Cumulative AP Practice Test 2 Solutions

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AP2.1 a.

AP2.2 d.

AP2.3 e.

AP2.4 b.

AP2.5 c.

AP2.6 e.

AP2.7 c.

AP2.8 a.

AP2.9 d.

AP2.10 c.

AP2.11 b.

AP2.12 c.

AP2.13 a.

AP2.14 c.

AP2.15 d.

AP2.16 c.

AP2.17 e.

AP2.18 a.

AP2.19 c.

AP2.20 b.

AP2.21 a.

AP2.22 (a) This is an observational study. No treatments were imposed on the subjects. (b) No. Since this was an observational study and not a randomized controlled experiment, no cause-and-effect conclusions are possible. (c) Two variables are confounded when their effects on the cholesterol level cannot be distinguished from one another. For example, people who take omega-3 fish oil might also be more health conscious in general and do other things such as eat more healthfully or exercise more. Researchers would not know whether it was the omega-3 fish oil or the more healthy food consumption or exercise that was the real explanation of lower cholesterol. In other words, the effects of omega-3 fish oil consumption are mixed up with the effects of the other activities that more health conscious people do.

AP2.23 (a) P(type O or Hawaiian-Chinese) = 65,516/145,057 = 0.452. (b) P(type AB|Hawaiian) = 99/4670 = 0.021. (c) P(Hawaiian) = 0.032; P(Hawaiian|type B) = 0.010. Since these probabilities are not equal, the two events are not independent. (d) The probability of randomly selecting a specimen that contains type A blood from the white ethnic group is 50,008/145,057 – 0.345. The probability that at least

one of the two samples matches this description = 1-*P*(neither are type A from white ethnic group) = 1-(1-0.345)^2 = 0.571.

AP2.24 (a) This was an experiment since a treatment was imposed. The researchers added dead cicadas to some plants while the others served as a control group. (b) The distribution of seed mass for the cicada plants has the higher mean. The distribution of seed mass for the cicada plants is skewed to the right, which will pull the mean above its median and toward the higher values. The distribution of seed mass for the control plants is skewed to the left, which will pull the mean of this distribution below its median toward the lower values. Since the medians of both distributions are equal, the mean for the cicada plants lies above the mean for the control plants. (c) As stated in part (b), the mean seed mass for the cicada plants is higher than the mean seed mass for the control plants. However, the median seed mass for the two groups is the same. The boxplots show a great deal of overlap between the seed masses of the plants in the two groups. There is some evidence that cicadas can be used effectively as fertilizer, but the difference in the mean seed weights for the two groups isn't large enough to rule out the chance involved in the random assignment as a plausible explanation.

AP2.25 (a) Since *P*(diamond)= 1/5, let 0 and 1 represent drawing the card with a diamond and the digits 2 through 9 represent drawing a card without the diamond. Moving left to right across a row, examine one digit at a time. Stop when you get a diamond. Count the number of cards drawn. (b) The results: 3, 7, 5, 11, 2, 12, 1, 7, 5, 3. (c) Expected number of cards to get the diamond $\frac{56}{10} = 5.6$. On average, you will draw 5.6 cards in order to win. (d) At \$1.00 per card, you will expect to pay \$5.60, on average, in order to win \$5.00. So the game is not fair.