

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Hr: \_\_\_\_\_

**Unit 2 Day 3: How Likely is....**

Focus Question: How do I answer the toughest ACT questions?

A. The ACT Trick:

To plan a new amusement park, a team of coaster designers asked riders if they preferred wood or steel frame roller coasters. The table shows the preferences of the kids and adults surveyed.

|        | Prefer Wooden Frame | Prefer Steel Frame |     |
|--------|---------------------|--------------------|-----|
| Kids   | 45                  | 60                 | 105 |
| Adults | 15                  | 20                 | 35  |
|        | 60                  | 80                 |     |

1. Based on the survey data would you agree or disagree with the following statement:

**Kids** are three times more likely to prefer a **steel frame** roller coaster than an **adult**.

$\frac{60}{105} = 57.1\%$        $\frac{20}{35} = 57.1\%$

2. What information is missing from the table that could change your opinion of the statement? Add that information. Totals

3. What percent of kids prefer steel frame coasters?

$57.1\%$

4. What percent of adults prefer steel frame coasters?

$57.1$

5. Are kids more likely than adults to prefer steel frame coasters? No

6. The ACT will put numbers that meet the "times" part of the statement and bet that you do not pay attention to the word likely. But you will not be fooled! If you read the word likely you will find the percent (or relative frequency).

B. Practice

|       | Chocolate Ice Cream | Vanilla Ice Cream | Total |
|-------|---------------------|-------------------|-------|
| Boys  | 100                 | 200               | 300   |
| Girls | 25                  | 50                | 75    |
| Total | 125                 | 250               | 375   |

1) True or False: **Boys** are 4 times as likely as **girls** to like **Chocolate Ice Cream**. Explain.

$\frac{100}{300} = 33.3\%$        $\frac{25}{75} = 33.3\%$

False. They are equally likely to like chocolate ice cream.

2) True or False: A boy is equally as likely to prefer vanilla as a girl. Explain.

$\frac{200}{300}$        $\frac{50}{75}$

True because they have the same percentage



8<sup>th</sup> graders at Lincoln Junior High were surveyed about how they get home from school.

|       | Male | Female | Total |
|-------|------|--------|-------|
| Walk  | 42   | 46     | 88    |
| Car   | 20   | 20     | 40    |
| Bus   | 15   | 12     | 27    |
| Bike  | 52   | 17     | 69    |
| Total | 129  | 95     | 224   |

3. Mandy's teacher asked her to make a true statement about the two way table. She said That boys and girls are equally likely to be car riders. Explain her error(s) in reasoning.

boys-car vs girls-car

$$\frac{20}{129} \approx 15.5\% \quad \frac{20}{95} \approx 21\%$$

1) Two way table of how students get home from school

2) We are told that boys and girls are equally "likely" to be a car rider

3) Mandy's mistake is that she ignored the word likely and saw that there was the same amount, but that doesn't mean they are equally likely.

4) Girls are more likely to be car riders than boys because 21% of the girls are car riders while only 15.5% of boys are car riders

The Final ACT Question to Complete Two-Way Frequency Tables:

thirty-six children were asked to choose which of three after school activities they would like their school to offer. The results are in the two way table below.

|       | Computer Games | Watch Movies | Read | Total |
|-------|----------------|--------------|------|-------|
| Girls | 5              | 11           | 6    | 22    |
| Boys  | 19             | 11           | 4    | 34    |
| Total | 24             | 22           | 10   | 56    |

Select each of the following statements that is true.

a) More boys were surveyed than girls. **True**

b) Boys and girls are equally likely to choose watching movies. **False**

$$\frac{11}{34} \approx 32.4\% \quad \frac{11}{22} \approx 50\%$$

c) About 25% of girls chose reading. **True**

$$\frac{6}{22} \approx 27\%$$

d) Girls are more than twice as likely to choose reading as boys. **True**

$$\frac{6}{22} \approx 27\% \quad \frac{4}{34} \approx 12\%$$

e) Fewer than half the students chose computer games. **True**

$$\frac{24}{56} \text{ students}$$