

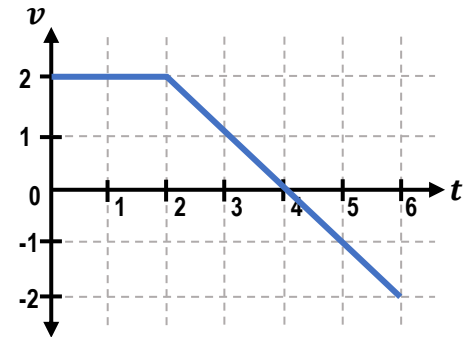
CONCEPT: CALCULATING DISPLACEMENT FROM VELOCITY-TIME GRAPHS

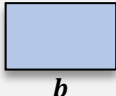
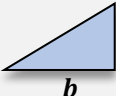
- In velocity-time graphs, the **displacement** (Δx) between two points is the _____ “under the curve” (graph)
 - “under the curve” = between the **graph** and **time** axis

EXAMPLE: The velocity-time graph for a moving object is shown.

a) Calculate the displacement for the first 4.0s

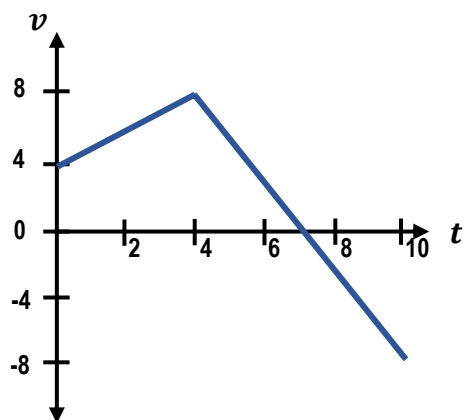
b) Calculate the displacement for the entire motion



<u>Rectangle</u>	<u>Triangle</u>
	
$A = b * h$	$A = \frac{1}{2} b * h$

- Areas above the **time** axis → **[POSITIVE | NEGATIVE]** displacement Δx
- Areas below the **time** axis → **[POSITIVE | NEGATIVE]** displacement Δx

PRACTICE: A moving box's motion is described by the velocity graph below. The box's initial position is $x_0 = 0$. **(a)** How far has the box moved from $t=0$ to $t=4.0\text{s}$? **(b)** How far does the box move from $t=4$ to $t=10\text{s}$?



EXAMPLE: The figure shows the velocity graph for a car having initial position $x_0 = -21\text{m}$ at $t = 0$. What is the car's final position at $t=5.0\text{s}$?

