\[ n = \left( \frac{2.92}{E} \right)^2 \]

\[ 6 = 16100 \]
\[ E = 2000 \]
\[ 2.92 = 2.33 \]

\[ n = 352 \]

352 chevy cars are needed in a sample to estimate the mean # of miles with 98% confidence within 2000 miles.

\[ n = \left( \frac{2.33 \times 16100}{1020} \right)^2 \]

\[ = 1408 \]
Null: $H_0: \mu = \mu_0$

alt: $H_1: \mu \neq \mu_0$

Example 1

$H_0: \mu = 500$ hrs

$H_1: \mu < 500$ hrs

Example 2

$H_0: \mu = 36.7$ yrs

$H_1: \mu > 36.7$ yrs
$\ H_0: \ P = 78.2\% \ \ \ \ P = 0.782$

$H_1: \ P > 78.2\%.$
	right tailed.

Reject $H_1$ in fact $H_0$ is true $\rightarrow$ correct
Don't reject $H_1$ in fact $H_1$ is true $\rightarrow$ correct

Reject $H_0$ ... in fact $H_0$ is true $\rightarrow$ type I error
Don't reject $H_0$ ... in fact $H_1$ is true $\rightarrow$ type II error.

**Type I error:**
we reject that the lifetime of a light bulb is 500 hrs.

**Type II error:**
the lifetime of a light bulb is 500 when in fact it was less than 500 hrs.

$\ H_0: \ P = 78.2\%.$

$H_1: \ P > 78.2\%.$

**Type I:** we found out that 12-19 years old trends of the boarding school get more than 78.2%. The USDA's protein is above 78.2%.
When in fact it has 78.2% 

Type II: We found at 12-19 at the school who set USDA's protein is 78.2%. When in fact it was above 78.2%.

H0 is rejected $\Rightarrow$ Enough evidence to support H1.
H0 is not rejected $\Rightarrow$ Not enough evidence to support H1.

Insufficient.

a) H0: $\mu = 518$
H1: $\mu > 518$ (Right-tailed)

b) Since we fail to reject H0, we believe that the mean score on SAT Math Rew. Exam is still 518. The test is not significant.
a) \( H_0: \mu = 10.3 \pm \sigma \).
\( H_1: \mu > 10.7 \pm \sigma \).
(right tailed)

b) Since there is insufficient sample evidence to reject \( H_0 \), we believe that more than 10.3% of Americans of 65 years of age lost weight we interstate today.
the test is significant.

a) \( \alpha = 0.05 \)
\( z = 2.00 \)
\( H_0: \mu = 0.5 \)
\( H_1: \mu < 0.5 \)

0.0228 < 0.05
\( H_0 \) is rejected.