

Name: Answer Key Date: _____

Task – Public Opinions

MCC9-12.S.ID.5 Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data.

A public opinion survey explored the relationship between age and support for increasing the minimum wage. The results are found in the following two-way frequency table.

| | For | Against | No Opinion | TOTAL |
|------------|-----|---------|------------|-------|
| Ages 21-40 | 25 | 20 | 5 | 50 |
| Ages 41-60 | 30 | 30 | 15 | 75 |
| Over 60 | 50 | 20 | 5 | 75 |
| TOTAL | 105 | 70 | 25 | 200 |

Frequency Count

- In the 41 to 60 age group, what percentage supports increasing the minimum wage? Explain how you arrived at your percentage. What type of probability is this? Joint, marginal, or conditional?

$\frac{30}{75} = 0.4 = 40\%$ This is a conditional frequency

- Out of the people that have no opinion, what percentage is over 60 years old?

$\frac{5}{25} = 20\%$ *This is conditional!

- What are the marginal frequencies? These are found along the right side & along the bottom of the chart. They lack one of the categories (52.5%, 35%, 12.5%, 100%)

- What are the joint frequencies?

| | | |
|-------|-----|------|
| 12.5% | 10% | 2.5% |
| 15% | 15% | 7.5% |
| 25% | 10% | 2.5% |

} All the internal percentages

- Why are joint and marginal frequencies important when describing trends or associations in data? Do you see any significant trends when looking at the frequencies?

You are able to better see & compare different groups in larger populations.

Task – Leisure Time

1. Using the table below, construct a table displaying the joint and marginal frequencies.

| | Dance | Sports | Movies | TOTAL |
|-------|-------|--------|--------|-------|
| Women | 16 | 6 | 8 | 30 |
| Men | 2 | 10 | 8 | 20 |
| TOTAL | 18 | 16 | 16 | 50 |

| | Dance | Sports | Movies | TOTAL |
|-------|-------|--------|--------|-------|
| Women | 32% | 12% | 16% | 60% |
| Men | 4% | 20% | 16% | 40% |
| TOTAL | 36% | 32% | 32% | 100% |

2. After the basketball game, the statistician did not have time to compute Jana's relative frequency. Complete the table determining the relative frequency for Jana. Discuss any trends or associations from the table below concerning points scored by two basketball players.

| Point Value | Frequency for Jana | Relative Frequency for Jana | Frequency for Jill | Relative Frequency for Jill |
|-------------|--------------------|-----------------------------|--------------------|-----------------------------|
| 0 | 0 | 0 | 1 | 0.025 |
| 1 | 0 | 0 | 1 | 0.025 |
| 2 | 0 | 0 | 2 | 0.05 |
| 3 | 0 | 0 | 2 | 0.05 |
| 4 | 0 | 0 | 3 | 0.075 |
| 5 | 1 | 0.025 | 3 | 0.075 |
| 6 | 0 | 0 | 5 | 0.125 |
| 7 | 3 | 0.075 | 4 | 0.1 |
| 8 | 6 | 0.15 | 5 | 0.125 |
| 9 | 5 | 0.125 | 1 | 0.025 |
| 10 | 7 | 0.175 | 4 | 0.1 |
| 11 | 5 | 0.125 | 5 | 0.125 |
| 12 | 4 | 0.10 | 3 | 0.075 |
| 13 | 4 | 0.10 | 0 | 0 |
| 14 | 3 | 0.075 | 0 | 0 |
| 15 | 2 | 0.05 | 1 | 0.025 |
| TOTALS | 40 | 1 | 40 | 1 |