

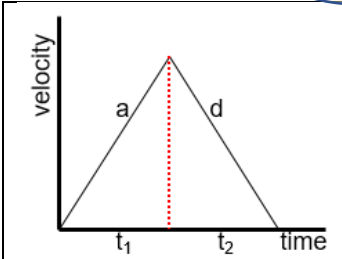
Topic 2: Uniform Acceleration

1) Equations of Motion:

$$v = u + at$$
$$s = \frac{(u + v)}{2} t$$
$$s = ut + \frac{1}{2} at^2$$
$$v^2 = u^2 + 2as$$

See Tables
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2) Types of Problems:

<p>a) Velocity-Time Graphs:</p> <div style="text-align: center; border: 1px solid black; border-radius: 50%; padding: 10px; margin: 10px auto; width: 80%;"><p>Area Under Graph = Total Distance Travelled</p></div> <div style="display: flex; justify-content: space-around;"><div style="text-align: center;"></div><div style="text-align: center;"><div style="border: 1px solid black; border-radius: 50%; padding: 10px; width: 60%;">$\frac{t_1}{t_2} = \frac{d}{a}$</div></div></div>	<p>b) 2 Bodies in Motion/Overtaking:</p> <p>Notes:</p> <ul style="list-style-type: none">➤ List what you know about each body➤ Relate time for each e.g. t (body in front) and t - 2 (body starting later)➤ Identify what is common between bodies e.g. velocities same at max distance, distance being the same etc. <div style="text-align: center; border: 1px solid black; border-radius: 50%; padding: 10px; margin: 10px auto; width: 80%;"><p>Distance travelled by both objects from some fixed point is the same</p></div> <div style="text-align: center; border: 1px solid black; border-radius: 50%; padding: 10px; margin: 10px auto; width: 80%;"><p>At greatest gap: $V_a = V_b$</p></div>
<p>c) Gravity/Vertical Motion:</p> <p>Notes:</p> <ul style="list-style-type: none">➤ Watch for displacement e.g. throwing something off a cliff 30m above the ground, then displacement is -30 <div style="text-align: center; border: 1px solid black; border-radius: 50%; padding: 10px; margin: 10px auto; width: 80%;"><p>Falling => Acc = +g</p><p>Thrown Upwards => Acc = -g</p></div>	<p>d) Passing successive points:</p> <p>Notes:</p> <ul style="list-style-type: none">➤ Always start from same point and use same initial velocity and uniform acceleration➤ If question is a to b, b to c, c to d<ul style="list-style-type: none">○ you take a to b first and form an equation in 'u' and 'a'○ then take a to c and form a second equation in 'u' and 'a' - solve both equations for 'u' and 'a'○ then take a to d and solve to find what you're looking for about c to d

3) General Tips for Exam Question:

- Do use the formulae only when there is constant uniform acceleration.
- Do draw a clear Velocity-Time Graph.
- Do define terms clearly at the beginning of your solution.
- Don't do the question first, just because it's the first question.
- Don't assume that the particle starts from rest, unless this is stated explicitly in the question.
- Don't jump into the question before giving it enough clear thought.