Name:_____ Block:_____ Date:_____

Frequency Tables – Day 1

Frequency is the number of occurrences, or how many times something has happened.

Problem 1 - Students Playing Instruments and Students Playing Sports

Predict:

Using the data from your survey, answering the questions:

- Do you play a sport?
- Do you play a musical instrument?

Fill in the values on the table below:

	Plays Instrument	Does Not play instrument	
Play Sport		Check slides for data depending on class.	
Does Not Play Sport			

When completing the following questions, provide numerical evidence used to formulate your answer.
What is the frequency of:

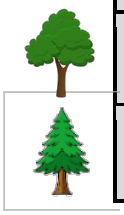
1. People who play a sport?
2. People who play an instrument?
3. People who play a sport and an instrument?
4. How many are in the class?

Relative Frequency is the comparison of a frequency to a total amount, or a different frequency. This is usually written as a ratio or percent.

Problem 2 - Tree Type & Height - Analyzing data in two-way tables

Predict:
Do you think deciduous & evergreen trees have different heights in general? What evidence could you give as support?

An ecologist is studying a forest with a mixture of tree types. Since the average tree height in the area is 40 feet, he measures the height of the tree against that. He also records the type of tree. The table below shows the types & heights of the trees measured



	Under 40 feet	Exactly 40 feet	Taller than 40 feet
Deciduous	42	4	30
Evergreen	42	2	15

A. Use the table above. Do you think each statement is true or false?

1. Deciduous & Evergreen trees are equally likely to be under 40 feet.

True False

2. Deciduous trees are more likely than Evergreen trees to be exactly 40 feet.

True False

3. Deciduous trees are more likely to be taller than 40 feet.

True False

4. Evergreen trees are only half as likely as deciduous trees to be taller than 40 feet.

True False

These answers are based on actual numbers of trees without taking into consideration the totals of each type of tree.

What might be misleading or confusing about the way data is presented in this table?

We can't compare the numbers because there are different totals of deciduous and evergreens.

B. Study the table of tree types and heights.

Copy and complete this extended table.

	Under 40 feet	Exactly 40 feet	Taller than 40 feet	**Total**
Deciduous	42	4	30	76
Evergreen	42	2	15	59
Total	84	6	45	135

Why are the category totals important?

We cannot compare just based on numbers, but we can compare proportions of totals.

C. One way to compare groups with unequal numbers is to find fractions or percentages.

Complete the table below to show the fractions or percentages by row for each category.

	Under 40 feet	Exactly 40 feet	Taller than 40 feet	**Total**
Deciduous	$\frac{42}{76} = \frac{21}{38}$ = **55.2%**	$\frac{4}{76}$ = 5.3%	$\frac{30}{76}$ = 39.5%	100%
Evergreen	$\frac{42}{59}$ = 71.2%	$\frac{2}{59}$ = 3.4%	$\frac{15}{59}$ = 25.4%	100%

Use the values from the table above to revisit your answers to Question A. **Justify your answer.**

1. Deciduous & Evergreen trees are equally likely to be under 40 feet. True or (False)?

55.2% ≠ 71.2%
Deciduous Evergreen

2. Deciduous trees are more likely than Evergreen trees to be exactly 40 feet. (True) or False?

5.3% > 3.4%
Deciduous Evergreen

3. Deciduous trees are more likely to be taller than 40 feet. (True) or False?

39.5% > 25.4%
Deciduous Evergreen

4. Evergreen trees are only half as likely as deciduous trees to be taller than 40 feet. True or (False)?

half of Deciduous: $\frac{39.5}{2}$ = 19.75

19.75% ≠ 25.4%
50% Deciduous Evergreen

Problem 3 - Let's go back to data collected from E and F blocks:

	Plays Instrument	Does Not play instrument	Total
Play Sport	11	17	28
Does Not Play Sport	2	2	4
Total	13	19	32

Show your work to answer the following problems:

1. How likely is it that a student plays a sport?

All students → $\frac{28}{32} = 87.5\%$

2. How likely is it that a student plays an instrument?

All students → $\frac{13}{32} = 40.6\%$

3. How likely is it that a student doesn't play a sport or an instrument?

All students → $\frac{2}{32} = 6.25\%$

4. How likely is it that a student who plays a sport, does not play an instrument?

students who play sports → $\frac{17}{28} = 60.7\%$

5. Is a student who plays a sport more likely to play an instrument than a student who does not play a sport? (You will compare 2 ratios.)

students who play sports → $\frac{11}{28} = 39.3\%$

students who don't play sports → $\frac{2}{4} = 50\%$

No, a student who plays a sport is less likely to play an instrument than a student who doesn't play sports.

6. Is a student who does not play an instrument more likely to play a sport than a student who does play an instrument? (You will compare 2 ratios.)

$\frac{17}{19} = 89.5\%$ $\frac{11}{13} = 84.6\%$

Slightly more likely $89.5\% > 84.6\%$