

Motion Graphs

Physics

Reading gradient and area, and converting between graph types.

What gradient and area mean on each graph.

Graph	Gradient	Area
Displacement-time	Velocity	No meaning
Velocity-time	Acceleration	Displacement
Acceleration-time	Jerk	Change in velocity
Force-extension	Stiffness k	Work done / elastic PE
Force-time	—	Impulse

A curved displacement-time graph means changing velocity. A straight line on velocity-time means constant acceleration.