Formative Assessment

A. Match each statement in column A with the correct word or phrase in column B.

A	**B**
1. A statement of no difference that you want to test	a. type I error
2. The error when you do not reject the null hypothesis when in fact it is false	b. type II error
3. A statement believed to be true whenever H$_0$ is rejected	c. null hypothesis
4. A measure in decision making computed from the sample data	d. alternative hypothesis
	e. test statistic
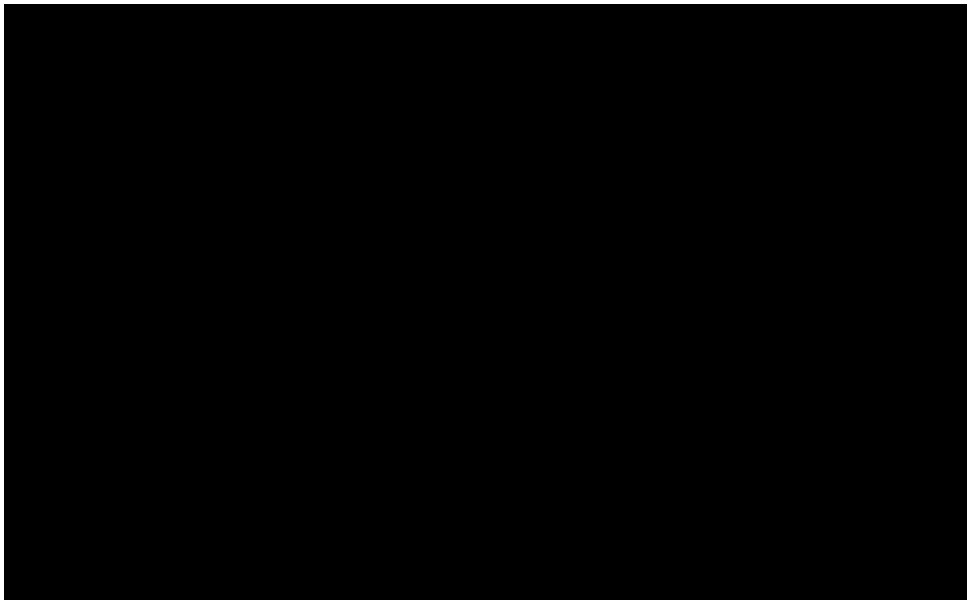
B. Test each given null hypothesis H$_0$ against the given alternative hypothesis H$_a$ using the given sample measures.

1. H$_0$: $\mu = 50$ versus H$_a$: $\mu \neq 50$
   $\alpha = 0.05$, $n = 22$, $\bar{x} = 46$, $\sigma = 7$

2. H$_0$: $\mu = 100$ versus H$_a$: $\mu < 100$
   $\alpha = 0.02$, $n = 64$, $\bar{x} = 90$, $s = 12$

3. H$_0$: $\mu = 10$ versus H$_a$: $\mu > 10$
   $\alpha = 0.01$, $n = 12$, $\bar{x} = 10.5$, $s = 2$

C. Perform hypothesis testing on each problem.
1. A factory manufacturing light-emitting diode (LED) bulbs claims that their light bulbs last for 50 000 hours on the average. To confirm if this claim is valid, a quality control manager got a sample of 50 LED bulbs and obtained a mean lifespan of 40 000 hours. The standard deviation of the manufacturing process is 1000 hours. Do you think that the claim of the manufacturer is valid at the 5% level of significance?