SET® AND STATISTICS

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The use of statistics pervades the world in which we live. It is used arguably to defend positions in basic and applied scientific research, and ultimately affects all aspects of our lives. It therefore is important to understand the rationale and meaning of these "numbers" that affect our lives.

An easy way for students to begin to grasp the value of numbers involves collection of data while playing the game SET: The Family Game of Visual Perception. SET lends itself to this task because patterns which are removed from the board during play can be neatly categorized according to characteristics listed in Table 1 below.

Table 1: CATEGORIES OF *SETs*

ONE DIFFERENCE:			
a) different:	shape	same:	shade, color, number
b)	shade		shape, color, number
c)	color		shape, shade, number
d)	number		shape, shade, color
TWO DIFFERENCES:			
a) different:	shape, shade	same:	color, number
b)	shape, color		shade, number
c)	shape, number		shade, color
d)	shade, color		shape, number
e)	shade, number		shape, color
f)	color, number		shape, shade
THREE DIFFERENCES:			
a) different:	shape, shade, color	same:	number
b)	shape, shade, number		color
c)	shape, color, number		shade
e)	shade, color, number		shape
FOUR DIFFERENCES:			
a) different:	shape, shade, color, number		

Problems which can be addressed by collecting data after the conclusion of a game include the following:

1)

(a) Sort each *SET* removed during play into its appropriate category by either number of differences or type of differences (according to the table above). Tally the totals in each category. Then calculate the percentages (or fractions) in each category.

(b) After several games have been played add the totals in each category and calculate percentages again. Compare the values in this larger population to any individual game. The students may easily see the differences in "small population" vs. "large population" statistics.

2)

(a) Using two decks of identically arranged SET cards (after random shuffle of one deck) have one team play one deck of cards while another team plays the second deck. Stack each *SET* until the end of the game, and then sort each *SET* into the appropriate category. Compare responses from each team. Are there any differences? Since the boards started identically and cards were replaced in identical order, any differences would begin to demonstrate the effect of previous decision-making on subsequent possibilities.

(b) Randomly shuffle the deck. Lay out a board of the first 15 cards. Find all *SETs* within that board. Once the students believe they have located all the *SETs*, have them align all the cards using one attribute for sorting. For example, sort all the cards with three in one column, two in another, and one in another. Systematically check the cards to locate all *SETs*. Did the students miss any *SETs*, and if so, what category did they belong?