

# Math 153 - Quiz 11

November 24, 2015

Name key

Score \_\_\_\_\_

Show all work to receive full credit. Supply explanations when necessary. Assume all populations are normally distributed. For each problem, state the null and alternative hypotheses, as well as the  $P$ -value and your conclusion.

1. (5 points) An educator claims that the mean salary of substitute teachers in a school district in Allegheny County, Pennsylvania, is less than \$60 per day. A random sample of eight school districts is selected, and the daily salaries (in dollars) are shown. Is there enough evidence to support the educator's claim at the level  $\alpha = 0.10$ ?

CLAIM:  $\mu < 60$

60, 56, 60, 55, 70, 55, 60, 55

COUNTER:  $\mu \geq 60$

CALCULATOR SAYS...

$H_0: \mu = 60$

$t \approx -0.626$

$H_1: \mu < 60$

P-value  $\approx 0.276$

LEFT-TAILED T-Test

$\alpha = 0.10$

$n = 8$

P-value  $> \alpha \Rightarrow$  We do not reject  $H_0$ .

EVIDENCE DOES NOT  
SUPPORT THE ORIGINAL  
CLAIM.

2. (5 points) An attorney claims that more than 25% of all lawyers advertise. A sample of 200 lawyers in a certain city showed that 63 had used some form of advertising. Is there enough evidence to support the attorney's claim at the level  $\alpha = 0.05$ ?

CLAIM:  $p > 0.25$

COUNTER:  $p \leq 0.25$

CALCULATOR SAYS...

$H_0: p = 0.25$

$z \approx 2.123$

$H_1: p > 0.25$

P-value  $\approx 0.0169$

RIGHT-TAILED Prop Z Test

$n = 200$

$X = 63$

$\alpha = 0.05$

P-value  $< \alpha \Rightarrow$  We reject  $H_0$ .

THE EVIDENCE SUPPORTS THE  
CLAIM THAT  $p > 0.25$ .