A train in Boston is traveling to Los Angeles. Let $X_t \sim N(\mu_x, \sigma_x^2)$ be the (random) number of miles the train travels on day $t$ of the trip where $\mu_x = 500$ and $\sigma_x = 50$. Analogously, a train in Los Angeles is traveling to Boston. Let $Y_t \sim N(\mu_y, \sigma_y^2)$ be the (random) number of miles the train travels on day $t$ of the trip where $\mu_y = 400$ and $\sigma_y = 40$. What is the expected number of days until the two trains crash into each other?