1. In quality control applications of hypothesis testing, the null and alternative hypotheses are frequently specifies as

H0: The production process is performing satisfactorily

HA: The process is performing in an unsatisfactory manner

Accordingly, α is sometimes referred to as the producer’s risk, while β is called the consumer’s risk

An injection molder produces plastic golf tees. The process is designed to produce tees with a mean weight of .250 ounce. To investigate whether the injection molder is operating satisfactorily, 40 tees were randomly sampled from the last hour’s production. Their weights (in ounces) are listed in the TEES file from your book.

1. Write H0 and HA in terms of the true mean weight of the golf tees
2. In the context of the problem, explain why it makes sense to call α the producer’s risk and β the consumer’s risk.

**For the given hypothesis test, explain the meaning of a Type I error, a Type II error, or a correct decision as specified.**

2) In 2000, the mean math SAT score for students at one school was 472. Five years later, in 2005, a teacher performed a hypothesis test to determine whether the average math SAT score of students at the school had changed from the 2000 mean of 472. The hypotheses were:

 : μ = 472

 : μ ≠ 472

where μ is the mean math SAT score, in 2005, for students at the school

Explain the meaning of a Type I error.

1. A Type I error would occur if, in fact, μ ≠ 472, but the results of the sampling fail to lead to that conclusion.
2. A Type I error would occur if, in fact, μ = 472, but the results of the sampling lead to the conclusion that μ ≠ 472
3. A Type I error would occur if, in fact, μ = 472, but the results of the sampling do not lead to rejection of that fact
4. A Type I error would occur if, in fact, μ ≠ 472, and the results of the sampling lead to that conclusion.

3) In 2000, the mean math SAT score for students at one school was 472. Five years later, in 2005, a teacher performed a hypothesis test to determine whether the average math SAT score of students at the school had changed from the 2000 mean of 472. The hypotheses were:

 : μ = 472

 : μ ≠ 472

where μ is the mean math SAT score, in 2005, for students at the school

Explain the meaning of a Type II error.

1. A Type II error would occur if, in fact, μ = 472, but the results of the sampling lead to the conclusion that μ ≠ 472
2. A Type II error would occur if, in fact, μ ≠ 472, and the results of the sampling lead to that conclusion.
3. A Type II error would occur if, in fact, μ ≠ 472, but the results of the sampling fail to lead to that conclusion.
4. A Type II error would occur if, in fact, μ = 472, but the results of the sampling do not lead to rejection of that fact