Write

Write a brief explanation of the difference between a relative frequency distribution and a marginal relative frequency distribution.

Remember

A relative frequency distribution table provides the ratio of occurrences in each category to the total number of occurrences and allows you to use percents to analyze categorical data in two variables. You can use a stacked bar graph to visually represent the marginal relative frequencies of a data set.

Practice

1. The principal of Umber Elementary School (grades K – 4) would like to reward his students for recent good test scores on a standardized test. He thinks of four different types of assemblies. In order to please the most students, the principal asks his teachers to survey the students in their classes. The students from each grade are asked which assembly they would most want to see. The table shows the responses gathered from the surveys.

	Wild Animals	Hip Hop Show	Magic Show	Puppet Show
Kindergarten	18	5	8	33
Grade 1	26	10	21	15
Grade 2	21	19	17	12
Grade 3	22	28	20	8
Grade 4	19	44	7	2

a. Construct a marginal relative frequency distribution of the data.

b. The principal wants to choose one assembly that he can show to all of the students. Construct two stacked bar graphs of the marginal relative frequency distribution. Then tell which assembly he should choose for the students. Explain how you determined your answer.

c. The principal has come up with an idea to hold a hip hop assembly for Grades 1 through 4 and a puppet show for Kindergarten. Do you think this is a good idea? Explain your reasoning.

Stretch

1. A teacher at the Umber Elementary School decides to organize the data from the students differently. She decides to calculate percentages of the assembly types the students want within each grade, not out of the total.

a. Use the data from Umber Elementary School to show the percentages for each assembly type by grade.

	Wild Animals	Hip Hop Show	Magic Show	Puppet Show	Total
Kindergarten	$\frac{18}{64} \approx 28.1\%$				
Grade 1					
Grade 2					
Grade 3					
Grade 4					

b. Construct a stacked bar graph of the percentages for each grade. How does this graph compare to the stacked bar graph of the marginal relative frequency distribution that you constructed in the Practice to show the assembly choice by grade?
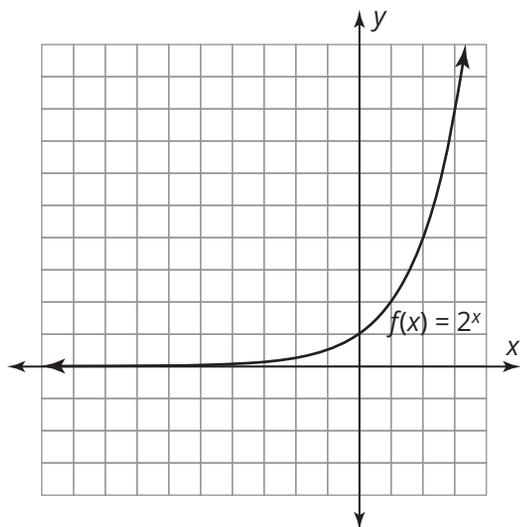
Review

1. A company conducts a study to find out how much time employees spend on their smart phones doing non-work related things doing work hours. The table displays the data collected from surveying 20 employees.

Create an appropriate data display. Use statistics appropriate to the shape of the data distribution to describe the measure of center and spread. Write a report to summarize your findings.

Employee	Time on Phone (minutes)	Employee	Time on Phone (minutes)
1	45	11	52
2	35	12	60
3	68	13	58
4	55	14	20
5	43	15	30
6	59	16	55
7	37	17	44
8	75	18	40
9	41	19	65
10	48	20	25

2. For each function $f(x)$, sketch a graph of the given transformation, $g(x)$, and describe the transformation from the graph of $f(x)$ to $g(x)$.

a. $g(x) = \frac{1}{3} \cdot f(x) - 1$

$f(x) = 2^x$

b. $g(x) = 2 \cdot f(x) + 4$

$f(x) = \left(\frac{3}{4}\right)^x$