

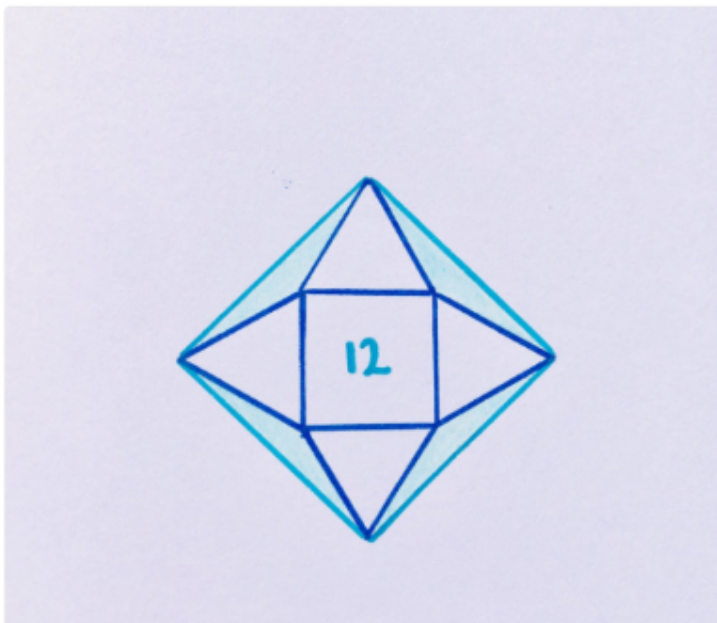
Show all your work, cite your sources, and type your answers for full credit.

Materials needed: tape measure, scissors, ruler or phone measurement app, lev-o-gage or suncalc phone app, thermometer or Google

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1. (5 points) **Review of Rates and Unit Conversion:** You are out and about frolicking in nature, when you suddenly see dark clouds. You see lightning strike some distance off, and exactly 7.3 seconds later you hear thunder. How far away was the lightning strike? Provide your answer in miles. If you don't have the speed of sound memorized (who doesn't?) you can feel free to Google it.
2. (5 points) **Review of Trigonometry and Problem Solving:** How tall is the steeple on top of McClain from the ground? If you are doing this lab at home, pick a tall object near your house, get the suncalc app on your phone, and measure the shadow of that object at two different times, marking the angle of the sun each time.
3. (5 points) **Review of Linear Functions.:** Use two points on a thermometer to find an equation that converts temperature from F to C. If you do not have an alcohol or mercury thermometer handy, use Google to convert two temperatures from Fahrenheit to Celsius.
4. (5 points) **Review of Geometry and Trigonometry:**

Four equilateral triangles are arranged around a square which has area 12. What's the total shaded area?



5. (5 points) **Review of geometry and prelude to optimization:** Grab a piece of computer paper. With this paper, cut squares out of each of the corners and make a box by folding up the edges. How much should you cut out to give you the maximum volume? You will need a ruler, scissors, and tape.

This question will be graded on how close you come to the optimum volume, your communication of your solution, and your perceived effort.