

1.2: Chi-square (Solutions- Practice + Homework)

1.

mean = 25 and standard deviation = 7.0711

3.

when the number of degrees of freedom is greater than 90

5.

$$df = 2$$

6.

a test of a single variance

8.

a left-tailed test

10.

$$H_0 : \sigma^2 = 0.812;$$

$$H_a : \sigma^2 > 0.812.$$

12.

a test of a single variance

16.

a goodness-of-fit test

18.

3

20.

2.04

21.

We decline to reject the null hypothesis. There is not enough evidence to suggest that the observed test scores are significantly different from the expected test scores.

23.

H_0 : the distribution of AIDS cases follows the ethnicities of the general population of Santa Clara County.

25.

right-tailed

27.

2016.136

28.

- 30.

a test of independence

a test of independence

34.

8

36.

6.6

39.

Table 1.2.54

Smoking level per day	African American	Native Hawaiian	Latino	Japanese Americans	White	Totals
1-10	9,886	2,745	12,831	8,378	7,650	41,490
11-20	6,514	3,062	4,932	10,680	9,877	35,065
21-30	1,671	1,419	1,406	4,715	6,062	15,273
31+	759	788	800	2,305	3,970	8,622
Totals	18,830	8,014	19,969	26,078	27,559	10,0450

41.

Table 1.2.55

Smoking level per day	African American	Native Hawaiian	Latino	Japanese Americans	White
1-10	7777.57	3310.11	8248.02	10771.29	11383.01
11-20	6573.16	2797.52	6970.76	9103.29	9620.27
21-30	2863.02	1218.49	3036.20	3965.05	4190.23
31+	1616.25	687.87	1714.01	2238.37	2365.49

43.

10,301.8

44.

right

46.

1. 48.

test for homogeneity

test for homogeneity

52.

All values in the table must be greater than or equal to five.

54.

3

57.

a goodness-of-fit test

59.

a test for independence

61.

Answers will vary. Sample answer: Tests of independence and tests for homogeneity both calculate the test statistic the same way $\sum_{(ij)} \frac{(O-E)^2}{E}$. In addition, all values must be greater than or equal to five.

63.

true

65.

false

67.

225

69.

$H_0 : \sigma^2 \leq 150$

71.

36

72.

Check student's solution.

74.

The claim is that the variance is no more than 150 minutes.

76.

a Student's t - or normal distribution

78.

1. 80.

1. 82.

1. 84.

1. 87.

Table 1.2.56

Marital status	Percent	Expected frequency
Never married	31.3	125.2
Married	56.1	224.4
Widowed	2.5	10
Divorced/Separated	10.1	40.4

1. 89.

1. 91.

1. 94.

true

false

98.

1. 100.

1. 102.

1. 104.

1. 106.

1. 108.

true

true

112.

1. 114.

1. 116.

1. 118.

1. 120.

1. 122.

1. The test statistic is always positive and if the expected and observed values are not close together, the test statistic is large and the null hypothesis will be rejected.
2. Testing to see if the data fits the distribution “too well” or is too perfect.

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