

Quiz 13 April 27, 2001, *Statistics for Business*

1. Another beer taste test is done with 4 tasters. An investigator decides to reject random guessing if 3 or more tasters “get it right.”

With this decision rule, what is the chance of a *Type I error*?

(Binomial probabilities for  $n = 4$ ,  $\pi = 1/3$  are shown in the table.)

Successes	Probability
0	0.198
1	0.395
2	0.296
3	0.099
4	0.012

- A) 0.099
- B) 0.012
- C) 0.111
- D) 0.222
- E) None of the above.

2. Failing to reject a true null hypothesis is a correct decision.

- A) True
- B) False

3. In a simple random sample, increasing the sample size will *increase* the margin of sampling error (other things being equal).

- A) True
- B) False

4. The probability of a Type I error is called the *significance level* of the test.

- A) True
- B) False

**Answers:** 1.  $\Pr(\text{Type I Error}) = \Pr(\text{Rejecting } H_0 \text{ when it is true}) = \Pr(3 \text{ or } 4 \text{ Successes} \mid \pi=1/3) = \Pr(3 \text{ Successes} \mid \pi=1/3) + \Pr(4 \text{ Successes} \mid \pi=1/3) = 0.099 + 0.012 = 0.111$

2. true, 3. false, 4. true