Chapter 7 Review #2 **Prob/Stats** **Name** _____

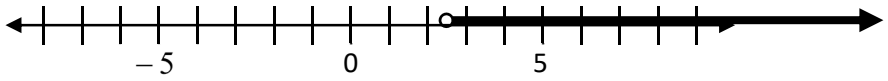
The statement represents a claim. Write its complement and state which is H_0 and which is H_a. Identify which one is the claim.

1. $p \neq 0.18$

2. $\mu \geq 32$

The alternative hypothesis is given with its graph. State the null hypothesis and sketch its graph.

3. $H_a : \mu > 2.5$



Write the null and alternative hypotheses for each statement. Identify which one is the claim. State whether you do a left-tailed, right-tailed, or two-tailed test for the hypothesis test.

4. The mean age of teachers when they retire in the state of California is at most 60 years.

5. Using the statement in problem #4, identify, in context, the type I and type II errors for the hypothesis test of this claim.

6. The mean age of teachers when they retire in the state of California is at most 60 years. If a hypothesis test is performed, how should you interpret a decision that fails to reject the null hypothesis?
   a) There is not sufficient evidence to reject the claim $\mu \leq 60$.
   b) There is sufficient evidence to reject the claim $\mu \leq 60$.
   c) There is sufficient evidence to support the claim $\mu \leq 60$.
   d) There is not sufficient evidence to support the claim $\mu \leq 60$.

7. Given $H_0 : \mu \leq 345$, for which confidence interval should you reject H_0?
   a) (340, 360)
   b) (342, 358)
   c) (350, 360)

8. The P-value for a hypothesis test is P = 0.0092. Do you reject or fail to reject H_0 when the level of significance is $\alpha = 0.01$?

Find the P-value for the hypothesis test with the standardized test statistic z. Decide whether to reject H_0 for the level of significance α.

9. Right-tailed test, $z = 1.12, \alpha = 0.10$

10. Two-tailed test, $z = 2.57, \alpha = 0.01$

Find the critical value(s) and rejection region(s) for the type of z-test with level of significance α.

11. Two-tailed test, $\alpha = 0.05$

12. Left-tailed test, $\alpha = 0.03$

13. A consumer group claims that the mean acceleration time from 0 to 60 miles per hour for a sedan is 6.3 seconds. A random sample of 33 sedans has a mean acceleration time from 0 to 60 miles per hour of 7.2 seconds. Assume the population standard deviation is 2.5 seconds. If $\alpha = 0.05$, test the consumer group's claim. Use a P-value.

14. A fast food restaurant estimates that the mean sodium content in one of its breakfast sandwiches is no more than 920 milligrams. A random sample of 44 breakfast sandwiches has a mean sodium content of 925 milligrams. Assume the population standard deviation is 18 milligrams. Use $\alpha = 0.10$ and rejection regions.