Miller Indices - Questions

1) What is the relevance of Miller Indices to what we are learning in ENEE416?

2) Compute the Miller Indices for a plane intersecting at x= ¼ , y=1, and x=1/2,

3) Graph the plane and determine the axis intersects of a surface with the Miller Index (013).

4) Explain the meaning of {100} and it's importance.

<u>Answers</u>

1) Miller indices allow one to describe the arrangement of atoms within a unit cell. Knowing the unit cell, the distances can be calculated between atoms can be calculated and the force holding the lattice can also be calculated. This is important since the force holding the lattice determines which electrons can participate in the conduction process and ultimately other electrical and optical properties. This is very useful when working with semiconductor devices.

2) (4,1,2)
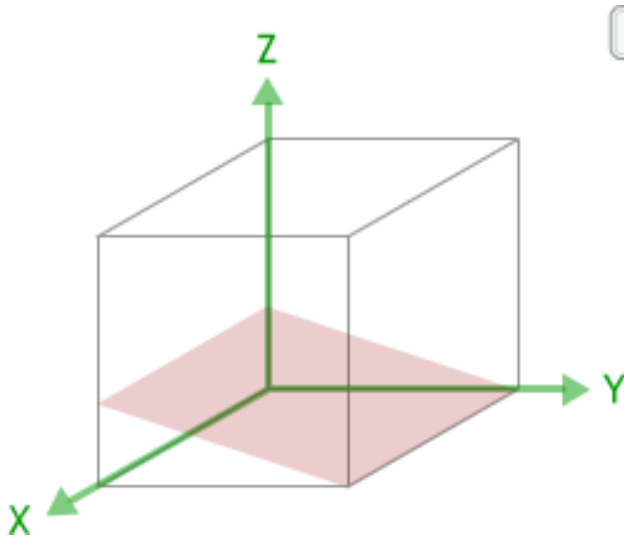
3)

Intersects at y = 1, z = 1/3, plane does not intersect the x-axis

4) {100} is a short way of referring to 6 different planes. These indices all refer to the same lattice as viewed from different points of reference defined by the axis.
1. (100)
2. (010)
3. (001)
4. (-100)
5. (0-10)
6. (00-1)