Solutions

1. B 12 X 80 = 960. 960 – 72 – 78 = 810. 810/10 = 81.

2. C Mean will increase by 5 but standard deviation is not changed.

3. A The mean is being influenced by one or a few very large values.

4. D The t distribution has MORE probability in the tails.

5. B P(A or B) = P(A) + P(B) – P(A and B) = .2 + .3 – (.2)(.3) = .5 - .06 = .44

6. C Increasing standard deviation will increase the P(Type II error).

7. D Hypotheses use the company's claim of 30 minutes as the null value.

8. C P(Type I error) = level of significance (alpha) = 5% = .05

9. C The pvalue > alpha meaning there is insufficient evidence for the H_a.

10. A Controlled experiment is the only way to show causation.

11. C 100 – 20 (neither) – 20 (both) = 60 who take one or the other. Split evenly, that means that 30 take Calculus only. Add to the 20 also taking Statistics, and 50 total students are taking Calculus.

12. B Choosing every 5^{th} person is Systematic.

13. B The chi-square distribution starts at zero on the left, taking on only positive values.

14. A There is not a fixed number of observations. The number of observations depends on the occurrence of the first success.

15. D The temperature decreases as the distance increases, indicating a negative association.

16. C The coefficient of determination is R^2 and must be positive.

17. B The predicted value is 30 - .5(8) = 26. The residual –3 = y – 26. Therefore, y = -3 + 26 = 23.

18. D You must take the log of both variables to transform a power model.

19. D The others refer specifically to the sample mean. Only D refers to our confidence in the method of constructing the interval.

20. B Only one out of the 6 possible outcomes will win more than the $1 needed to play the game.

21. B Considering the cost of the game, 3/6(-$1) + 2/6($0) + 1/6($3) = $0.

22. A Both stratified and block require the division of subjects based on a common characteristic.

23. A By definition, if two events are mutually exclusive, they cannot occur at the same time.

24. B A sample size of 3 is too small – one of the survivors could have been unusually large.

25. A The triangular area created will have a base of 2 and height of 1. Area = $\frac{1}{2}$ bh = 1. All others have an area under the curve other than 1.

26. C Gender is the only variable that is not quantitative.

27. D The standard deviation can never be negative.

28. D This is a geometric distribution with p = 1/50. The mean or expected number of trials is 1/p = 50.

29. C There are 3 row variables and 3 column variables. (r – 1)(c – 1) = 4.

30. A (Row total x Column total)/Table total = (20 x 30)/100 = 6