

### Lab: 100m sprint – Speed and Acceleration

#### Purpose

The purpose of this lab is to create distance-time and speed-time graphs from collected data.

#### Materials

- Timers
- Track and field tape

#### Procedure

1. Measure out 100 meters.
2. Mark the following distances: 0, 10, 20, 30, 40, 50, 60, 70, 80, 90 and 100 m.
3. A student will be at each position with a stopwatch or timer.
4. One student, the runner, will wait at the start line. At the countdown, the runner will begin to run and all students will stop their stopwatches. As the runner passes each point, the timers should stop their stopwatches.
5. The time at each point will be recorded.
6. Create a table similar to the one below for results (10C)

#### Results

A	B			
Distance (m)	Time from Start (s)			Runner 4
	Runner 1	Runner 2	Runner 3	
0	0.00	0.00	0.00	0.00
10				
20				
30				
40				
50				
60				
70				
80				
90				
100				

**Discussion**

1. Calculate the linear velocities for each 10m interval. (10A)
2. Create a velocity time graph, showing the displacement on the x axis and time on the y axis for each runner. (10T)
3. Assuming a constant acceleration use the initial and final velocities and times to calculate the average acceleration for each 10m interval (10A)
4. What did you notice about the graph? (2C)
5. Describe how a coach could use this information for future coaching sessions. (4T)