

SOA Puzzle 49 - Solution

14 Person Relay

At the 14 Person Relay, the recently formed Lochdoon OC team members, legs courses and times were:

Leg 1	- Green	Doris	W40	39:30
Leg 2	- Yellow	Alan	M12	21:05
	- Light Green	George	M35	38:37
	- Blue	Duncan	M18	36:38
Leg 3	- Yellow	Carrie	W16	22:16
	- Light Green	Mary	W50	43:52
	- Blue	Jock	M21	33:41
Leg 4	- Yellow	Fred	M16	16:34
	- Light Green	James	M18	23:38
	- Blue	Ivan	M40	35:47
Leg 5	- Light Green	Donald	M35	22:07
	- Light Green	Tam	M50	28:04
	- Light Green	Fiona	W21	28:16
Leg 6	- Green	Catriona	W18	38:40

The team's total time was 206:24 minutes and the 'dead time' - the difference between the first and last fifth leg finisher - was 24:30.

Can you work out:

- Which runner's times on legs 2, 3, 4 and 5 counted towards the team total?

Answer 1

At the real event, the runners whose times counted in the team total time of 206:24 are shown in the third column below. The other combinations are in columns one and two. What this shows is that Doris handed over to Duncan, Alan and George. George handed over to Mary, who handed over to James, who handed over to Donald. Donald, being the last Leg 5 runner back, handed over to Catriona.

G = Green, Y = Yellow, LG = Light Green, B = Blue

Leg 1	.	.	.	.	.	.	.	.	.	G Doris	39:30
Leg 2	B	Duncan	36:38	Y	Alan	21:05	LG	George	38:37		
Leg 3	Y	Carrie	22:16	B	Jock	33:41	LG	Mary	43:52		
Leg 4	Y	Fred	16:34	B	Ivan	35:47	LG	James	23:38		
Leg 5	LG	Fiona	28:16	LG	Tam	28:04	LG	Donald	22:07		
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			103:44 (a)			118:37 (b)					128:14 (c)
Leg 6	G Catriona	38:40

'Dead time'										= (c) - (a) = 24:30	
										Team total	206:24

2. With the benefit of hindsight and given the same runner, leg and course combinations and the benefit of hindsight, what sequence of 2nd, 3rd, 4th and 5th leg runners would have given the shortest possible team time and the minimum dead time?

Answer 2

The answer to the question, what combination of Leg 2, 3, 4 and 5 runners would have given the best possible team time and minimum 'dead time', is shown below.

Leg 2	B	Duncan	36:38	Y	Alan	21:05	LG	George	38:37
Leg 3	Y	Carrie	22:16	B	Mary	43:52	LG	Jock	33:41
Leg 4	B	Ivan	35:47	B	James	23:38	LG	Fred	16:34
Leg 5	LG	Donald	22:07	LG	Fiona	28:16	LG	Tam	28:04
			-----			-----			-----
			116:48			116:51			116:56
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That would produce a finish time of 39:30 + 116:56 + 38:40 = 195:06 and a 'dead time' of only 8 seconds.

Rules: For those too young (or too old?) to remember the rules for the Scottish 14 Person Relay, introduced in 1991 by Derek Allison, were as follows.

- Leg 1 was a single runner on a mass start Green course.
- The Leg 1 runner handed over to three Leg 2 runners, one on Yellow, one on Light Green and one on Blue.
- The Leg 2 runners each handed over to one Leg 3 runner, who could be on Yellow, Light Green or Blue. Similarly, each Leg 3 runner handed over to one Leg 4 runner, who could be on Yellow, Light Green or Blue. (Legs 2, 3 and 4 runners had to complete 3 Yellow, 3 Light Green and 3 Blue courses between them.)
- The Leg 4 runners handed over to Leg 5 runners, all of whom were on Light Green.
- The last of the three Leg 5 runners handed over to a single Leg 6 Green course runner.

Thanks to Dave McQuillen from SOLWAY for this fantastic puzzle.