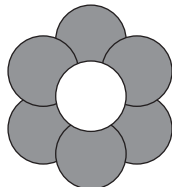


Student Worksheet

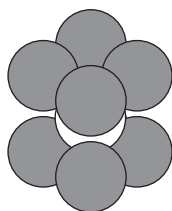
For both the *hcp* structure and the *ccp* structure, each atom has 12 adjacent atoms.

1. Examine the simple cubic structure.



How many atoms are adjacent to each atom? (Count first the number of atoms touching a specific atom in one layer, then look at the number of atoms in the layers above and below that are adjacent to the same atom.)

2. Examine the body-centered cubic structure.



How many atoms are adjacent to each atom? (Count first the number of atoms touching a specific atom in one layer, then look at the number of atoms in the layers above and below that are adjacent to the same atom.)

3. Compare the number of atoms that touch each atom in the simple cubic versus the body-centered cubic structures. Knowing that the *hcp* and the *ccp* structures have the highest efficiency of packing (74% of the space), estimate whether the simple cubic or body-centered cubic structure has the greater efficiency of packing.