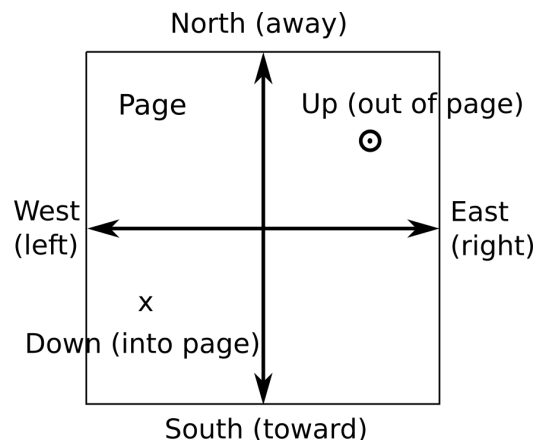
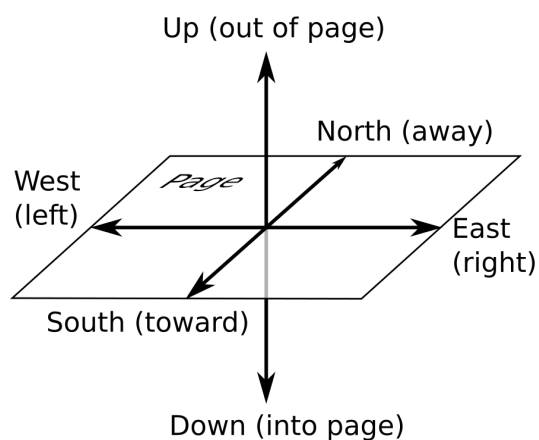


Week 9 covers sections 1, 8, and 9 of chapter 19 in the textbook.

Topics include:

- magnetic field and everyday phenomena
- magnetic field from a line current
- magnetic field from a coil or dipole
- solenoids
- the right hand rule

1. The hardest part of describing magnetic fields is describing their direction in relation to the direction of other quantities. So the guide below will hopefully help us all use the same terminology so that we can use a consistent system to describe things. There are two common ways of describing the direction of things: the *cardinal directions* (North, South, East, West, Up, Down) and relative directions (Away, Toward, Right, Left, Up Down). Both of these are displayed in the figures below so take some time to see how these two perspectives, and two descriptions work.









8. Now draw a loop of current, but draw it so that the magnetic field point northward. On the east side of this loop, in what direction is the current going? What about the west side? Now draw in magnetic field lines, two loops for each side of this current and draw an axis through the center of the loop. Draw in three different locations how a compass would orient itself in this magnetic field. This pattern is known as a dipole and we will need this again next week to hold onto this drawing.
9. Two separate current loops are positioned so that they form concentric circles. The radius of the smaller loop is 1 cm and the radius of the larger is 1.5 cm. The larger loop has a current of 10 A. If the magnetic field at the center of the loops is 0 T, then what is the magnitude and direction of the current in the inner loop.

