

9.1 Developing Null and Alternative Hypotheses

109

- Null Hypotheses: H_0 (Always contain equality)
- Alternative Hypotheses: H_a (what the test is attempting to establish)
"Research Hypotheses"
- Three forms of hypotheses tests used to test the population parameters μ and p :

①	②	③
$H_0: \mu \geq \mu_0$	$H_0: \mu \leq \mu_0$	$H_0: \mu = \mu_0$
$H_a: \mu < \mu_0$	$H_a: \mu > \mu_0$	$H_a: \mu \neq \mu_0$
lower tail test	upper tail test	
One-tailed tests		Two-tailed test

- In the three hypotheses tests above:

- ① If H_0 can be rejected, then the research hypotheses H_a is supported.
- ② If H_0 cannot be rejected, then there is no evidence that the research hypothesis H_a is supported.

In test ③ this means accept H_0 .

Example (Q2 page 336) The manager of an automobile dealership is considering a new plan designed to increase sales volume.

Currently, the mean sales volume is 14 automobile per month.

- (a) Develop the null and alternative hypothesis?

$$H_0: \mu \leq 14$$

$$H_a: \mu > 14$$

- (b) Comment on the conclusion when H_0 cannot be rejected.

STUDENTS-HUB.COM

There is no evidence that the new plan increases sales.

- (c) Comment on the conclusion when H_0 can be rejected.

The research hypotheses $\mu > 14$ is supported.

"The new plan increases the sales volume"

- Null hypotheses (H_0): is the Hypotheses assumed to be true in the hypotheses testing procedure.
- Alternative hypotheses (H_a): is the Hypotheses concluded to be true if H_0 is rejected.