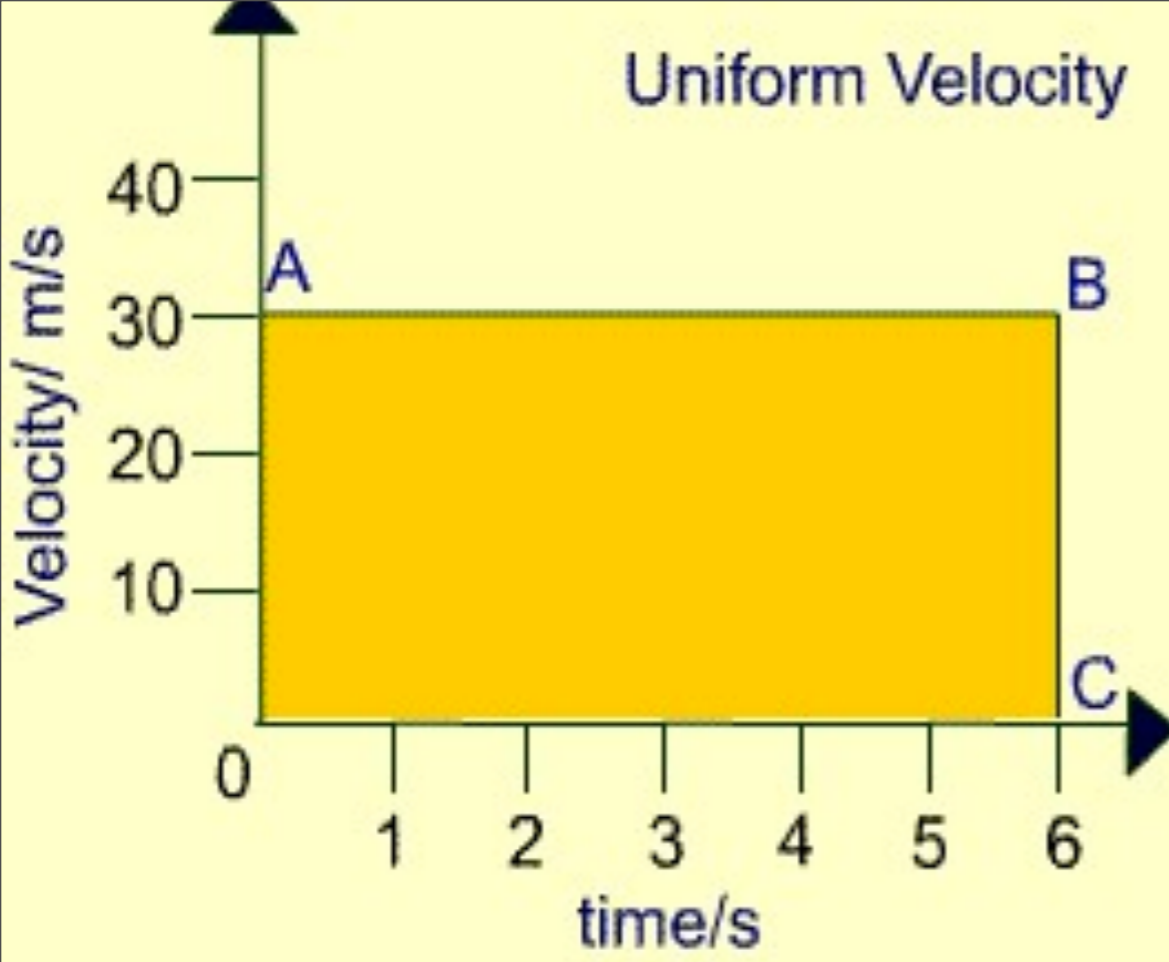
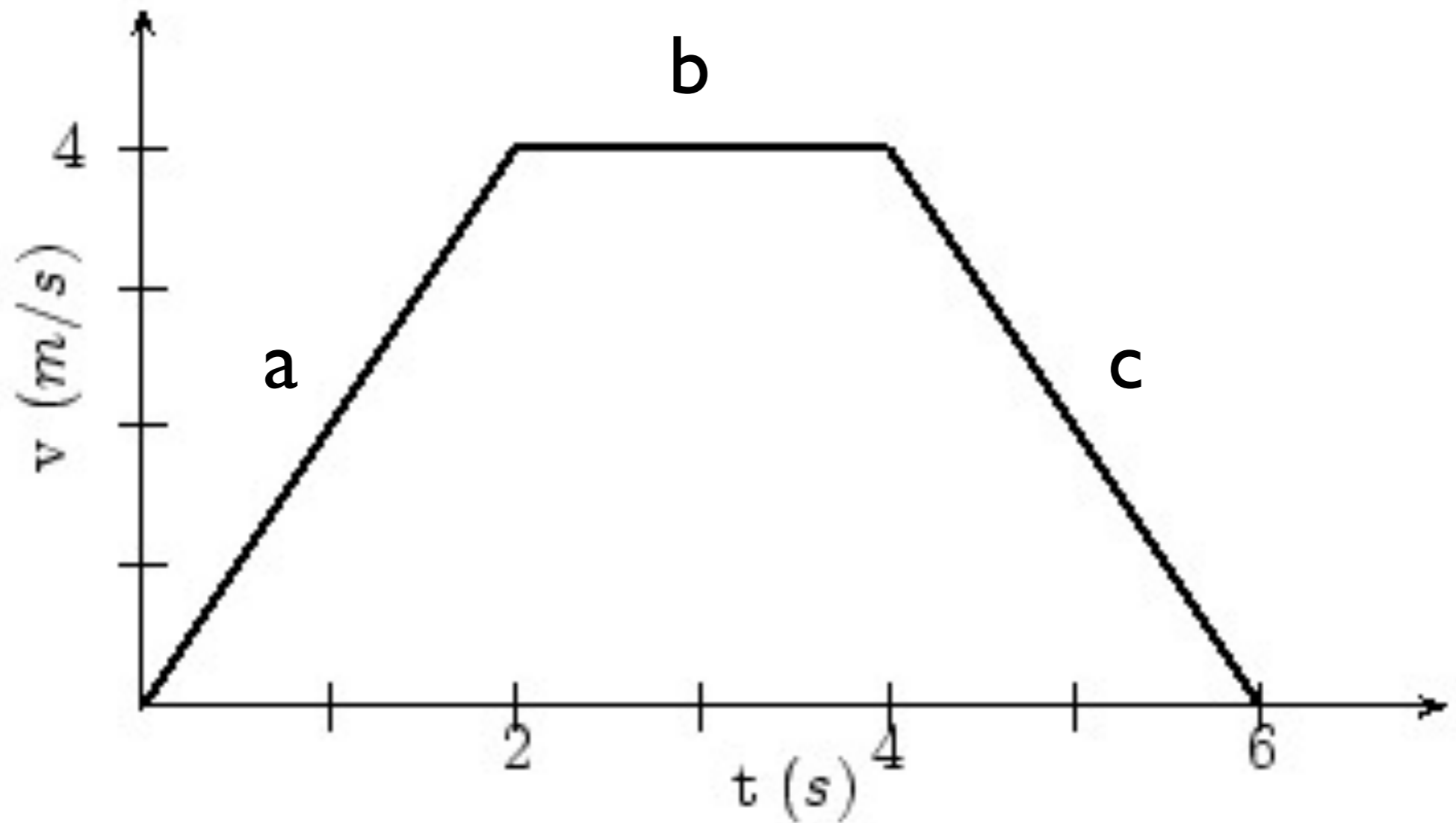
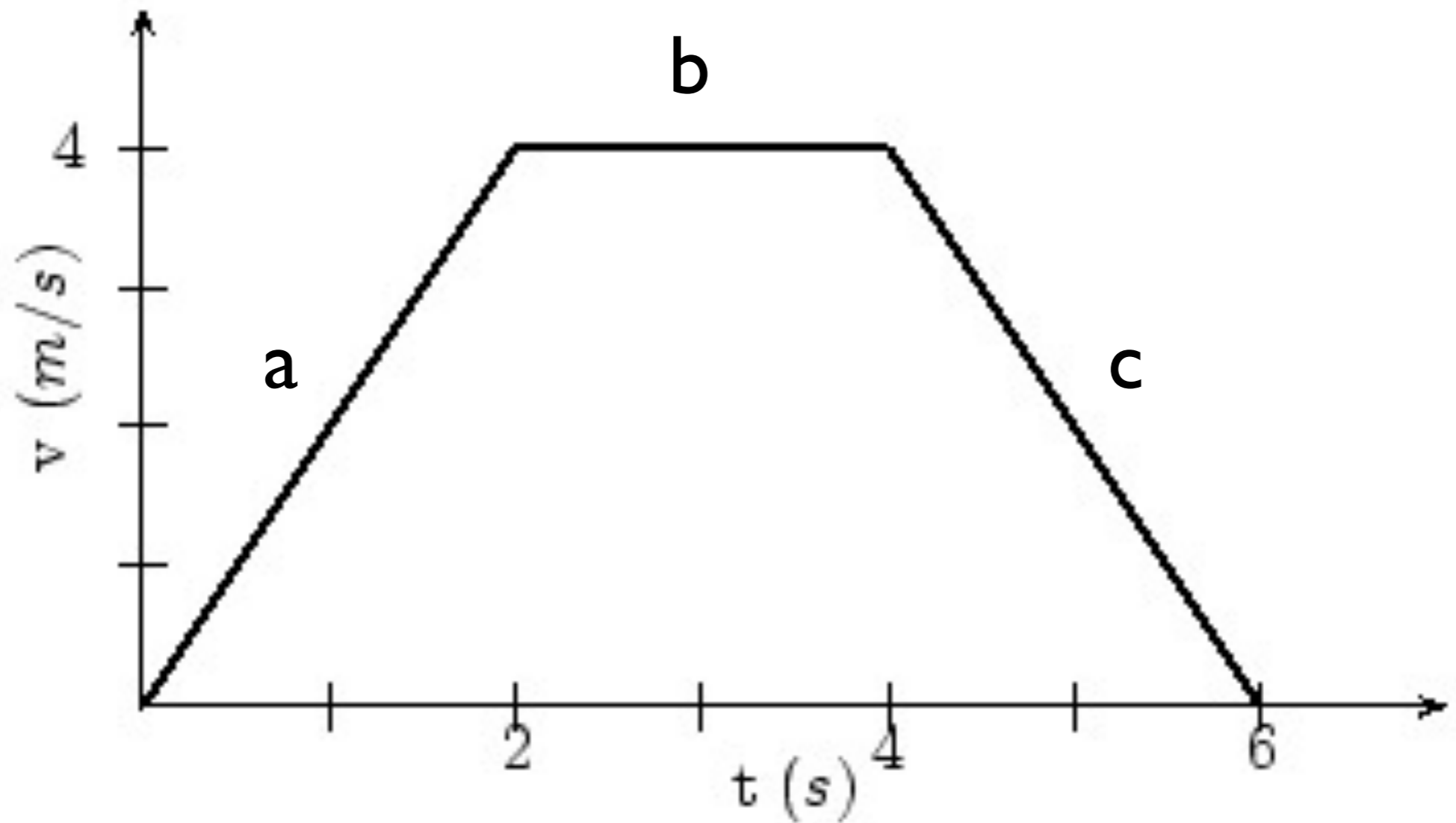


Do Now: Determine the Displacement of the object based on the V-t graph.





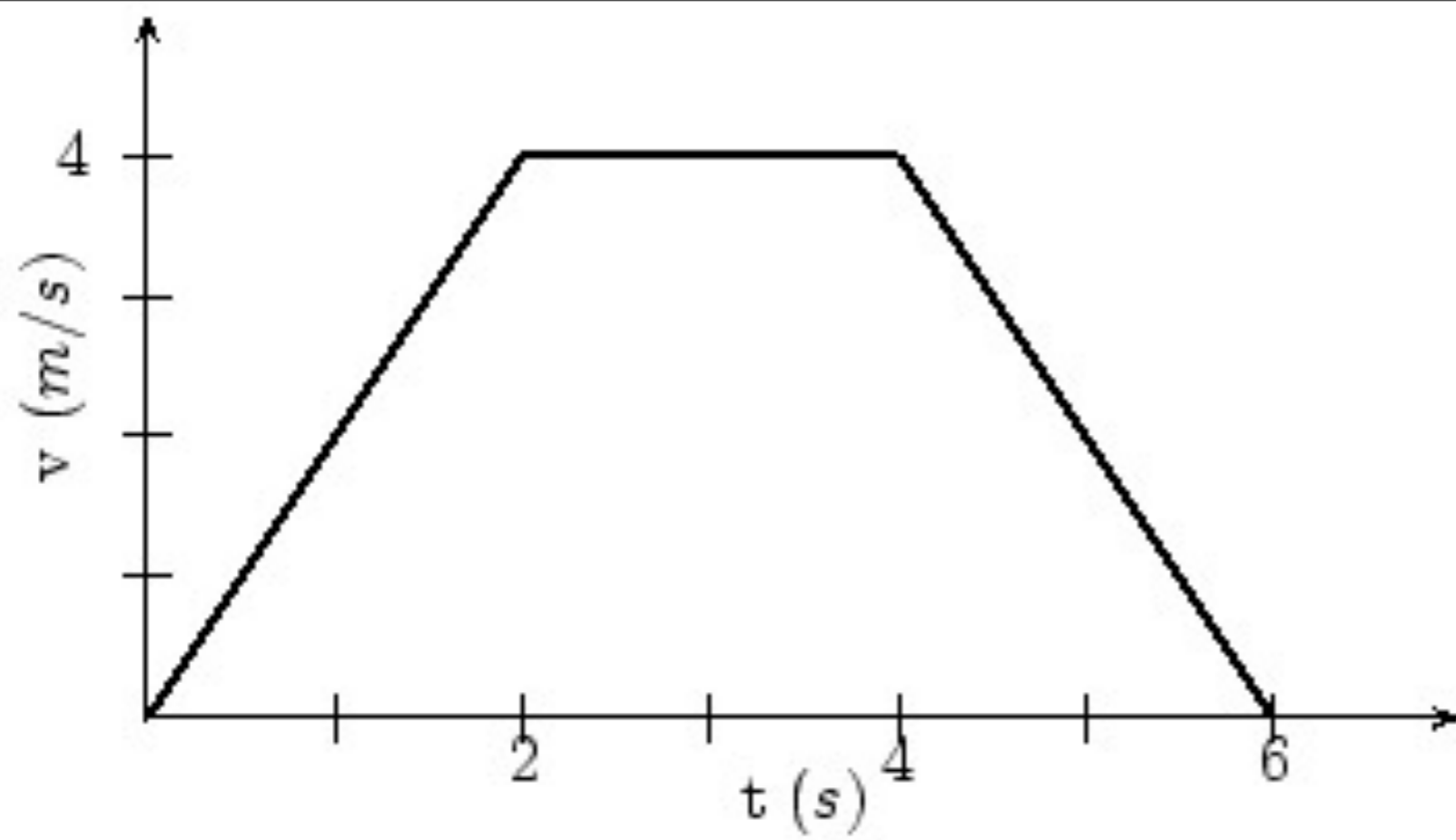
Create a chart with Δ displacement and Δ time for each leg of the journey.



Determine the slope for each leg. What does this represent?

Acceleration (vector)

- Change in velocity.
- Measured in m/s^2 .
- We will work with constant acceleration.
- Make a formula for the slope of the V-t graph.



Slope: $\Delta v / \Delta t$

Δt (sec) Δx (m) V (m/s) a (m/s²)

Materials

- Piece of graph paper. Fold it into quarters.
- Ruler
- Smart Phone

Wheel Down a Ramp

- Make a table with 6 columns.
- Label them t , Δt , x , Δx , v , and Δv .
- You will record t & x .



● t Δt x Δx v Δv

Position-Time Graph

Velocity-Time Graph

- Δ Velocity-time Graph

$$a = (V_f - V_i) / t$$

- Slope of V-t graph.
- $a = \Delta v / \Delta t$
- What is the value of V_f ?
- Use algebra to isolate V_f .

$$V_f = V_i + at$$

- This is the first of 3 main kinematics equations.
- Use algebra to isolate the unknown variable.
- Plug in numbers and cancel out units.

A plane needs to go 150m/s in order to take off. If the plane starts from rest ($V_i=0$) and accelerates at 4.9m/s^2 , how long does it take for the plane to get to take off speed?

A drag racer starts from rest and accelerates uniformly at 15m/s^2 . The race takes 9 seconds. How fast is she going when she crosses the finish line?

Evil Kinevil rides is doing a wheelie. The front wheel starts to come down and so he accelerates at 3.2m/s^2 to hold the wheelie. After 5 seconds he finishes the stunt at 40m/s . How fast was he going when he started the wheelie?

A truck is going 30m/s . It slams on the breaks and comes to a stop over 2.5 seconds. What is the acceleration of the truck?

