Let W be a subspace of $\mathbb{R}^n$. The goal of this activity is to show that the orthogonal complement $W^\perp$ is a subspace of $\mathbb{R}^n$.

A few things to get you started ...

1. State the definition of $W^\perp$.

2. State the definition of a subspace of $\mathbb{R}^n$.

3. To show that $W^\perp$ is a subspace of $\mathbb{R}^n$, what, specifically, will you have to show?

Let W be a subspace of $\mathbb{R}^n$. The goal of this activity is to show that the intersection of W and its orthogonal complement $W^\perp$ is $\{0\}$.

A few things to get you started ...

1. State the definition of $W^\perp$.

2. If v is in both W and $W^\perp$, what can you say about v?

Let W be a subspace of $\mathbb{R}^n$. The goal of this activity is to show that if W is the span of a set $\{w_1, \ldots w_k\}$ of vectors in $\mathbb{R}^n$, then v is in $W^\perp$ if and only if $v \cdot w_i = 0$ for all $i = 1, \ldots, k$.

A few things to get you started ...

1. State the definition of $W^\perp$.

2. State the definition of the span of a set of vectors.

3. Break down the "if and only if" statement into two statements. Which one will be easier to show?