

In – Class Quiz (if you'd like): Grade

Name: _____

So, now you've seen the badass videos of various folks trying to ride up (and down^a) Lions Back in Moab, Utah. What I'd like to do now is to try to figure out just how steep that ridgeline *is*. If you look at the video of Vittorio Brumotti that we watched in class closely, there appear to be two different descriptions of the steepness of the ridge: 65 **degrees** and 65%.



1. (1 point) Only one of those is a “grade”, by the mathematical definition of “grade” ($\frac{\text{rise}}{\text{run}}$). Circle the image above that shows the “grade” measurement. *Remember to start up a blank document to submit this!*
2. (1 point) Use a tangent table (you can find them online) to figure out what grade the other one would **actually** be! #yikes^b

Now, it's been years since I've seen Lion's Back in person, but I was able to find some fun videos online of various cars heading down it. From one of these videos, I was able to get a good, 2 – dimensional side view of the bottom (right before the formation re-enters the ground):



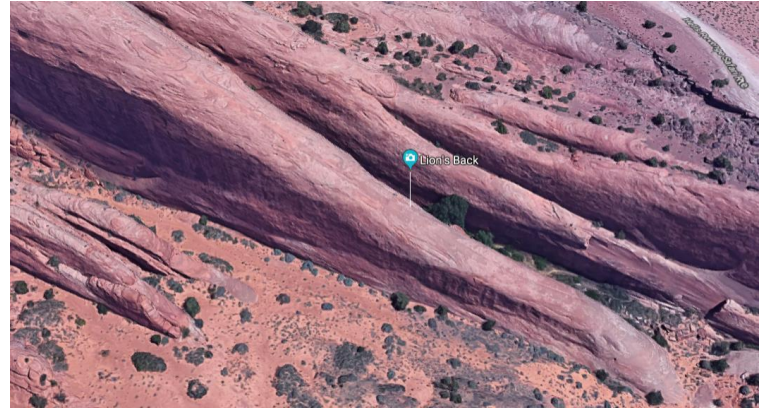
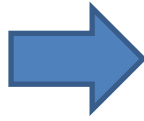
3. (2 points) (w) Using your ruler's **inch** side, calculate the approximate grade of this section. Remember that “(w)” means to show me what you did!
4. (3 points) (w) Repeat 3 using your ruler's **centimeter** side. Which was easier, the math you did in 3 or 4?
5. (1 point) Do either (or both) of the values you got in 3 or 4 come close to the correct grade from 1? Circle one: **YES NO**

Now, granted – this is just one small **part** of LB: the very bottom. What if there's a steeper part, somewhere else along the way? So, I decided to do a little digging and try to get a better image to play with.

^a Let me say right here, in order to CMA, that I don't want ANYONE trying this. Not only is LB closed (and has been since 2006), it should have never (IMHO, of course) been open to this kind of thing in the first place.

^b FYI – that measure is about the steepest slope anyone on earth can ski, apparently: <https://www.tetongravity.com/forums/archive/index.php/t-12999.html>

What I discovered was that the best way to get a better image was to use Google Earth and zoom in:



And that's when I realized: the steepest part of the entire thing is at the **very bottom**...the part we already measured. This also explains one of the more hilarious comments on Instagram:



Simon Clarke · Sheffield Hallam University

Nice edit, why didn't he ride the steep bit, the first 100 feet...

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So yeah – I have NO idea where the 65% measurement comes from (maybe it's the part that juts out of the ground at the very start; that seems kinda crazy-steep-ish).

6. (2 points) Suppose you made up your **own** ruler, instead of using a standard inch/centimeter one. Explain, in a sentence or two, why that doesn't matter! Also be sure to use the words "ratio" and "units" in your answer. 😊