The parameters are b_1 and b_2, the data are $\boldsymbol{y} = (y_1, \ldots, y_{10})$ (and also $\boldsymbol{x}$, but the x values are treated as known in advance and not observed samples of a random variable, and hence are conditioned on throughout).

The posterior distribution of the parameters given the data is

$$\pi(b_1, b_2|\boldsymbol{y}, \boldsymbol{x}) \propto \pi(\boldsymbol{y}|\boldsymbol{x}, b_1, b_2)\pi(b_1, b_2),$$

i.e. likelihood of data $\times$ prior.

For the likelihood, note that each y_i (given $\boldsymbol{x}, b_1, b_2$) is of the form $y_i = \text{constant}_i + \epsilon_i$,

where ϵ_i is normal, so each y_i is also normal (with a particular mean and variance).

Finally, note that the y_i (given $\boldsymbol{x}, b_1, b_2$) are considered independent of each other.