

## Ch 19 Testing Hypotheses Practice

**Directions:** Read each question carefully. *Be sure to use proper notation, and show work as needed to indicate your understanding of the concepts. Round decimals to 3 places, and percentages to the nearest tenth.*

**1)** The International Olympic Committee states that the female participation in the 2004 Summer Olympic Games was 42%, even with new sports such as weight lifting, hammer throw, and modern pentathlon being added to the Games. Broadcasting and clothing companies want to change their advertising and marketing strategies if the female participation increases at the next games. An independent sports expert arranged for a random sample of pre-Olympic exhibitions. The sports expert reported that 202 of 454 athletes in the random sample were women. Is this strong evidence that the participation rate may increase?

**a) Test an appropriate hypothesis and state your conclusion.**

Hypotheses:

Model:

Mechanics:

Conclusion (in context):

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**b) Was your test one-tail upper tail, one-tail lower tail, or two-tail? Explain why you chose that kind of test in this situation.**

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**c) Explain what your P-value means in this context.**

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2) A company claims to have invented a hand-held sensor that can detect the presence of explosives inside a closed container. Law enforcement and security agencies are very interested in purchasing several of the devices if they are shown to perform effectively. An independent laboratory arranged a preliminary test. If the device can detect explosives at a rate greater than chance would predict, a more rigorous test will be performed. They placed four empty boxes in the corners of an otherwise empty room. For each trial they put a small quantity of an explosive in one of the boxes selected at random. The company's technician then entered the room and used the sensor to try to determine which of the four boxes contained the explosive. The experiment consisted of 50 trials, and the technician was successful in finding the explosive 16 times. Does this indicate that the device is effective in sensing the presence of explosives, and should undergo more rigorous testing?

**a) Test an appropriate hypothesis and state your conclusion.**

Hypotheses:

Model:

Mechanics:

Conclusion (in context):

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**b) Was your test one-tail upper tail, one-tail lower tail, or two-tail? Explain why you chose that kind of test in this situation.**

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**c) Explain what your P-value means in this context.**

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