

Aim

To investigate and observe the difference between acceleration and velocity.

Method

- 1) Accurately measure a 100m distance.
- 2) Place markers at the start and at 10m intervals up to 100m.
- 3) A student with a stopwatch stands at each marker and records the time of the sprinter as he passes the marker.

Results

	Usain Bolt's Time	Usain Bolt's Splits	Usain Bolt's Velocity	Usain Bolt's Acceleration	Student's Speed	Student's Velocity	Student's Acceleration
10m	1.85	1.85					
20m	2.89	1.04					
30m	3.78	.89					
40m	4.64	.86					
50m	5.49	.85					
60m	6.31	.82					
70m	7.11	.8					
80m	7.92	.81					
90m	8.74	.82					
100m	9.58	.84					

Discussion

- 1 Record the time, velocity, and acceleration for each distance using the following formulas:
 a $Velocity = (distance\ covered)/(time)$
 b $Acceleration = (change\ in\ velocity)/(time)$
- 2 Draw a graph showing the velocity and acceleration over the 100m
- 3 At which point was velocity the lowest? Why?
- 4 At which point did the sprinter reach maximum velocity?
- 5 Can you explain why it may have occurred at this distance?
- 6 Where did the sprinter reach maximum acceleration?
- 7 Can you explain why it may have occurred at this distance?
- 8 Did the sprinter experience zero acceleration at any stage?

9 What does zero acceleration mean?

10 Did the sprinter experience negative acceleration at any stage?