PHYS 321 Face-centered cubic crystal structure Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



0. Metals: Al, Cu, Au, Pb, Ni, Ag, Pt

1. How many atoms are inside the cubic unit cell of [FCC](https://www.youtube.com/watch?v=KNgRBqj9FS8)?

2. Show the cube edge length, *a* and the atomic radius, *R* in
the figure.

3. Show that the cube edge length, *a* and the atomic radius, R are
related by: $ a=2R\sqrt{2}$

4. Calculate the density of lead, Pb, which has a FCC crystal structure. Its atomic radius = 0.175 nm [Table 3.1] and atomic weight = 207.2 g/mol. (Avagadro’s number = 6.022 x 1023) [<http://www.ptable.com/>]