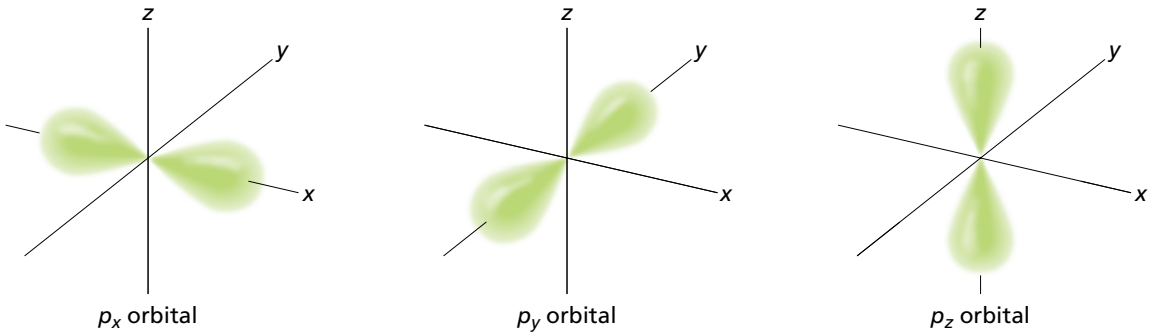

FIGURE 14 The subscripts *x*, *y*, and *z* indicate the three different orientations of *p* orbitals. The intersection of the *x*, *y*, and *z* axes indicates the location of the center of the nucleus.

ber of $m = 0$. There is therefore only one *s* orbital in each *s* sublevel. As shown in **Figure 14,** the lobes of a *p* orbital can extend along the *x, y,* or *z* axis of a three-dimensional coordinate system. There are therefore three *p* orbitals in each *p* sublevel, which are designated as p_x, p_y, and p_z orbitals. The three *p* orbitals occupy different regions of space and are related to values of $m = -1$, $m = 0$, and $m = +1$.

There are five different *d* orbitals in each *d* sublevel (see **Figure 15**). The five different orientations, including one with a different shape, correspond to values of $m = -2$, $m = -1$, $m = 0$, $m = +1$, and $m = +2$. There are seven different *f* orbitals in each *f* sublevel.

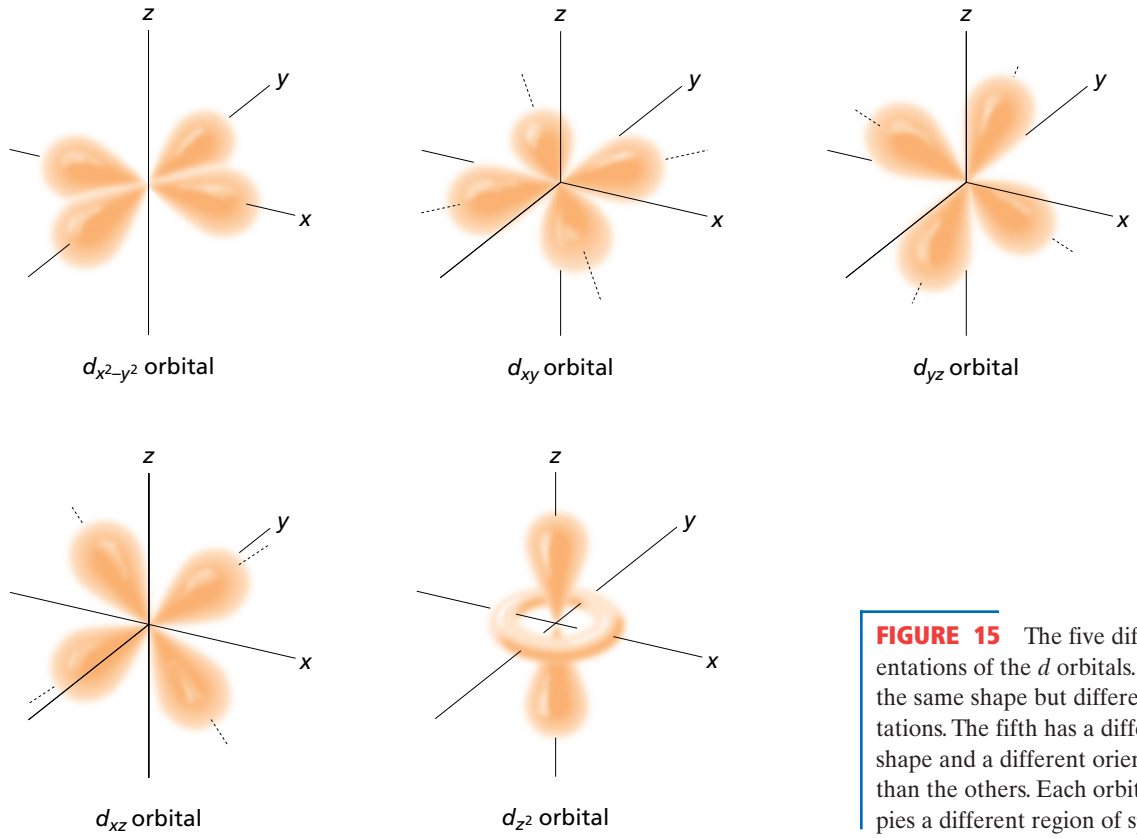

FIGURE 15 The five different orientations of the *d* orbitals. Four have the same shape but different orientations. The fifth has a different shape and a different orientation than the others. Each orbital occupies a different region of space.