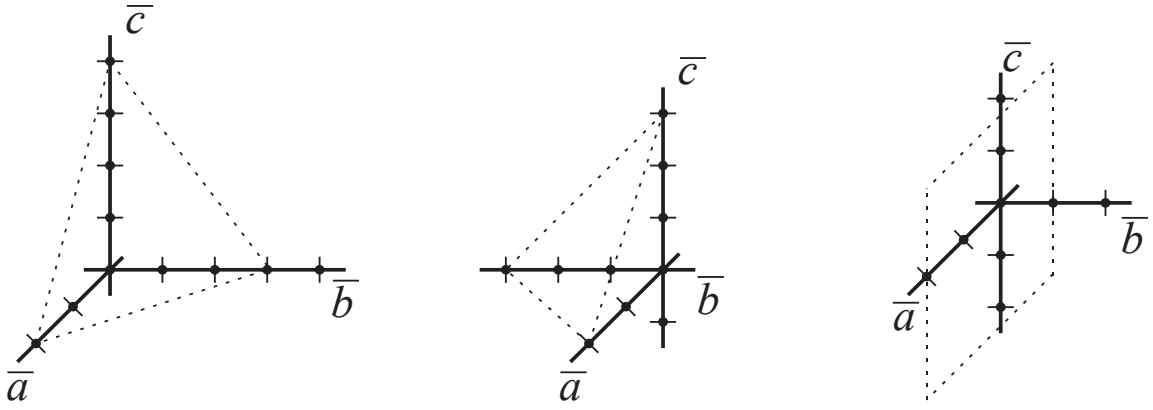
Homework 1
EE 362 Electronic, Magnetic, & Optical Properties of Materials (Spring 2024)
Friday, January 12, 2024

1) 1.2 Also, determine the number of atoms per unit cell in each case.
2) 1.5
3) 1.9 Hint: You will need to know Avogadro's number (see Appendix B.3 or 6.022×10^{23} atoms per gram molecular weight).
4) 1.11
5) For the four orthorhombic Bravais lattices: a) simple, b) body-centered, c) face-centered, and d) side-/end-centered. Compute how many atoms are contained within each of the unit cells and the volume density when $a = 4.6$ Å, $b = 5.6$ Å, and $c = 6.8$ Å. Treat each atom as a sphere and count only that portion of the sphere that actually resides <u>within</u> the cube.
6) 1.19
7) 1.21abc
8) Determine the Miller indices for the <u>three</u> following crystal lattice planes:



a) b) c)

Due Friday, January 19, 2023.

Hint: Consult Appendix B and/or Appendix C for material properties.