Speedy Acceleration Lab

Objective: Students will collect data and use it to calculate speeds and acceleration
Question: Which student is the fastest?
Materials: Stopwatches and phones with timers
Hypothesis: I think that _____ will be the fastest because_____

_____

_____

Procedure: In groups of 6: One student at a time will be a "runner" and the other 5 will be timers.

1. Timers will station themselves at each of the meter marks (20, 40, 60, 80, 100)
2. Runners begin running and timers start their watches on the teacher's signal
3. Timers should stop their watch when the runner passes by them.
4. After the runner crosses the 100 feet mark, the team should get together and exchange data
5. On separate graphs, graph distance vs time and speed vs time for each runner's different data sets.

Runner 1 _____

Sprint	20 feet	40 feet	60 feet	80 feet	100 feet
Time in seconds	s	s	s	s	s
Speed (distance/time)	ft/s	ft/s	ft/s	ft/s	ft/s

Race Walk	20 feet	40 feet	60 feet	80 feet	100 feet
Time in seconds	s	s	s	s	s
Speed (distance/time)	ft/s	ft/s	ft/s	ft/s	ft/s

Runner 2 _____

Sprint	20 feet	40 feet	60 feet	80 feet	100 feet
Time in seconds	s	s	s	s	s
Speed (distance/time)	ft/s	ft/s	ft/s	ft/s	ft/s

Race Walk	20 feet	40 feet	60 feet	80 feet	100 feet
Time in seconds	s	s	s	s	s
Speed (distance/time)	ft/s	ft/s	ft/s	ft/s	ft/s

$$\text{speed} = \frac{\text{distance}}{\text{time}}$$

SPEEDY LAB Part 2: Acceleration

With your data, calculate the acceleration for each distance and graph the data

Runner 1 Sprint

Time at 100 feet_____	Time at 0 feet_____	Difference (**Δ**) in time _____
Speed at 100 feet _____	Speed at 0 feet _____	Difference (**Δ**) in speed _____
Acceleration = _____ ÷ _____ = _____ ft/s^2 (**Δ**time) (**Δ**speed)		

Runner 1 Race Walk

Time at 100 feet_____	Time at 0 feet_____	Difference (**Δ**) in time _____
Speed at 100 feet _____	Speed at 0 feet _____	Difference (**Δ**) in speed _____
Acceleration = _____ ÷ _____ = _____ ft/s^2 (**Δ**time) (**Δ**speed)		

Runner 2 Sprint

Time at 100 feet_____	Time at 0 feet_____	Difference (**Δ**) in time _____
Speed at 100 feet _____	Speed at 0 feet _____	Difference (**Δ**) in speed _____
Acceleration = _____ ÷ _____ = _____ ft/s^2 (**Δ**time) (**Δ**speed)		

Runner Race Walk

Time at 100 feet_____	Time at 0 feet_____	Difference (**Δ**) in time _____
Speed at 100 feet _____	Speed at 0 feet _____	Difference (**Δ**) in speed _____
Acceleration = _____ ÷ _____ = _____ ft/s^2 (**Δ**time) (**Δ**speed)		

In the table below, list the runners and their movement style in order of decreasing acceleration (Highest acceleration is at the top of the table

Runner	Sprint or Race Walk	Acceleration