

Being Naturally Mathematical at Easter time: Upper Primary Solutions

These solutions show how mathematical problem solving can be enhanced using spreadsheets. The spreadsheet **2018 Upper Solutions.xls** gives the full solutions; this document discusses how the spreadsheets were put together.

Question 1

We have two sets of information that tell us how many steps each person took to go the same distance and how many steps Jai took compared with Claire and Tim.

Let's see what happens if we put this information into a table. The table that shows how many steps Claire and Tim take for 8 of Jai's steps will look like:

Jai	Claire	Tim
8	7	6
16	14	12
24	21	18
32	28	24
40	35	30
48	42	36
56	49	42
64	56	48
72	63	54
80	70	60

This shows that when Jai has taken 8 steps, Claire has taken 7 and Tim has taken 6. The second row of the table shows that when Jai has taken 16 steps, Claire has taken 14 and Tim has taken 12.

Now for the second part, in which we are told that to cover the same distance, Jai will take 28 steps, Claire will take 24 steps and Tim will take 21 steps.

Jai	Claire	Tim
28	24	21
56	48	42
84	72	63
112	96	84
140	120	105
168	144	126
196	168	147
224	192	168
252	216	189
280	240	210

There are two rows of these tables that enable us to answer the question. From the first table, when Jai has taken 56 steps, Claire will have taken 49 steps and from the second table, we see that Claire only need to take 48 steps to cover the same distance as Jai does with 56 steps. This means that Claire

will be 1 step ahead of Jai. Comparing Jai with Tim, we see that when Jai has taken 56 steps, Tim will have taken 42 steps, which is the number he needs to cover the same distance as Jai.

Result: Claire is just the winner and Jai and Tim tie for second place.