Quiz 1

1 – Null hypotheses are never really true

* True
* **False**

**Keyword here is \*never\* -- absolutes might tip us off that this statement is false. Most of them time null hypotheses are not true – but not ‘never’.**

2 – Regardless of the statistical test used, a p-value is always a function of what two things?

* Sample size and number of samples
* Slope and effect size
* Slope and confidence intervals
* **Sample size and effect size**
* Sample size and p-value

**Sample size and effect size. Slope is the same thing as effect size; so needed to be careful with that.**

3 – If the p-value is large (> 0.05), what are the two possible interpretations?

* No effect, small slope
* No effect, no difference between groups
* Insufficient sample size, need more samples
* **Insufficient sample size, small effect size**
* Too much noise, too much error

**This can happen when you have a small effect OR a small sample size (or possibly both).**

4 – What does Johnson (1999) argue that ecologists should report instead of p-values?

* **Estimates of effects and confidence intervals**
* Error and sample size
* Confidence interval and sample size
* Estimates of effect and sample size

**Estimates of effects and confidence intervals. You could also report Standard Error – just some form of uncertainty.**

5 – According to Johnson (1999), which of the following is the correct definition of the ‘p-value’?

* The probability that the observed results were due to chance
* The probability that the alternative hypothesis was false
* **The probability of getting equal or more extreme data than that observed if the null hypothesis were true**
* The probability of getting the same result if the experiment were repeated
* The probability that the null hypothesis is true

Bonus: Which result would you rather have?

* **P = 0.04, n = 30**
* P = 0.04, n = 150

**We talked about this in class; this result has a larger effect size, all else being equal, which means you measured something larger, more interesting, it required less effort.**