Question 3 - Part A

Population	Speed Limit	Particle Intertia	Personal Best	Global-Best	Ticks	Best-Value
30	2	0.6	1.7	1.7	inf	0.9862
30	2	0.6	1.7	1.494	inf	0.8431
30	2	0.6	1.494	1.7	inf	0.8973
30	2	0.6	1.494	1.494	58	1
30	2	0.729	1.7	1.7	inf	0.9828
30	2	0.729	1.7	1.494	inf	0.9201
30	2	0.729	1.494	1.7	inf	0.8381
30	2	0.729	1.494	1.494	inf	0.9418
30	6	0.6	1.7	1.7	inf	0.9032
30	6	0.6	1.7	1.494	inf	0.9916
30	6	0.6	1.494	1.7	41	1
30	6	0.6	1.494	1.494	inf	0.9063
30	6	0.729	1.7	1.7	inf	0.8687
30	6	0.729	1.7	1.494	inf	0.9942
30	6	0.729	1.494	1.7	10	1
30	6	0.729	1.494	1.494	inf	0.9706
80	2	0.6	1.7	1.7	2	1
80	2	0.6	1.7	1.494	12	1
80	2	0.6	1.494	1.7	inf	0.9811
80	2	0.6	1.494	1.494	inf	0.8673
80	2	0.729	1.7	1.7	20	1
80	2	0.729	1.7	1.494	inf	0.9923
80	2	0.729	1.494	1.7	54	1
80	2	0.729	1.494	1.494	inf	0.9482
80	6	0.6	1.7	1.7	15	1
80	6	0.6	1.7	1.494	15	1
80	6	0.6	1.494	1.7	20	1
80	6	0.6	1.494	1.494	21	1
80	6	0.729	1.7	1.7	12	1
80	6	0.729	1.7	1.494	16	1
80	6	0.729	1.494	1.7	12	1
80	6	0.729	1.494	1.494	14	1

From these results, what can be seen is that as a higher a population is used, the possibility of finding the true best value of 1 had increased. This was mostly due to the fact that with a higher population, the possibility of a particle spanning next to the source increased, giving it a better chance of finding the result. Another trend found was that with higher velocity (speed limit) also increased the possibility of finding the best value.

In regards to personal-best and global-best, the best ratio found to be used is 1: X, where X is greater than 1. By having a larger global-best, the results showed that the swarms were able to avoid getting stuck in local minimas.