

HW00A_These are Practice HW Questions on "global". Some of them may be asked in the first HW Exam. The questions are also embedded in the published notes.

HW - 00A.1

Note how the grains in the polycrystal meet (often) at three grain junctions, the shape of the grains being like hexagons. Can you think about this? Why this is so?

HW 00A.2

In 50 words or less explain why the fracture strength of optical glass fibers increases for smaller fiber diameters.

HW 00A.3

How would you expect the strength of the fibers, testing in uniaxial tension, to change with the length of the fibers

HW 00A.4

One gallon of gasoline has 33.7 kWh (kilo Watt hours). Convert this number into kJ.

Now calculate with reasonable approximations the work done to drive a 6000 lb car up hill at a grade of 2%, adding to it wind resistance (approximately) and the efficiency of the gasoline engine (please get this information from open sources. How far would one gallon of gasoline be able to propel this car.