

Graphing Usain Bolt's 2008 (then) WR 100m Sprint Data

Name: _____

Below is a table showing the split times for Usain Bolt's 100m run.

A	B	C	D	E
Distance (m)	Time (s)	Time for each 10m interval (s) (from Column B)	Average velocity in each 10m interval (m/s) (10m/Column C)	Mid-point Time (s) ie. average time between each interval (from Column B)
0	0	-	0	0
10	1.85	$1.85 - 0 = 1.85$	$10/1.85 = 5.41$	$(1.85+0)/2 = 0.925$
20	2.87	$2.87 - 1.85 = 1.02$	$10/1.02 =$	$(2.87+1.85)/2 =$
30	3.78			
40	4.65			
50	5.50			
60	6.32			
70	7.14			
80	7.96			
90	8.79			
100	9.69			

Q1. (a) Draw a graph of **Distance vs Time** (Column A vs Column B). Distance should be shown on the y-axis (the vertical axis).

(b) Draw a graph of **Velocity vs Time** (Column D vs Column E). Velocity should be shown on the y-axis (the vertical axis).

A note about Column E: the average velocity in each time interval was close enough to the actual velocity half way in time between the start of the interval and the end of the time interval. For example, we are assuming that Bolt's average speed of 5.41m/s in the first 10-metre interval was his actual (or "instantaneous") speed at the halfway point in time between the 0s mark and the 1.85s mark. This is only an approximation, but it is the best we can do with the available data.

- Q2. How far did Bolt run in 1 second?
- Q3. How far did Bolt run in 2 seconds?
- Q4. How far did Bolt run in 3 seconds?
- Q5. How far did Bolt run in the first second?
- Q6. How far did Bolt run in the second second?
- Q7. How far did Bolt run in the third second?

Note: Qs 2-4 are not necessarily the same as Qs 5-7

- Q5. How much time did it take for Bolt to run 8 metres?
- Q6. How much time did it take for Bolt to run 25 metres?
- Q7. What was Bolt's average speed over the whole race?
- Q8. What was Bolt's highest speed?
- Q9. Describe Usain Bolt's speed as he ran the 100 metres.