### *Fermat's Principle of Least Time applied to a drowning man*

I think the best way of resolving this is by elimination.

The easiest path to eliminate is A because you'd be spending the minimum time at your fastest (running) speed and the maximum time at your slowest (swimming) speed.

The next path, D, is the one that many people (including me) might choose in the heat of the moment, but it is not the quickest path. It would only be the right choice if you could run infinitely faster than you can swim.

This leaves B and C. Again B might be the instinctive choice because you'd be making straight for the person in distress.

In fact, though, C is the right choice and the reason requires some thought. You are concerned with choosing the quickest path which means that you have to optimise your path by choosing the best combination of running at 7 m/s and swimming at 2 m/s.  If you start adding distances, you can actually calculate the exact point at which George should enter the water

The snag is that, by the time George has applied Fermat's Principle of least Time to work out the quickest route, the poor victim will have drowned.

When light travels from air, say, into water or glass it bends to find the optimum (quickest) path each time. Impressive, no?

*I used to give this problem to my Physics students and a disappointing percentage chose the right path.*