Open Ended Problem #4

The Legend of Zelda

Group work okay, Due 10/4/23 at beginning of class

(Don't be afraid to "Google" for reasonable assumptions; just provide references!)

Hyrule has no gyms; Hyrule needs no gyms!

Besides this being one of the most epic games ever, the concept of getting stronger just from wearing a special pair of gloves is pretty awesome. Think of what we could accomplish if they were real? Now, the Hylians only said you could lift previously immovable stones, but you all have one major advantage over the Hylians… you are material science EXPERTS! Given that, please calculate just how powerful the Titan's Mitts are.

1) What is this problem actually asking for? What is the final value you are being asked to find?

2) Draw a sketch that indicates the actual problem (include micro scale drawings also).

3) a) What physical laws apply to this problem?
b) Indicate equations, correlations, and/or formulae that can model these laws.
c) What are the potential limitations of these equations?

4) What assumptions should be made to utilize the equations/correlations/formulae listed in part 3b?

a) List ALL the assumptions that you need to in order to solve the problem.

b) Justify your assumptions (**references**, reasoning, judgment, common sense, etc.)

5) What are the physical properties (list assumed or referenced values) used in this problem?

6) How powerful are the Titan's Mitts?

7) Verify your answer... Does it look reasonable? Anything odd about the calculation?

a) What kind of range exists for this answer change if you assume different metals?
b) What kind of range exists for this answer if you assume different ceramics?
c) Do defect densities impact this calculation? What percentage range of error (+/- x%) is reasonable based on defect concentrations that might actually exist?
d) In real life, what kind of objects could you lift with these gloves?