

Remember to show your thinking through your work.

Multiple Choice – Highlight the best answer.

- 1) Fourth grade children were asked what emotion they associated with the color red. The responses for emotion and gender of the children are summarized in the following two-way table.

| | Anger | Pain | Happiness | Love |
|---------------|--------------|-------------|------------------|-------------|
| Male | 35 | 27 | 12 | 38 |
| Female | 27 | 17 | 19 | 39 |

What proportion of the males associate the color red with love?

- (a) 0.5234
 - (b) 0.3598
 - (c) 0.3393
 - (d) 0.1822
 - (e) 0.1775
- 2) A study was conducted to determine the effectiveness of varying amounts of vitamin C in reducing the number of common colds. A survey of 450 people provided the following information:

| | Daily amount of Vitamin C taken | | |
|--------------------------|--|---------------|----------------|
| | None | 500 mg | 1000 mg |
| No colds | 57 | 26 | 17 |
| At least one cold | 223 | 84 | 43 |

What conclusion can be made?

- (a) The data proves that vitamin C reduces the number of common colds.
- (b) The data proves that vitamin C has no effect on the number of common colds.
- (c) There appears to be a strong association between consumption of vitamin C and the occurrence of common colds.
- (d) There appears to be little association between consumption of vitamin C and the occurrence of common colds.
- (e) Since common colds are caused by viruses, there is no reason to conclude that vitamin C could have any effect.

- 3) The table below describes the data comparing the relationship between age groups and localities of residence.

| | | Localities of Residence | | | |
|------------|----------|-------------------------|----------|-------|--------|
| | | Urban | Suburban | Rural | Totals |
| Age Groups | Under 25 | 110 | 150 | 65 | |
| | 25-50 | 240 | 220 | 75 | |
| | Over 50 | 53 | 112 | 58 | |
| Totals | | | | | |

- a) Compute the marginal frequencies.

Place the answers in the table.

- b) What percent of the urban dwellers are over 50?

- c) What percent of the Over-50 residents live in rural areas?

- d) Compute the percentage of:

Urban Dwellers

Urban Dwellers, given they are Under 25

Urban Dwellers, given they are 25-50

Urban Dwellers, given they are Over 50

- e) Based on your analyses, do you believe that these data indicate there is a relationship between locality of residence and the ages of the residences? Explain your answer.

- 4) Consider the data on smoking and parenting:

| | Neither Parent Smokes | One Parent Smokes | Both Parents Smoke |
|------------------------|-----------------------|-------------------|--------------------|
| Student does not smoke | 1168 | 1823 | 1380 |
| Student smokes | 188 | 416 | 400 |

- a) How many students does this data describe?

- b) What percent of these students smoke?

- c) What conclusions can you make relating a student's smoking behavior to that of their parents?