1. If s is distance and t is time, what must be the dimensions of a and b in the equation $s=a\sin(b\,t)$?

Solution.

Sinus has no dimensions. So, the dimension of s and a must be identical: $[a]=[s]=m$.

The argument of sinus function is dimensionless, so the dimension of b must be as the simension of $1/t$: $[b]=[t^{-1}]=s^{-1}$.

Answer: $[a]=m$, $[b]=s^{-1}$.