



## / Appetizers /

**Problem 1.** The value of  $1 + 2 + 4 + 8 + 16 + 32 + 64$  is

- (A.) -69 (B.)  21 (C.) 26 (D.) 79 (E.) 127

**Problem 2.** The expression  $(\overline{0100} + \overline{0009}) - (\overline{0100} - \overline{0009})$  is equal to

- (A.)  91 (B.) 19 (C.) 9991 (D.) 9919 (E.) 10991

**Problem 3.** If 64 is divided into three parts proportional to 2, 4, and 6, the smallest part is

- (A.)  $5\frac{1}{3}$  (B.) 11 (C.)   $10\frac{2}{3}$  (D.) 5 (E.) none of these answers

## } Entrées }

**Problem 9.** Mathematical Mayhem occurs each year in March. In 40 consecutive months, what is the largest number of Mathematical Mayhem contests that could be held?

- (A.) 1 (B.) 2 (C.) 3 (D.)  4 (E.) 5

**Problem 10.** If  $m$  men can do a job in  $d$  days, then  $m + r$  men can do the job in

- (A.)  $d + r$  days (B.)  $d - r$  days (C.)  $\frac{d}{m+r}$  days (D.)   $\frac{md}{m+r}$  days (E.)  $\frac{m}{m+r}$  days

**Problem 11.** In the base 10 addition shown below, the letters  $X$ ,  $Y$ , and  $Z$  each represent a different non-zero digit (i.e. they are each an integer between 1 and 9). The digit  $X$  is

- (A.) 1 (B.) 2 (C.) 7 (D.)  8 (E.) 9

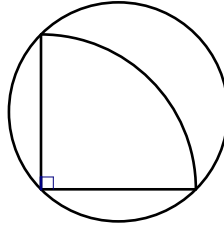
$$\begin{array}{r} X \ X \ X \\ Y \ Y \ Y \\ + \ Z \ Z \ Z \\ \hline Z \ Y \ Y \ X \end{array}$$

**Problem 12.** The side, front, and bottom faces of a rectangular box have surface areas 12 square inches,

~ Desserts ~

**Problem 16.** How many real numbers satisfy the equation  $(x^2 + 2x)^{(x^2 - 3x + 2)} = 1$ ?  
 (A.) none (B.) 2 (C.) 4 (D.)  5 (E.) infinitely many

**Problem 17.** Your hungry brother puts 1/4th of a pizza, with radius 7 inches, on a circular plate. The plate is exactly large enough to hold this oversized "piece" of pizza, as shown in the figure below. What fraction of the plate is covered by the "piece" of pizza?  
 (A.) 1/4 (B.) 1/3 (C.)  1/2 (D.) 2/3 (E.)  2/3



**Problem 18.** Consider the pattern / ~} / ~~} / ~~~} :::. Assuming that the pattern continues, how many /'s will appear in the first 2014 symbols?  
 (A.) 61 (B.) 62 (C.) 63 (D.)  64 (E.) 65