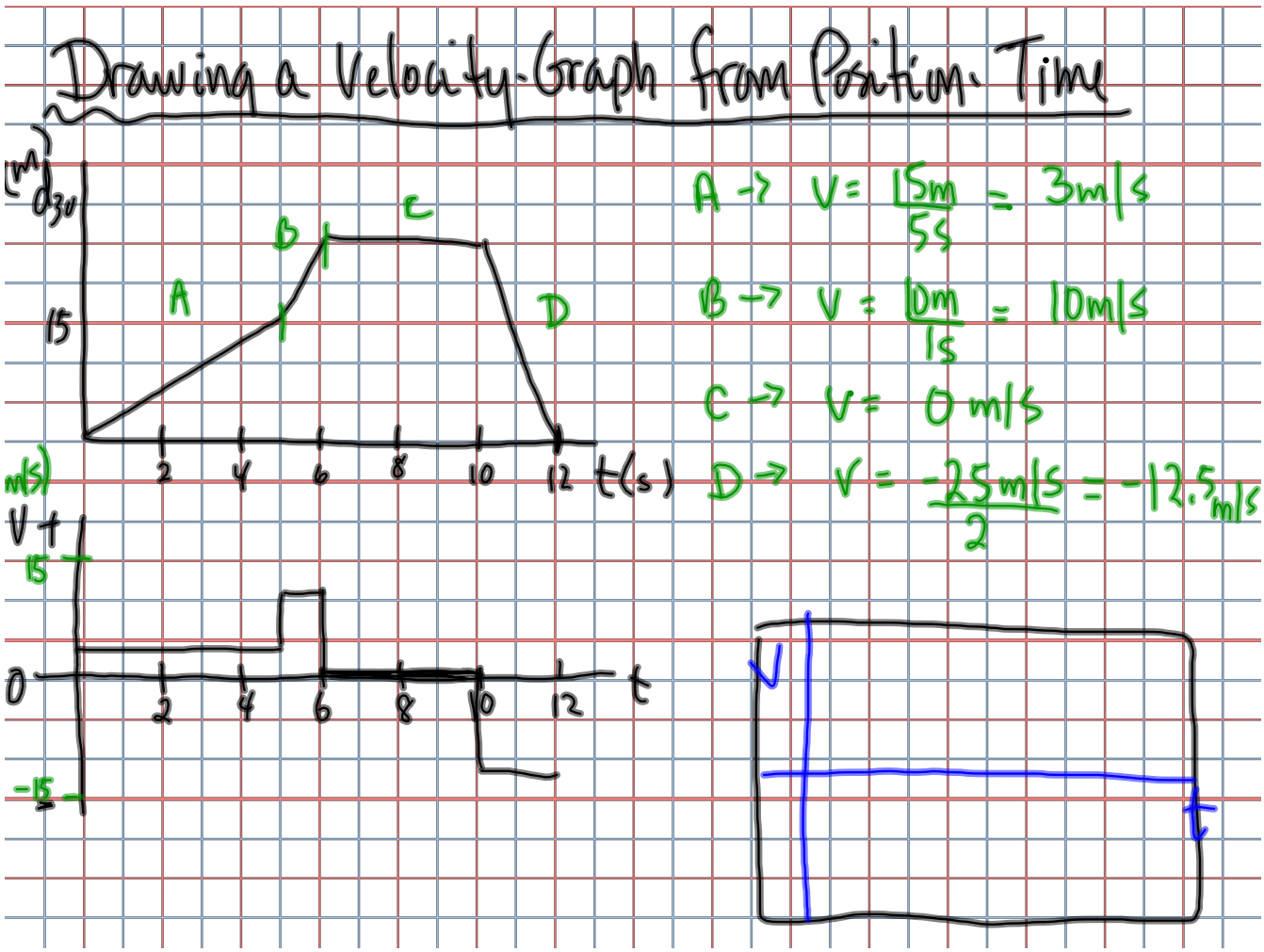
Drawing a Velocity-Graph from Position-Time



Solving Velocity Problems

Recall: $\vec{v} = \frac{\Delta \vec{d}}{\Delta t}$ (velocity) — displacement

$v = \frac{\Delta d}{\Delta t}$ (speed) — distance

GRASP

G - Given – what is given?

R - Required – what do you need to find?

A - Analysis – choose an equation + rearrange

S - Solution – substitute given info & solve

P - Paraphrase – write a sentence stating answer

Example

How far will a car travelling 25 m/s (v) travel in 35 min (Δt)?

Given

$v = 25\ m/s$

$\Delta t = 35\ min = 2100\ s$

Required

$\Delta d = ?$

Analysis

$\cdot \Delta t \quad v = \frac{\Delta d}{\Delta t} \quad \cdot \Delta t$

$v\Delta t = \Delta d$

$\Delta d = v\Delta t$

Solution

$\Delta d = v\Delta t$

$\Delta d = (25\ m/s)(2100\ s)$

$\Delta d = 52500\ m$

$\Delta d = 5.2 \times 10^4\ m$

Paraphrase

The car travelled $5.2 \times 10^4\ m$.

Rearranging for Δt:

$v = \frac{\Delta d}{\Delta t}$

$\frac{v\Delta t}{v} = \frac{\Delta d}{v}$

$\Delta t = \frac{\Delta d}{v}$

To Do

1. Velocity Time Graphs => INV3
2. INV 4 - Velocity Problem