Name _____

Lesson 10: Relative Frequencies

Warm Up: Regents Prep

LEARNING OUTCOMES (L.O.)

- I can interpret relative frequencies given the context of the data.

1. The table below represents the function F.

x	3	4	6	7	8
$F(x)$	9	17	65	129	257

The equation that represents this function is

(1) $F(x) = 3^x$

(2) $F(x) = 3x$

(3) $F(x) = 2^x + 1$

(4) $F(x) = 2x + 3$

2. A sunflower is 3 inches tall at week 0 and grows 2 inches each week. Which function(s) shown below can be used to determine the height, $f(n)$, of the sunflower in n weeks?

I. $f(n) = 2n + 3$

II. $f(n) = 2n + 3(n - 1)$

III. $f(n) = f(n - 1) + 2$ where $f(0) = 3$

(1) I and II

(2) II, only

(3) III, only

(4) I and III

Example 1: Extending the Frequency Table to a Relative Frequency Table

Determining the number of students in each cell presents the first step in organizing bivariate categorical data. Another way of analyzing the data in the table is to calculate the *relative frequency* for each cell. Relative frequencies relate each frequency count to the total number of observations. For each cell in this table, the **relative frequency** of a cell is found by dividing the frequency of that cell by the total number of responses.

Consider the two-way frequency table from the previous lesson.

Two-Way Frequency Table:

	To Fly	Freeze Time	Invisibility	Super Strength	Telepathy	Total
Females	49	60	48	1	70	228
Males	51	71	27	25	48	222
Total	100	131	75	26	118	450

The relative frequency table would be found by dividing each of the above cell values by 450. For example, the relative frequency of females selecting "To Fly" is 49/ 450, or approximately 0.109 to the nearest thousandth. A few of the other relative frequencies to the nearest thousandth are shown in the following relative frequency table**:**

Calculate the remaining relative frequencies in the table below. Write each value in the table as a decimal rounded to the nearest thousandth.

	To Fly	Freeze Time	Invisibility	Super Strength	Telepathy	Total
Females	$\frac{49}{450} \approx 0.109$					$\frac{228}{450} \approx 0.507$
Males			$\frac{27}{450} \approx 0.060$			
Total		$\frac{131}{450} \approx 0.291$			$\frac{118}{450} \approx 0.262$	

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Lesson 10: Relative Frequencies **CW/HW**

1. Consider the Rufus King data from the previous lesson regarding after school activities:

	Played Intramural Basketball	Played Chess	Played in the Jazz Band	Did Not Participate	Total
Males	20	2	8	10	40
Females	20	10	10	20	60
Total	40	12	18	30	100

Calculate the relative frequencies for each of the cells to the nearest thousandth. Place the relative frequencies in the cells of the following table. (The first cell has been completed as an example.)

	Played Intramural Basketball	Played Chess	Played in the Jazz Band	Did Not Participate	Total
Males	20/100 or .200				
Females					
Total					

2. Based on your relative frequency table, what is the relative frequency of students who indicated they played basketball?

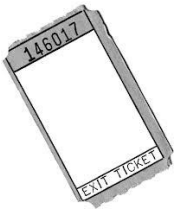
3. Based on your table, what is the relative frequency of males who play basketball?

4. If a student were randomly selected from the students at the school, do you think the student selected would be a male or a female?

5. If a student were selected at random from school, do you think this student would be involved in an after-school program? Explain your answer.

6. Why might someone question whether or not the students who completed the survey were randomly selected? If the students completing the survey were randomly selected, what do the marginal relative frequencies possibly tell you about the school? Explain your answer.

7. Why might females think they are more involved in after-school activities than males? Explain your answer.



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Lesson 10: Relative Frequencies
Exit Ticket

Juniors and seniors were asked if they plan to attend college immediately after graduation, seek full-time employment, or choose some other option. A random sample of 100 students was selected from those who completed the survey. Scott started to calculate the relative frequencies to the nearest thousandth.

	Plan to attend College	Plan to seek full-time employment	Other options	Totals
Seniors	$\frac{25}{100} = 0.250$	$\frac{10}{100} = 0.100$		
Juniors				$\frac{45}{100} = 0.450$
Totals	$\frac{60}{100} = 0.600$	$\frac{15}{100} = 0.150$	$\frac{25}{100} = 0.250$	$\frac{100}{100} = 1.000$

1. Complete the calculations of the relative frequencies for each of the blank cells. Round your answers to the nearest thousandth.

2. A school website article indicated that "A Vast Majority of Students from our School Plan to Attend College." Do you agree or disagree with this statement? Explain your answer.