THE pH BOX

All four of the measurements are different ways to express exactly the same condition. The Kw of water, the dissociation constant, is a natural number amazingly close to 1 E-14. That is, when you multiply the hydrogen ion concentration $[H^+]$ by the hydroxide ion concentration $[(OH)^-]$ in pure water at near room temperature, the number is 1 E-14. If you know the $[(OH)^-]$, you know the $[H^+]$ and visa-versa. These two measurements are not the same scale, but they are two different measurements of the same thing. The pH is just the negative log of the $[H^+]$ and the pOH is just the negative log of the $[(OH)^-]$. The final leg of the box is the relationship between the pH and pOH, and that is the easiest one. pH + pOH = 14 because this is the exponential form of the Kw equation.