

The range of some transformation $\tau : V \longrightarrow W$, where V, W are vector spaces is defined to be the set $\{w \in W | \tau(v) = w \text{ for some } v \in V\}$. So, you can think of the range of some transformation as everything that the transformation *covers* within its co-domain. Note also that range, image and co-domain are often used to mean the same thing, so watch for context. One will mean all of W while the other will mean the subspace of W defined above. A trivial example is that if you have the transformation $\psi : \mathbb{R}^2 \longrightarrow \mathbb{R}^2$ defined by $\psi(x, y) = (x, 0)$ for any vector $(x, y) \in \mathbb{R}^2$, then the range of ψ would be the x-axis, since every element in the domain is mapped to *some* element on the x-axis. In this sense, the x-axis is what's *covered* by the transformation. Hope this helps.