

Cal Poly Department of Mathematics

Puzzle of the Week

Oct 11 - Oct 17 24, 2012

From Kyle Griffin:

Alex announces to mathematicians Paula and Sam that he will secretly pick two distinct integers x and y with $2 \leq x < y \leq 100$. Alex then privately tells Paula the value xy and also privately tells Sam the value $x + y$ (Paula and Sam each know Alex has told the other this information). Afterwards Paula and Sam have the following conversation:

Paula: I wish I knew the two numbers, but I don't.

Sam: Well, I knew that you didn't know the two numbers.

Paula: Aha! Now I know both numbers!

Sam: Yes, now I do too!

What are x and y ?

Solutions should be submitted to Morgan Sherman:

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before next Tuesday. Those with correct and complete solutions will have their names listed on the puzzle's web site (see below) as well as in next week's email announcement. Anybody is welcome to make a submission.

<http://www.calpoly.edu/~sherman1/puzzleoftheweek>

Solution: The numbers are 4 and 13.

This problem has a lot of history to it as was pointed out by several people (thanks to Rob Easton who pointed out some links for me). Apparently the famous Martin Gardner called it the "impossible problem". Instead of trying to write up my own detailed solution I thought I'd just link to the wikipedia page:

http://en.wikipedia.org/wiki/Impossible_Puzzle