

# STAT115 Sample Questions

1. When should a t-test be used instead of a z-test?

- a) When the sample size is large.
- b) When the population standard deviation is known.
- c) If the population standard deviation is not known.
- d) When comparing proportions.
- e) When dealing with relative risk.

**Information for questions 2 - 3.**

For a hypothesis test comparing two population proportions with the following data:

| Group | Successes | Sample Size |
|-------|-----------|-------------|
| A     | 45        | 100         |
| B     | 30        | 80          |

2. Calculate the pooled sample proportion.

- a) 0.375
- b) 0.45
- c) 0.53
- d) 0.42
- e) 0.55

3. Using the data from the previous question, calculate the standard error for the difference in proportions.

- a) 0.065
- b) 0.024
- c) 0.085
- d) 0.095
- e) 0.074

**Information for questions 4 - 5.**

R is an important component of STAT115 - answer the following questions relating to R...

4. What is the purpose of the `pnorm` function in R?

- a) To calculate the density of the normal distribution.
- b) To calculate the quantiles of the normal distribution.
- c) To calculate the cumulative probability of the normal distribution.
- d) To generate random numbers from the normal distribution
- e) To calculate the limits of the normal distribution.

5. Which R command would you use to find the 95th percentile of a standard normal distribution?

- a) `pnorm(0.95)`
- b) `qnorm(0.95)`
- c) `pnorm(1.645)`
- d) `qnorm(1.645)`
- e) `pbinom(0.95)`

**Information for questions 6 - 7.**

Given the observed counts for a drug trial:

|         | Improved | Not improved | Total |
|---------|----------|--------------|-------|
| Drug    | 59       | 41           | 100   |
| Placebo | 37       | 63           | 100   |
| Total   | 96       | 104          | 200   |

6. What is the expected count for the "Improved" category in the drug group under the null hypothesis?

- a) 48
- b) 50
- c) 59
- d) 96
- e) 100

7. Calculate the chi-squared test statistic.

- a) 8.34
- b) 9.70
- c) 10.24
- d) 12.50
- e) 15.20



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