a)
Ally is running a 10km race.
Their personal best is 48 minutes and 43 seconds.

As they pass the 8km marker, their watch says 39 minutes and 32 seconds.
At what speed, in metres per second, must they run the remainder of the race to set a new personal best?

For how many seconds has Ally been running?	$39 \times 60 = 2340$ $2340 + 32 = 2923$ 39m 32s = 2372 seconds
How many seconds would set a new personal best?	48m 42s $48 \times 60 = 2880$ $2880 + 42 = 2922$ 2922 seconds
How long does Ally have to complete the race?	$2922 - 2372 = 550$ 549 seconds to complete 2km to set a new PB
What average speed must Ally run at?	Speed = distance ÷ time $\frac{2000}{549} = 3.64$m/s (2 d.p)

b)
Bellamy is running a 13.1km race.
Their personal best is 1 hour, 14 minutes and 15 seconds.

As they pass the 9km marker, their watch says 52 minutes and 12 seconds.
At what speed, in metres per second, must they run the remainder of the race to set a new personal best?

For how many seconds has Bellamy been running?	$52 \times 60 = 3120$ $3120 + 12 = 3132$ 52m 12s = 3132 seconds
How many seconds would set a new personal best?	1h 14m 14s $74 \times 60 = 4440$ $4440 + 14 = 4454$ 4454 seconds
How long does Bellamy have to complete the race?	
What average speed must Bellamy run at?	

c)
Charlie is running a 5km race.
Their personal best is 21 minutes and 21 seconds.

As they pass the 2km marker, their watch says 8 minutes and 42 seconds.
At what speed, in metres per second, must they run the remainder of the race to set a new personal best?