

Exercise 12

Recent studies indicate that the average surface temperature of the earth has been rising steadily. Some scientists have modeled the temperature by the linear function $T = 0.02t + 8.50$, where T is temperature in $^{\circ}\text{C}$ and t represents years since 1900.

- (a) What do the slope and T -intercept represent?
- (b) Use the equation to predict the average global surface temperature in 2100.

Solution

The T -intercept, $T(0) = 8.50$, represents the average surface temperature in 1900, and the 0.02 slope represents the yearly increase of this temperature. The year 2100 occurs 200 years after 1900, so the average surface temperature in 2100 is

$$T(200) = 0.02(200) + 8.50 = 12.5^{\circ}\text{C}.$$