Fun Number Jeopardy
(a.k.a. Math4010 Midterm 1 Review)

<u>Sets/Venn Diagrams</u>

10 points-- List all subsets of {m, a, t, h}.

Let T = the set of trumpet players, S = the set of sophomores, and E = the set of kids who excel in mathematics.

20 points—Shade in $(T \cup E) - S$ and describe that set in words.

30 points-- Shade in $(T \cup S) \cap E$ and describe that set in words.

40 points-- Fill in the Venn Diagram with the following information:
In a group of ▧ kids, 10 have a cat but not a dog. Six children have no animals at all. Three own a cat and a dog. Four kids own only a bird. Two kids have all three pets. Six children have a bird, but not a dog, and five have a dog and a bird. Twelve children have a dog.

50 points—For the above Venn Diagram, how many kids are in each of these sets?

(a) $(D \cap C) \cup B$

(b) $(D \cup C) - (D \cap B)$

(c) $\overline{B} \cup \overline{C}$

(d) $(B \cap C) - D$

<u>Number Systems</u>

10 points—Write 34 with the Tally System.

20 points—How many symbols/numerals are needed for a base 15 number system?

30 points—Write 31419 with the Roman Numeral System.

40 points—Write 513 using the Mayan Number System.

50 points—Convert 281 to base 5.

60 points—Convert 3167 to base 8.

70 points—Convert 111 to base 2.
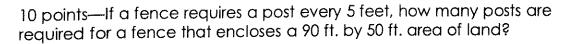
80 points—Convert 10211102_3 to base 10.

90 points—Convert 43501_6 to base 10.

Problem Solving

10 points—If a fence requires a post every 5 feet, how many posts are required for a fence that encloses a 90 ft. by 50 ft. area of land?

20 points—In three years, Mary will be three times my present age. I will then be half as old as she. How old am I now?

30 points—A letter was posted that was covered with 10-cent and 5-cent stamps. There were 12 stamps altogether, and the total postage was 70 cents. How many of each stamp were on the letter?

40 points—A certain type of tubing comes in lengths of 6-ft., 8-ft, and 10-ft. sections. How many different lengths can be formed using 4 sections of tubing?

50 points—Two friends are shopping together when they encounter a special "3 for 2" shoe sale. If they purchase two pairs of shoes at the regular price, a third pair (of lower or equal value) will be free. Neither friend wants three pairs of shoes, but Pat would like to buy a $56 and a $39 pair of shoes while Chris is interested in a $45 pair. If they buy the shoes together to take advantage of the sale, what is the fairest share for each to pay?

60 points—There are six baseball teams in a tournament. The teams are lettered A through F. Each team plays each of the other teams twice. How many games are played altogether?

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