$$\frac{2 \cdot (10^7)^2 \; instructions}{10^{10} \; instructions/second} = 20000 \text{ seconds (more than 5.5 hours)}$$

$$\frac{50 \cdot 10^7 \; \log_2 10^7 \; instructions}{10^7 \; instructions/second} \approx 1163 \text{ seconds (less than 20 minutes)}$$