

Stat 2000 International – Midterm - Answers

1. Correct answer: [3] comparative randomized experiment
2. Correct answer: [2] We have a list containing all classes at Utah State University. Classes are divided into the times when they are offered. A simple random sample of the times is chosen and all students in the class occurring at that time are administered a survey.
3. Correct answer: [3] Both 1 and 2 above.
4. Correct answer: [2] heart disease
5. Correct answer: [3] A sample statistic, since they represent numbers derived from the sample and not the population.
6. Correct answer: [2] Histogram B
7. Correct answer: [3] 9.6
8. Correct answer: [2] During this time period, Logan had the greater spread.
9. Correct answer: [4] {GGG,GGB,GBG,GBB,BGG,BGB,BBG,BBB}
10. Correct answer: [4] -0.1
11. Correct answer: [3] Plot C
12. Correct answer: [4] about 0.0535
13. Correct answer: [2] 0.10
14. Correct answer: [3] 106/235
15. Correct answer: [1] 10.5%
16. Correct answer: [1] 0.82
17. Correct answer: [3] 3/4
18. Correct answer: [2] about 0.447
19. Correct answer: [4] \$4
20. Correct answer: [4] The maximum for SO₂ is bigger than the maximum for NO₂.

21. Answer: mean = $np = 25 * 0.1 = 2.5$; variance = $np(1-p) = 25 * 0.1 * 0.9 = 2.25$
22. Answer: $P(\text{waiting time} > 40) = 0.19$
23. Answer: (i) 13 and (ii) 5
24. Answer: $60/110 = 0.5454$
25. Answer: expected value = $(0)(.60) + (1)(.20) + (2)(.08) + (3)(.04) + (4)(.04) + (5)(.03) + (6)(.01) = 0.85$
26. Answer: F ($S = 1$): min about 90 pounds, max about 190, mean and median about 140, fairly symmetric; M ($S = 2$): min about 120 pounds, max about 240, mean and median about 180, fairly symmetric; men are on average heavier and men have the higher variation
27. Answer: (i) $P(B) = 0.2$ and (ii) $P(A \text{ or } B) = 0.2$ when A is a subset of B
28. Answer: Sport 1: about 72 and Sport 2: about 29
29. Answer: about $18.8 / 81.7 = 0.2301$
30. Answer: average = -1376.143; this is far off from the correct average of 60.8571
31. Answer: expected number that will NOT stop = $200 * 0.79 = 158$
32. Answer: $P(\text{at least } 7) = 3/10 = 0.3$
33. Answer: mean = $np = 300 * 2/3 = 200$; standard deviation = $\sqrt{np(1-p)} = 300 * 2/3 * 1/3 = \sqrt{66.67} = 8.1650$
34. Answer: expected to fail = $np = 90 * 0.17 = 15.3$; $P(\text{at most } 10) = 0.084$
35. Answer: Correlation = 0.8721; this represents positive association and is very strong