

## WEEK 1: Motion in Physics

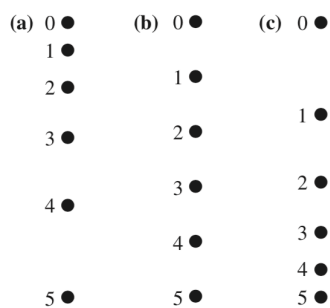
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COURSE: Physics 40A (Winter 2019), Prof. John Ellison  
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### 1 Kinematic Equations

Write down the five kinematic equations. Identify which two are the fundamental equations.

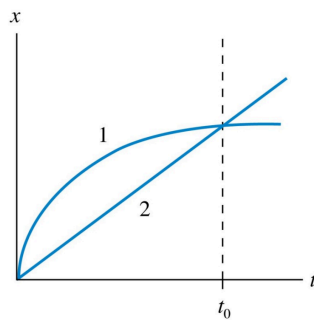
### 2 Motion Diagrams

Three motion diagrams are shown. Draw an acceleration vs time and a velocity vs time graph for each.



### 3 Velocity Diagram

Indicate on the graph where objects 1 and 2 have the same velocity.



### 4 Stopping at a Red Light

A motorist is traveling at 20 m/s. He is 60 m from a stoplight when he sees it turn yellow. His reaction time, before stepping on the brake, is 0.50 sec. What steady deceleration while braking will bring him to a stop at the red light?

### 5 Logarithmic Acceleration

A car accelerates logarithmically ( $\vec{a}(t) = \ln t \hat{x}$ ). Solve for position as a function of time  $x(t)$ .