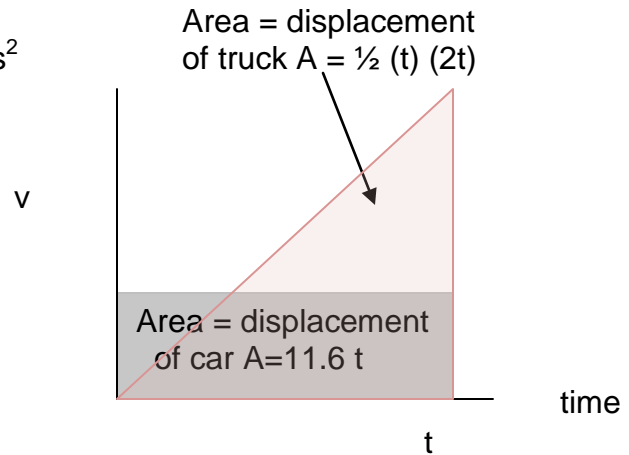
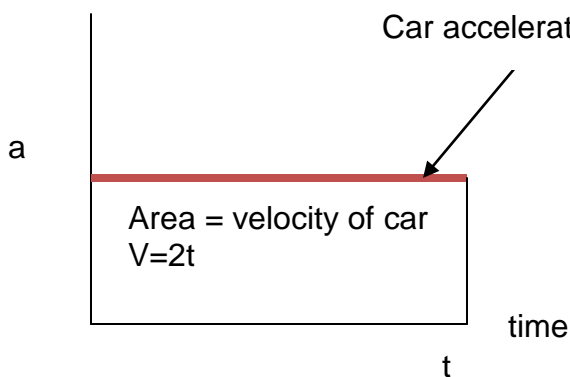
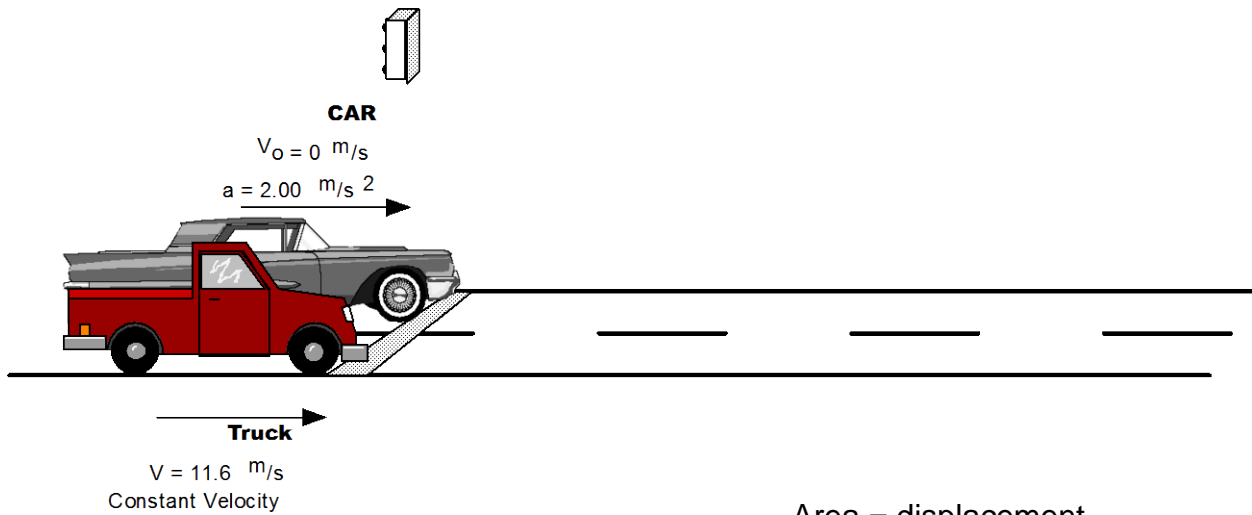


A car is at rest at a stop light. The moment the light turns green a truck rolls up the line with a CONSTANT velocity of 11.6 m/s. At the instant the truck is next to the car; the car begins to accelerate as shown.

- How much time does it take for the car to catch up to the truck?
- How much distance is covered when the from the start line to when the car catches up to the truck?
- What is the velocity of the car when it catches up to the truck?



a) Time

$$A_{Truck} = A_{car}$$

$$11.6t = \frac{1}{2}t(2t)$$

$$11.6t = t^2$$

$$11.6\text{sec} = t$$

b) Displacement

$$A_{Truck} = \text{displacement}$$

$$A = 11.6t$$

$$A = 11.6(11.6)$$

$$A = 134.6m$$

c) Velocity

$$V = 2t$$

$$V = 2(11.6)$$

$$v = 23.2m/s$$