

Re: Problem Solver

Source:

<http://www.tech-archive.net/Archive/Excel/microsoft.public.excel.worksheet.functions/2008-08/msg01405.html>

- *From:* Belinda7237 <Belinda7237@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx>
 - *Date:* Mon, 11 Aug 2008 09:57:02 -0700
-

thanks, i appreciate your thoroughness in explanation – how are you determining the amount of interger solutions – i think i am using solver inappropriately which is impairing my ability to solve these on my own?

"Dana DeLouis" wrote:

Hi. If you haven't gotten any responses yet, here is my guess.
I believe you have too many possible combinations that are valid.
To "narrow it down" I tried to see if there were any possible integer solutions.
If we start with the time for the M array, suppose we start with a time s.
One possible array for this first row is

$$v = \{s, c1 + s, c1 + c2 + s\};$$

Where we start with s, and c1 is a time increase for the next column.
The last column is larger than the middle column by adding c2.
We also increase each row by a certain amount k1, k2, and k3.

$$m = \{ \\ v, \\ k1 + v, \\ k1 + k2 + v, \\ k1 + k2 + k3 + v \}$$

The times for RD is twice that of m.

$$rd = 2*m$$

And the times for nd are 4 times that of m

$$nd = 4*m$$

If we do the math, the equation is reduce to:
 $394*c1 + 197*c2 + 444*k1 + 333*k2 + 193*k3 + 783*s = 6980$

I show there are about 166 integer solutions to this Diophantine equation.
However, many of them have 0 as a start s, so these are infeasible.

Re: Problem Solver

I show that there are 29 solutions that are reasonable.

If I pick one of the solutions, say...

{s -> 2, c1 -> 4, c2 -> 4, k1 -> 3, k2 -> 4, k3 -> 2}

Then the times for your M array are:

{2, 6, 10},
{5, 9, 13},
{9, 13, 17},
{11, 15, 19}}

The times for your RD array are:

{4, 12, 20},
{10, 18, 26},
{18, 26, 34},
{22, 30, 38}}

And the ND times are:

{8, 24, 40},
{20, 36, 52},
{36, 52, 68},
{44, 60, 76}}

Again, there are many solutions.

This is just one way limit the search by asking for an integer solution.

--

Dana DeLouis

"Belinda7237" <Belinda7237@xxxxxxxxxxxxxxxxxxxxxxxxxxxx> wrote in message
news:49737F5E-C02E-4F0A-AA2E-E5ED0C62416F@xxxxxxxxxxxxxxxxxxxx

I posted a week or so ago and have been successful based on the response I got. I have a new but similar question that i am trying to solve for with another layer of complexity:

I Know that it took 6980 hrs to produce the volume below.

ND take twice as long as R and R takes twice as long as M to do. (4T, 2T, T)

I also know that:

based on Coll Complex 1 takes less time then 2 and 2 takes less time then 3 and 3 takes less time then 4.

I also know that:

ND1 1 takes less time then ND 2 which takes less time then 3 same with R items and M items

based on the volume of each type, how long does each type take? can solver do this?

ND – 1 ND – 2 ND – 3
Coll Complex 1 18 9 9
Coll Complex 2 9 5 5
Coll Complex 3 9 5 5
Coll Complex 4 15 7 7

RD 1 RD 2 RD 3
Coll Complex 1 30 15 15
Coll Complex 2 5 3 3
Coll Complex 3 10 5 5
Coll Complex 4 12 6 6

M 1 M 2 M 3
Coll Complex 1 37 19 19
Coll Complex 2 7 3 3
Coll Complex 3 12 6 6
Coll Complex 4 15 7 7