face when designing devices to surgically repair fractures? (Remember that the device must operate in the aqueous environment of a living body.)
3. What situations require surgical repair instead of casts?
4. What kinds of materials would NOT be useable within a living organism? Explain.
5. What issues can occur if a metal implant is used?
(Or what are some ways way that metal implants can cause more damage than healing?)

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6. What kinds of challenges does the human immune system present when healing fractures?

**7. Which bones required the most force to break? The least?
Explain why you might see a pattern here.**

**8. Look back at your predictions and test data.
Were your predictions of bone strength accurate? Explain.**

9. Research all the types of methods of bone repair available. Specifically, for the bone and fracture type of your bone, what types of treatment methods have been used in the past and are being used today? Does your bone fracture require surgical repair or are non-surgical treatments enough? Why are certain methods recommended for certain bones and fracture types?

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Observations & Design Plans

<p>Draw the bone before fracturing. Bone type: _____</p>	<p>Draw the bone after fracturing. Type of fracture: _____</p>
<p>What possible methods of repair could be used in this situation?</p>	
<p>Draw the repair method your group recommends to fix the fracture your bone incurred.</p>	<p>List reasons why your recommended repair method is best for your bone's break.</p> <p>List any disadvantages of this repair method that might occur or be important to be aware of.</p>