

Combo Session 5 & 6: Competition Problems & Games



“Sometimes I find mathematical problems difficult, but my old obstinacy remains, for if I do not succeed today, I attack them again on the morrow.”

Mary Fairfax Somerville (1780-1872)

1. A date is called a *weird* if the number of its month and the number of its day have greatest common factor 1. What are the fewest number of *weird* days in a month?

- A. 9 B. 10 C. 11 D. 14 E. 15

2. If $AM/AT = .YC$ where each letter represents a different digit, AM/AT is in simplest terms, and $A \neq 0$, then $AT =$

A. 15

B. 16

C. 25

D. 28

E. 75

3. In the convex pentagon $AMTYC$, $\overline{CY} \perp \overline{YT}$, $\overline{MT} \perp \overline{YT}$, $YT = CY = 63$, $MT = 79$, $AM = 39$, and $AC = 52$. Find the area in square units of the pentagon.

- A. 5487 B. 5500 C. 5525 D. 5600 E. 5624

4. A palindrome is a word or a number (like RADAR or 1221) which reads the same forwards and backwards. If dates are written in the format MMDDYY, how many dates in the 21st century are palindromes?

- A. 1 B. 12 C. 24 D. 36 E. 144

5. If each letter in the equation $\sqrt{AMATYC} = MYM$ represents a different decimal digit, find T 's value.

A. 3

B. 4

C. 5

D. 6

E. 7