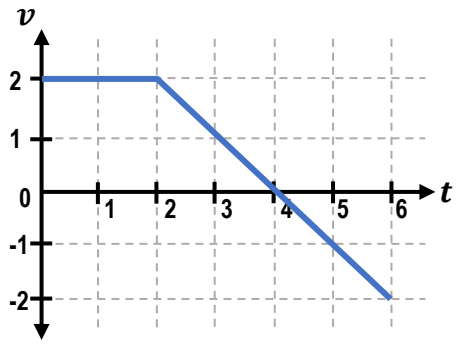
CONCEPT: CALCULATING CHANGES IN VELOCITY FROM ACCELERATION-TIME GRAPHS

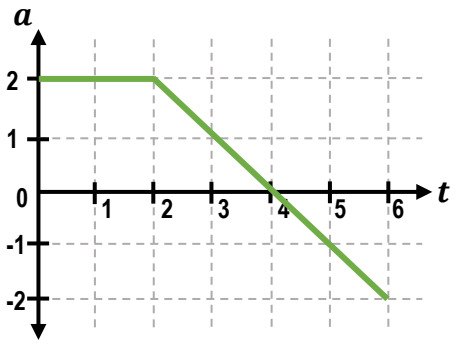
● Calculating velocity changes from acceleration-time graphs is *just* like calculating displacement from velocity-time graphs!

Velocity-Time Graphs



● Area under "curve" (graph) ⇒ **[Δx | Δv]**

Acceleration-Time Graphs

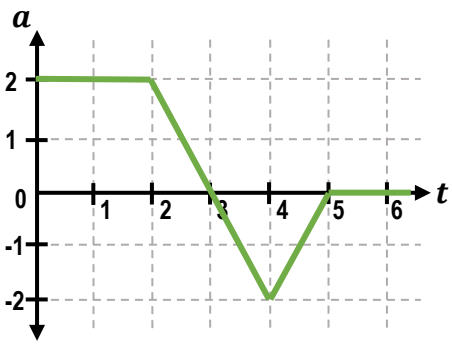


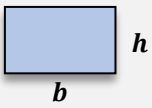
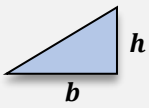
● Area under "curve" (graph) ⇒ **[Δx | Δv]**

EXAMPLE: The acceleration-time graph is shown for a box initially at rest.

a) What is the box's velocity at t=3.0s?

b) What is the box's velocity at t=5.0s?



Rectangle	Triangle
	
$A = b * h$	$A = \frac{1}{2} b * h$

● Areas *above* the **time** axis → **[POSITIVE | NEGATIVE]** Δv

● Areas *below* the **time** axis → **[POSITIVE | NEGATIVE]** Δv

EXAMPLE**:** The figure shows the acceleration graph for a sliding block with an initial velocity of v_0=3m/s at t=0s. What is the block's final velocity at t=5.0s?