

Problem of the Month

January and February, 2010

Please turn all solutions into Dr. Dunn's office, JB 322. You may slide your solutions under his door as well. Most elegant solution wins a \$10 gift certificate to the bookstore! Solutions will be accepted anytime during the month of January or February, 2010. Good luck!

A common algebra mistake is that $(a + b)^2 = a^2 + b^2$, although it is true for some choices of a and b . In some other instances, similar algebraic errors could yield true results for certain numbers. For instance, if $m = 2$ and $n = 3$, the statement

$$(m + n)^2 = (m + 1)^2 + (n + 1)^2$$

is true. For this month's prize, compute all integers a and b so that $(a + b)^2 = a^2 + b^2$, and compute all integers m and n so that $(m + n)^2 = (m + 1)^2 + (n + 1)^2$.