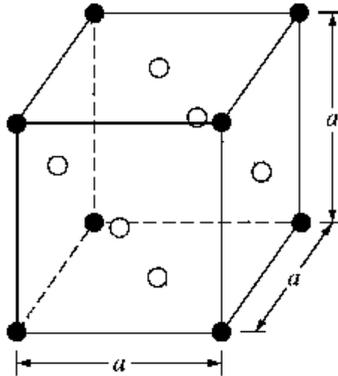A face-centered cubic lattice has a lattice constant of 8 Å. Find the Miller indices for a plane with intercepts on the three Cartesian axes at: a) $x = 8$ Å, $y = 8$ Å, & $z = 8$ Å, b) $x \rightarrow \infty$, $y = 8$ Å, & $z = 8$ Å, and c) $x = 8$ Å, $y = 8$ Å, & $z = 24$ Å.

a)

Form triplet from x-, y-, & z-intercepts $\Rightarrow$ (8 Å, 8 Å, 8 Å)

Invert each entry in triplet $\Rightarrow$ (1/8 Å, 1/8 Å, 1/8 Å)

Multiply triplet by (lcd)a $\Rightarrow$ 1(8 Å) (1/8 Å, 1/8 Å, 1/8 Å) = (1, 1, 1)

Drop commas to get Miller indices for a) $\Rightarrow$ **(1 1 1)**

b)

Form triplet from x-, y-, & z-intercepts $\Rightarrow$ (∞, 8 Å, 8 Å)

Invert each entry in triplet $\Rightarrow$ (0, 1/8 Å, 1/8 Å)

Multiply triplet by (lcd)a $\Rightarrow$ 1(8 Å) (0, 1/8 Å, 1/8 Å) = (0, 1, 1)

Drop commas to get Miller indices for a) $\Rightarrow$ **(0 1 1)**

c)

Form triplet from x-, y-, & z-intercepts $\Rightarrow$ (8 Å, 8 Å, 24 Å)

Invert each entry in triplet $\Rightarrow$ (1/8 Å, 1/8 Å, 1/24 Å)

Multiply triplet by (lcd)a $\Rightarrow$ 3(8 Å) (1/8 Å, 1/8 Å, 1/8 Å) = (3, 3, 1)

Drop commas to get Miller indices for a) $\Rightarrow$ **(3 3 1)**