

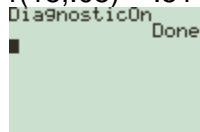
STATISTICS

Sample Test 4—ANSWERS

1. A relationship between two variables.
2. False
3. + (The longer you are in sun, the more severe the sunburn.)
4. – (If more people are unemployed, less money will be spent.)
5. + (The longer you exercise, the more calories you burn.)
6. 0 (probably not much relationship)
7. + (Bigger lakes can support more fish.)
8. – (Usually older people are less flexible than younger people.)
9. + (The longer since you ate, the hungrier you are.)
10. + (More wind turbines means more wind energy.)
11. 0 (There's not much difference in gas purchases in different parts of a month.)
12. B (negative – D is impossible)
13. D (fairly strong positive)
14. C (positive – A is impossible)
15. A (no real pattern)
16. D (strong negative)
17. A (perfect positive)
18. C (positive and negative cancel out)
19. C (weak positive)
20. B (nearly zero)

21. 15 (pairs of data)

22. $r(15, .05) = .51$



L1	L2	L3	2
50	16		
60	17		
26	12		
12	14		
18	16		
40	16		
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L2(16) =			

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EDIT [2ND] [TESTS]
1:1-Var Stats
2:2-Var Stats
3:Med-Med
4:LinReg(ax+b)
5:QuadReg
6:CubicReg
7:QuartReg

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LinReg
y=ax+b
a=.0837962228
b=10.96250331
r^2=.6022378265
r=.7760398356

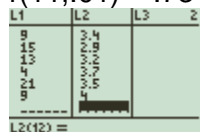
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, so $r = .776$

- 23.
24. YES (because $.776 > .51$)
25. $r^2 = .602$, so about 60%

26. 11

27. $r(11, .01) = .73$



L1	L2	L3	2
8	10		
10	10		
10	10		
10	10		
10	10		
10	10		
10	10		
---	---	---	---
L2(12) =			

```

LinReg
y=ax+b
a=-.0669852302
b=4.004257168
r^2=.4202246746
r=-.6482473869

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28. $r = .65$ (This was corrected from the original answer key.)
29. No (because $.65 < .73$)

30. $(-.6)^2 = .36$ or 36%
31. $100 - 36 = 64\%$

32. Here they give us that $r^2 = .49$, so we need to take $\sqrt{.49}$, which is .7

.9*2+10.5 12.3

33. 12.3 or about 12

.9*15+10.5 24

34. 24

25-10.5 14.5
Ans/.9 16.11111111

35. Here we know that $25 = 0.9\hat{x} + 10.5$

16. $\bar{1}$ or about 16

36. 4 x 2 (you don't include the totals)

MATRIX[A] 4 x2
[13 8]
[12 14]
[11 11]
[9 12]

X²-Test
Observed:[A]
Expected:[B]
Calculate Draw

X²-Test
X²=1.772893773
P=.6208512434
df=3

37. $\chi^2 = 12$

P = .62085

38. No (because .62 > .05)

MATRIX[A] 2 x2
[44 468]
[23 477]

X²-Test
X²=6.526428998
P=.0106283123
df=1

39. $\chi^2 = 477$

P = .0106

40. Yes (because .0106 < .10)

41. Yes (because .0106 < .05)

42. No (because .0106 > .01)

43. C (.01 or 1%, because important medical research should have the lowest possible level of significance – that is, you don't want to be wrong very often)

44.

L1	L2
50	.15*200 = 30
75	.35*200 = 70
25	.07*200 = 14
20	.13*200 = 26 – This was wrong on the original answer sheet.
30	.30*200 = 60

45. 4 (Since there are 5 categories, take $5 - 1 = 4$)

46. $P = 7.97 \times 10^{-8}$ (The P-Value WAS correct as original posted.)

47. Yes (the p-value is much less than 10%.)

48. 9 (10 sports, so $10 - 1$)

49. C (different to begin with)

50. E (highlighting one small thing that makes them look good)

51. B (refuse to answer—or lie—when asked personal questions)

52. F (the company has a vested interest in saying their product is beneficial)

53. D (college students at spring break aren't necessarily like all Americans)

54. A (people act differently when they think they're being watched or studied)

55. & 56.

Standard deviation χ^2 looks at whether data is too spread out (because the standard deviation is too large); **runs test** sees whether or not data is random; **Spearman's r** looks at whether different rankings are different; **high power tests** are unlikely to overlook significant results (but may include false positives); **analysis of variance** compares more than 2 averages and standard deviations; **non-linear regression** looks at patterns that aren't lines (like curved and cyclical data); **multiple regression analysis** uses many different factors to predict an outcome; **calculus based statistics** looks at constantly changing data and is used to find the areas under curves used for statistical probability

57. B (average and S.D. of 2 samples)

58. A ("The United Nations knows the S.D. for the world, and Denmark is likely to provide a large sample.)

59. B (as one thing increases, so does another)

60. B (As one thing goes up, the other goes down)

61. A (comparing percent from 2 different years)

62. C (His sample is more than 30 ... and also the U.S. Bureau of Labor Statistics knows the S.D. for the whole country)

63. B (They organized the data in a table ... this one would be a 2 x 4 matrix)

64. A (They're comparing the average of 2 samples .. in this case it might actually be a 2-sample **z** test, since both samples are likely to be large, but that is not an option)

65. D (comparing % of men and % of women)

66. This will obviously vary depending on your project. You don't need to know specific numbers, such as the p-value you got, but you should be able to answer parts a – d.