Stat 2300 International, Fall 2006– Sample Midterm Answers

Friday, October 20, 2006

.

1. **d**. variable.
2. **b.** sampling without replacement.
3. **d.** Statistical Inference
4. **a.** Outliers
5. **c.** three
6. **d.** Z-score
7. **a.** Independent events
8. **b.** mutually exclusive.
9. **b.** P(A | B) = P(A)
10. **b.** Poisson random variable
11. **b.** (*n*) (*p*).
12. **a.** its outcomes are countable.
13. **b.** zero, one.
14. **d.** Poisson and exponential
15. **d.** below the mean.
16. **c.** for any sample size.
17. **b.** increases, normal
18. **d.** .09 and 1.34
19. **b.** the *t* distribution.
20. **b.** size is large.
21. z = (33.2-32)/.8 = 1.5; value from table = 0.4332;
    Probability = 0.5 + 0.4332 = 0.9332 = 93.32%
22. (i) 9.6 (ii) 10 (iii) 10
23. [mean = 10] (i) 10 (ii) 11.6 (iii) about 3.41
24. Probability = .95*.92 = .874 = 87.4%
25. [P(B) = .4, P(M) = .5, P(B|M) = .2]
    P(B∩M) = P(M)*P(B|M) = .5*.2 = .1 = 10%
26. Expected Outcome = .25*(-40,000) + .7*10,000 + .05*70,000 = $500
27. Probability = 10! / (10! * 0!) * .9^10 * .1^0 = .3487 = 34.87%
28. 1 – P(x = 0) = 1 – e^(-2) * 2^0 / 0! = 1- .1353 = 0.8647 = 86.47%

29. .3333 = 33.33%

30. P(6.5 <= x <= 7.5) = P((6.5-8)/.5 <= z <= (7.5-8)/.5) = P(-3 <= z <= -1) = .1587 - .0013 = .1574 = 15.74%

31. mu = np = 200*.4 = 80, sigma = sqrt(np(1-p)) = sqrt(200*.4*.6) = sqrt(48) = 6.9282
P(x <= 95) = P(x <= 95.5) = P(z <= (95.5-80)/6.9282) = P(z <= 2.24) = .9875 = 98.75%

32. meanxbar = mean = 50, sigmaxbar = sigma/sqrt(n) = 1 / sqrt(100) = .1;
P(xbar > 50.2) = P(z > (50.2-50)/.1) = P(z > 2) = 1 - .9772 = .0228 = 2.28%

33. for 98%CI: z_alpha/2 = 2.33;
CI: [.1 +/- z_alpha/2 * sqrt(.1*.9/299)] = [.1 +/- 2.33 * .01735] = [.0596, .1404]

34.

Mean	27.75
Confidence Level(95.0%)	7.52952964

95% CI:

20.22047036	35.27953

35. (i)

Mean	102.8

(ii)

Median	99

(iii)

Standard Deviation	59.62065265