____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 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 |

- 1. 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?
- 2. Out of the people that have no opinion, what percentage is over 60 years old?

| 3. | What are the marginal probabilities? For: | Ages 21 – 40: |
|----|--|---------------|
| | Against: | Ages 41 – 60: |
| | No Opinion: | Over 60: |

- Find the following probabilities:
 a. Ages 21 40 and Against:
 - b. No Opinion and Over 60:
 - c. Ages 41 60 and For:

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

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

| | Dance | Sports | Movies | TOTAL |
|-------|-------|--------|--------|-------|
| Women | | | | |
| Men | | | | |
| TOTAL | | | | |

- 2. Based on the above tables, which is more likely to occur: a woman who enjoys sports or a male who enjoys movies?
- 3. Given that a person likes dancing, what is the probability that the person is a male?
- 4. If we only look at the men, what is the probability that they enjoy sports?
- 5. The following table comes from a survey of 100 hikers on the areas of hiking preferred. Complete the table.

| Hiking Area Preference | | | | | |
|------------------------|---------------|----------------------|-------------------|-------|--|
| Gender | The Coastline | Near Lakes & Streams | On Mountain Peaks | Total | |
| Female | 18 | 16 | | 45 | |
| Male | | | 14 | 55 | |
| Total | | 41 | | | |

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- 6. What percent of people surveyed prefer to hike on mountain peaks?
- 7. What percent of females surveyed prefer to hike the coastline?
- 8. What is the probability that a male prefers to hike near lakes and streams?
- 9. What is the marginal probability of people who prefer to hike the coastline?
- 10. What percent of people who prefer to hike the coastline are female?