



KINEMATICS AND TRAIL RUNNING

Answer the following questions in a Word file.

Filename: CMITE_Kinematics_Gnumber

Use the equations editor or the Excel spreadsheet if it is necessary.

1. Search the data:
 - a. GPS track of your race
 - b. Race standings on the race website
2. Paste the plot of speed and altitude versus distance
 - a. Calculate the average speed of the race (km/h, min/km)
 - b. Calculate the average speeds between the control points (race standings)
 - c. Locate approximately the control points in the GPS track and calculate the average speed between them using only the GPS data. Compare these results with the previous ones
3. Choose two parts of the race where you speed up and slow down respectively.
 - a. Collect 20 data points (position, time, altitude, speed) for each part and type them in an Excel spreadsheet
 - b. Draw the plots position/time, speed/time and acceleration/time for each part
 - c. Make brief comments about the shape of the data in each plot (types of motion) and relate it with the race profile
 - d. Insert trend lines and their equations for all the plots. Work out the meaning of them in each plot. Information about trend lines:
<https://www.ncsu.edu/labwrite/res/gt/gt-reg-home.html>

If you need to revise the basics of Kinematics, click on the following link:

<http://www.schoolphysics.co.uk/age16-19/Mechanics/Kinematics/>