UW-Platteville Mathematics Meet – 2009
Level II — Individual Event

Each correct answer is worth 10 points.

_______1: Solve for $x$: $(x + 1)(x + 5) = 21$.

_______2: Find the smallest integer $X$ so that $168$ times $X$ is a perfect square.

_______3: If $0 \leq \theta \leq 90^\circ$ and $\cos \theta = \frac{4}{7}$, compute $\cos(90^\circ - \theta)$.

_______4: If $\log_a x = 2$ and $\log_b x = 6$ what is $\log_a b$?

_______5: Solve for $x$: $\frac{1}{x} + \frac{1}{x + 3} = \frac{1}{2}$.

_______6: Three cylindrical oil drums with a diameter of 2 feet are securely fastened with a steel band. What length band will be required?

_______7: In a set of dominoes each domino contains two numbers. Each number is paired exactly once with every number from 0 through 6, including itself. How many dominoes are in the set?

_______8: If the points $A(0, 0)$, $B(x, y)$ and $C(12, 6)$ form right angle $\angle ABC$ then point $B$ always lies on a circle. Find the center and radius of the circle.

_______9: There are six red and four green socks in a drawer. If you reach in and pick two socks at random, what is the probability that they are the same color?

_______10: A parabola has vertex $(3, 14)$ and $y$-intercept $(0, -4)$, find the coordinates of the $x$-intercepts.