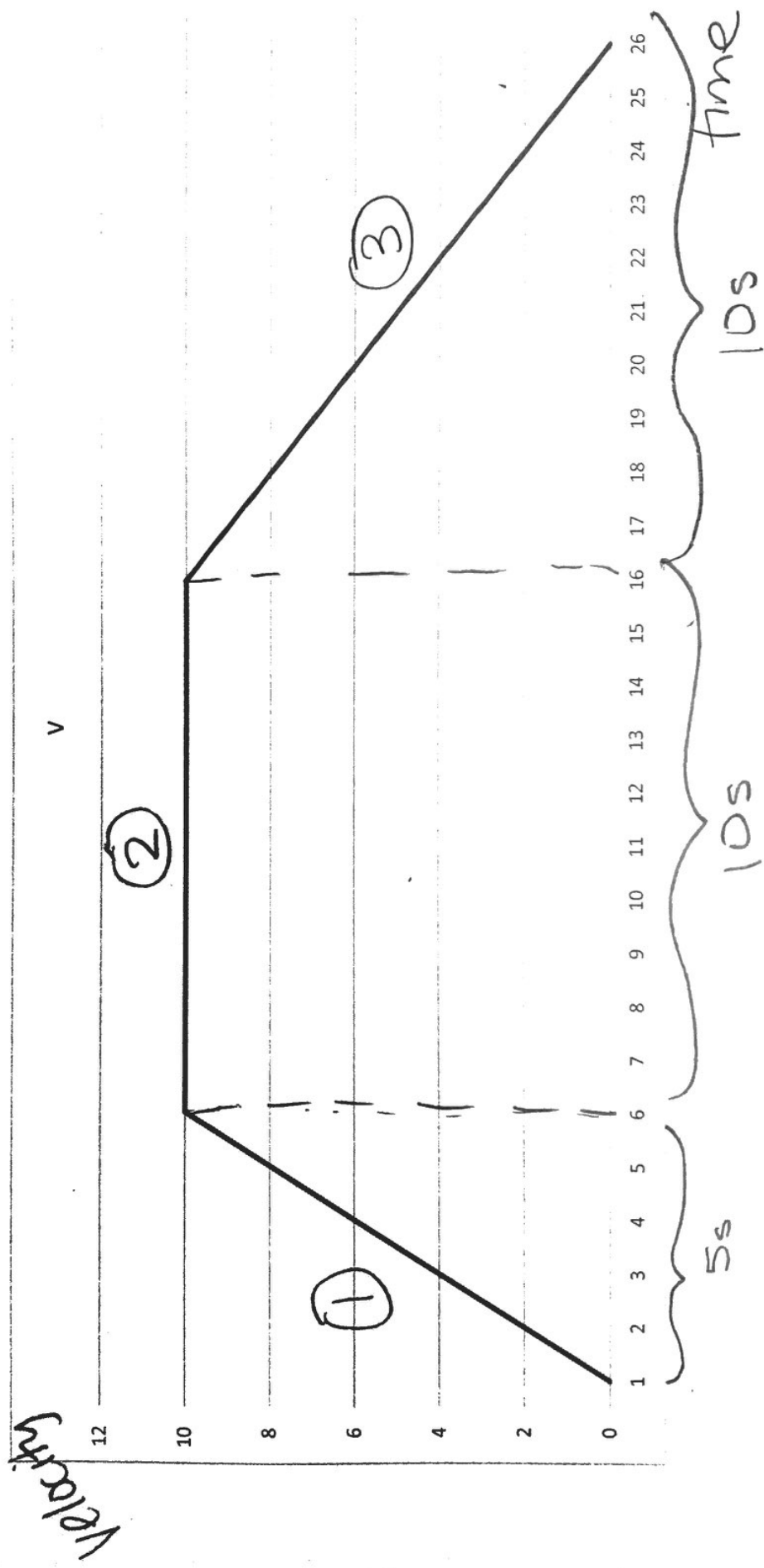


# Interpreting graphs and solving:



# Interpreting Graphs & solving:

Overall goal: to calculate the distance the object traveled.

$$\text{New formula: } X = V_0 t + \frac{1}{2} a t^2$$

To solve for  $X$ , I must first find  $a$  at each section of the graph.

**Step 1** Acceleration at ①:

$$a = \frac{\Delta v}{t} \quad a = \frac{10-0}{6-1} \quad a = 2 \text{ m/s}^2$$

Distance at ①:

$$X = V_0 t + \frac{1}{2} a t^2$$

$$X = 0(5\text{s}) + \frac{1}{2}(2 \text{ m/s}^2)(5\text{s})^2$$

$$X = 0 + (1)(5)^2$$

$$\boxed{X = 25\text{m}} \text{ at line ①}$$

**Step 2** Acceleration at ②:

$$a = \frac{\Delta v}{t} \quad a = \frac{10-10}{16-6} \quad a = 0 \text{ m/s}^2$$

Distance at ②:

$$X = V_0 t + \frac{1}{2} a t^2$$

$$X = (10 \text{ m/s})(10\text{s}) + \frac{1}{2}(0 \text{ m/s}^2)(10\text{s})^2$$

$$\frac{100}{+ 0}$$
$$\boxed{X = 100\text{m}} \text{ at line ②}$$

Step 3 Acceleration at line ③:

$$a = \frac{\Delta v}{t} \quad a = \frac{0 - 10}{26 - 16} \quad a = \frac{-10}{+10} = -1 \text{ m/s}^2$$

Distance at ③:

$$x = v_0 t + \frac{1}{2} a t^2$$

$$x = (10 \text{ m/s})(10 \text{ s}) + \frac{1}{2} (-1 \text{ m/s}^2)(10 \text{ s})^2$$

$$x = 50 \text{ m}$$

Total Distance traveled:

Line 1 : 25 m

Line 2 : 100 m

Line 3 : 50 m

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$$175 \text{ m}$$