If $X_1, X_2, \ldots, X_n$ are independent Normal random variables, we already observed that the sum $X_1 + X_2 + \ldots + X_n$ is a Normal random variable too. So $\dfrac{X_1 + X_2 + \ldots + X_n - (\mu_1 + \mu_2 + \ldots + \mu_n)}{\sqrt{\sigma_1^2 + \sigma_2^2 + \ldots + \sigma_n^2}}$ is a standard Normal random variable, i.e. has 0 mean and variance of 1.

If $X_1, X_2, \ldots, X_n$ are independent Normal random variables that have the same mean μ and the same variance σ^2 then $\dfrac{X_1 + \ldots + X_n - n\mu}{\sqrt{n\sigma^2}}$ is a standard Normal random variable.