

Velocity Graphs

IB PHYSICS | SCIENCE SKILLS

What is...

Speed

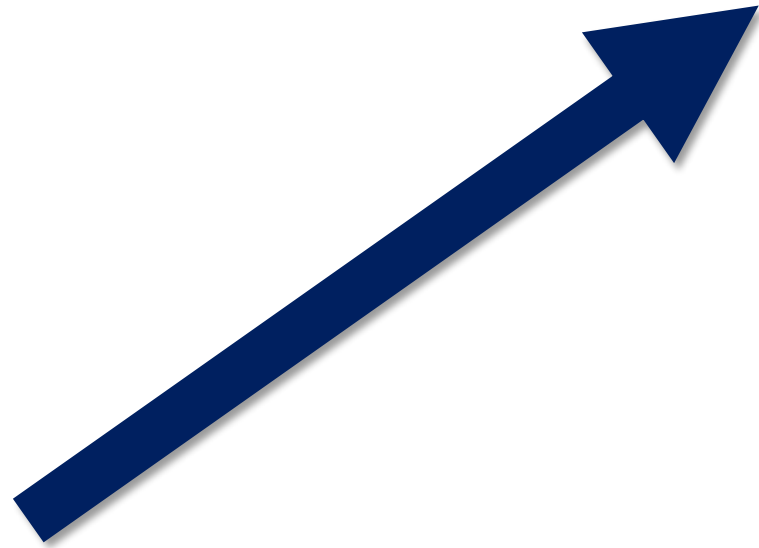
The rate of change of position
"how fast"

Velocity

Speed with direction

What is a Vector?

A Vector is a quantity that includes both **direction** and **magnitude**



Vector vs Scalar

Vector Quantities

Displacement

Velocity

Can be negative to indicate direction

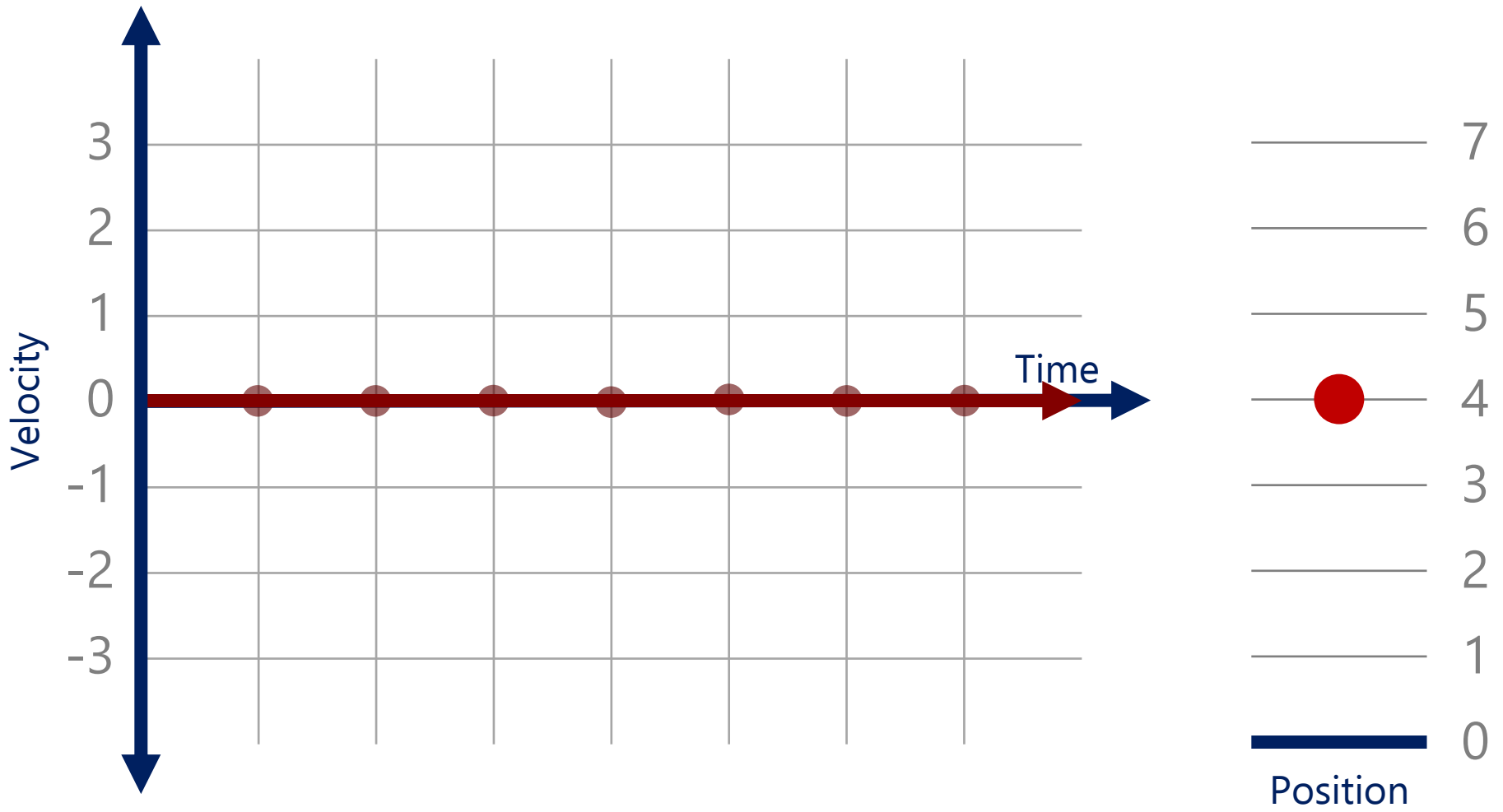
Scalar Quantities

Distance

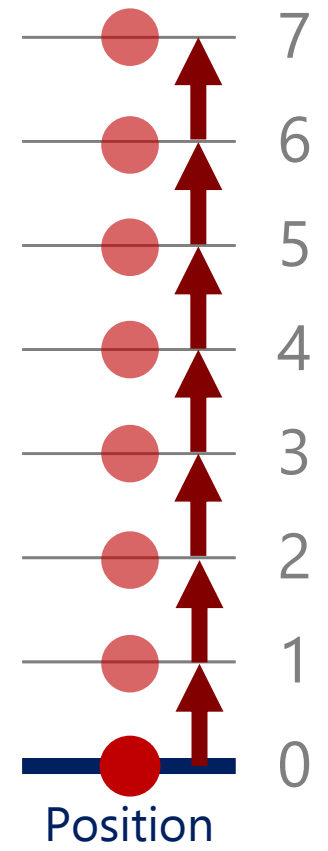
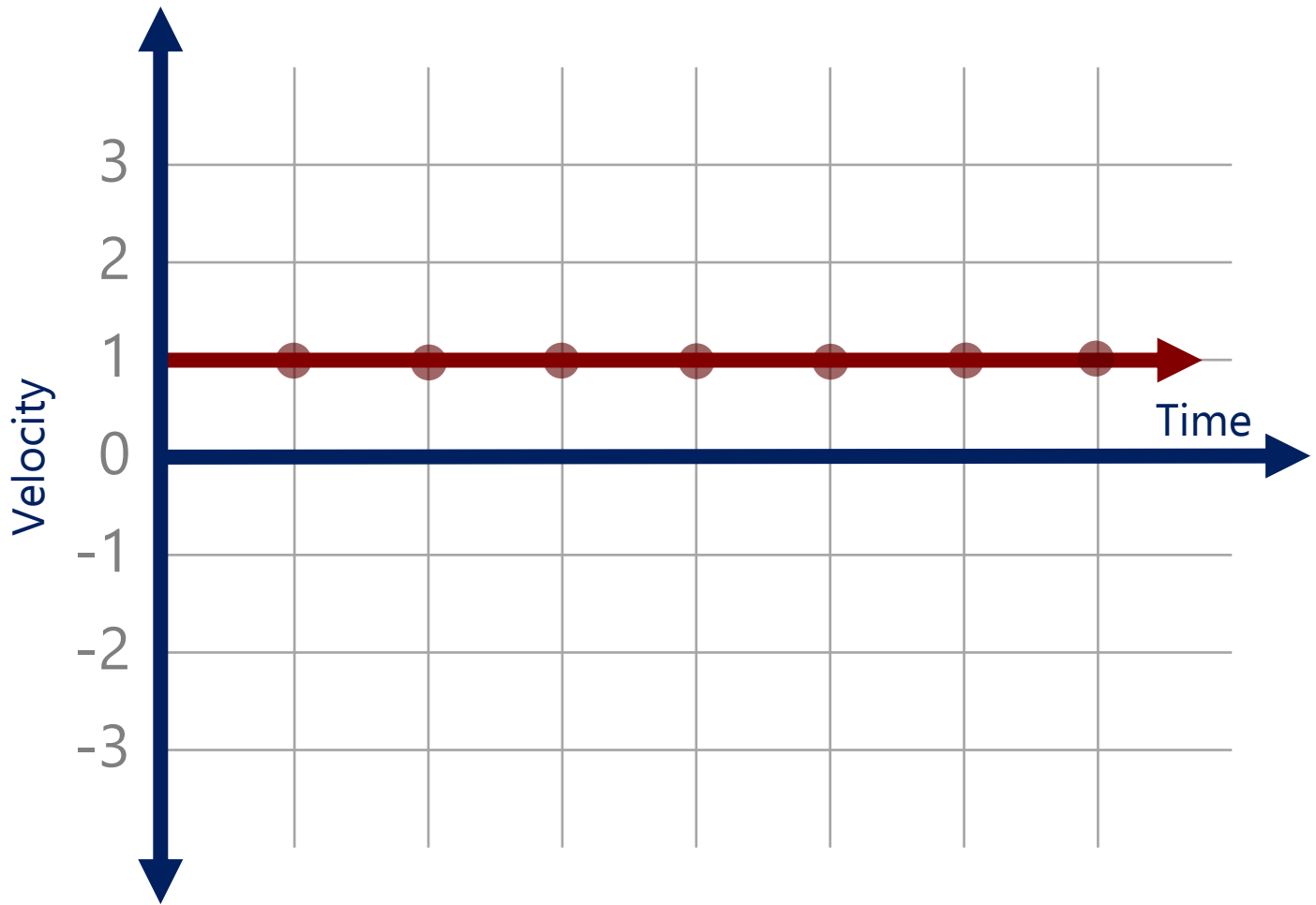
Speed

Only Positive

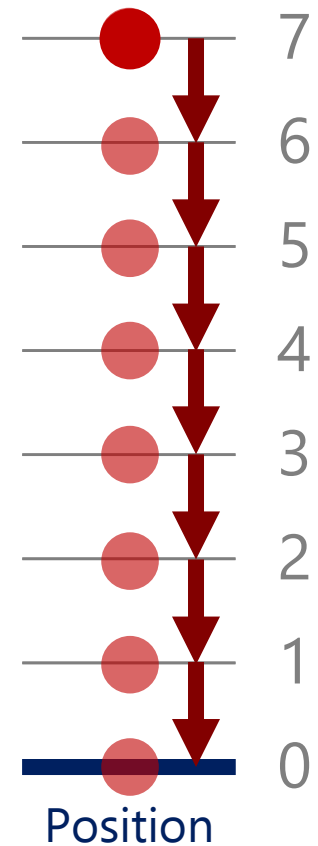
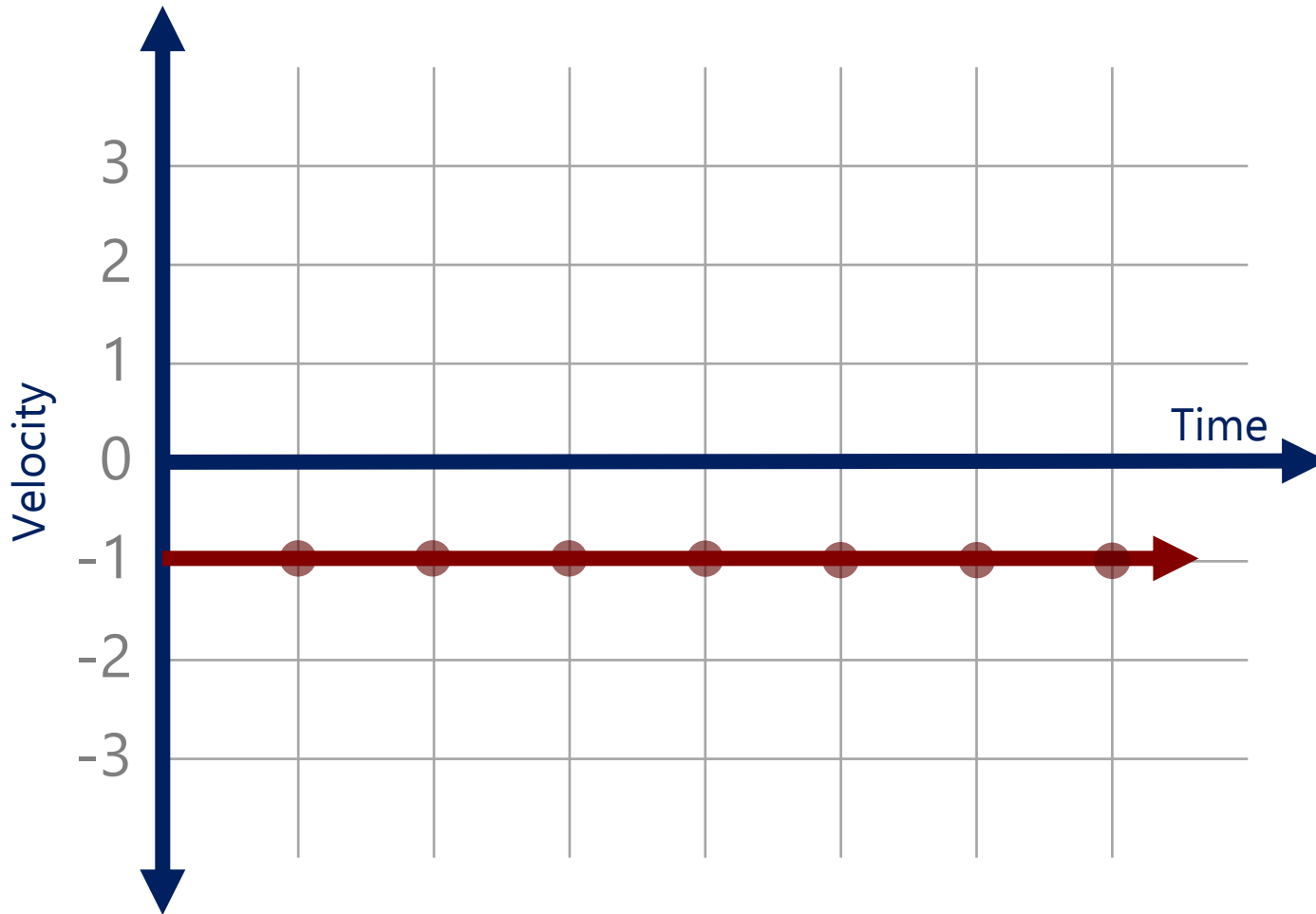
An object not moving



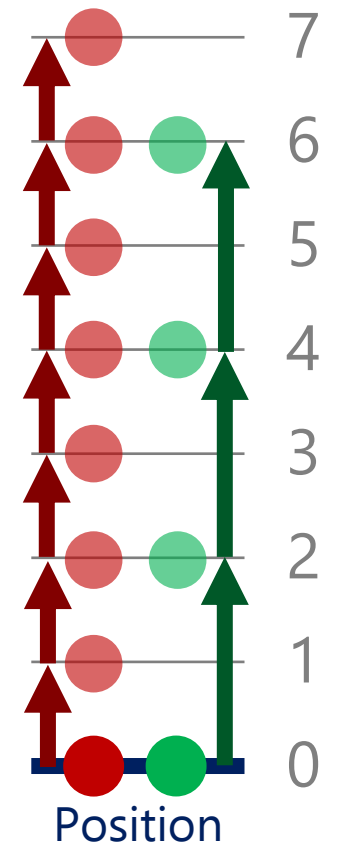
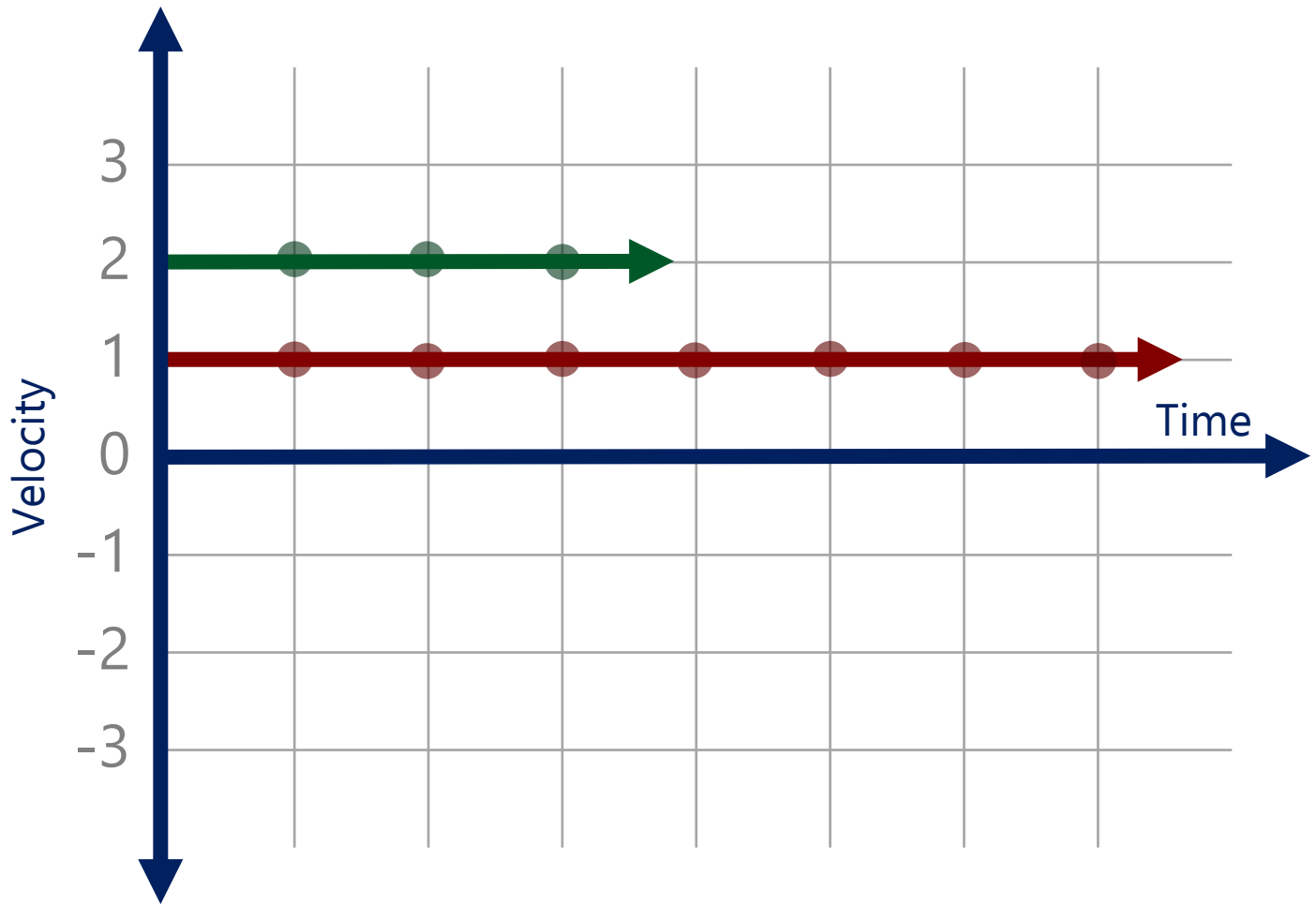
An object moving forward



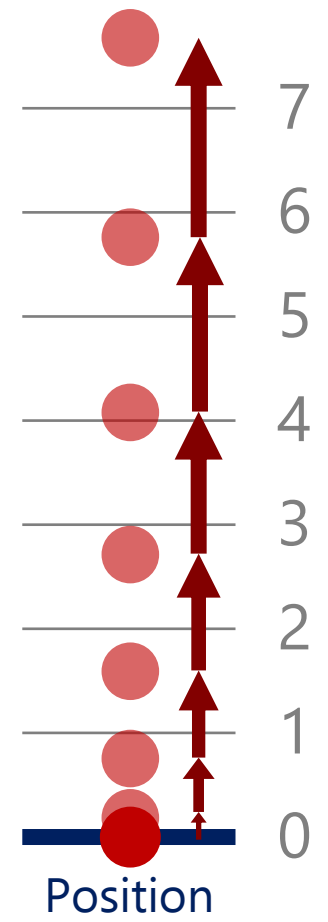
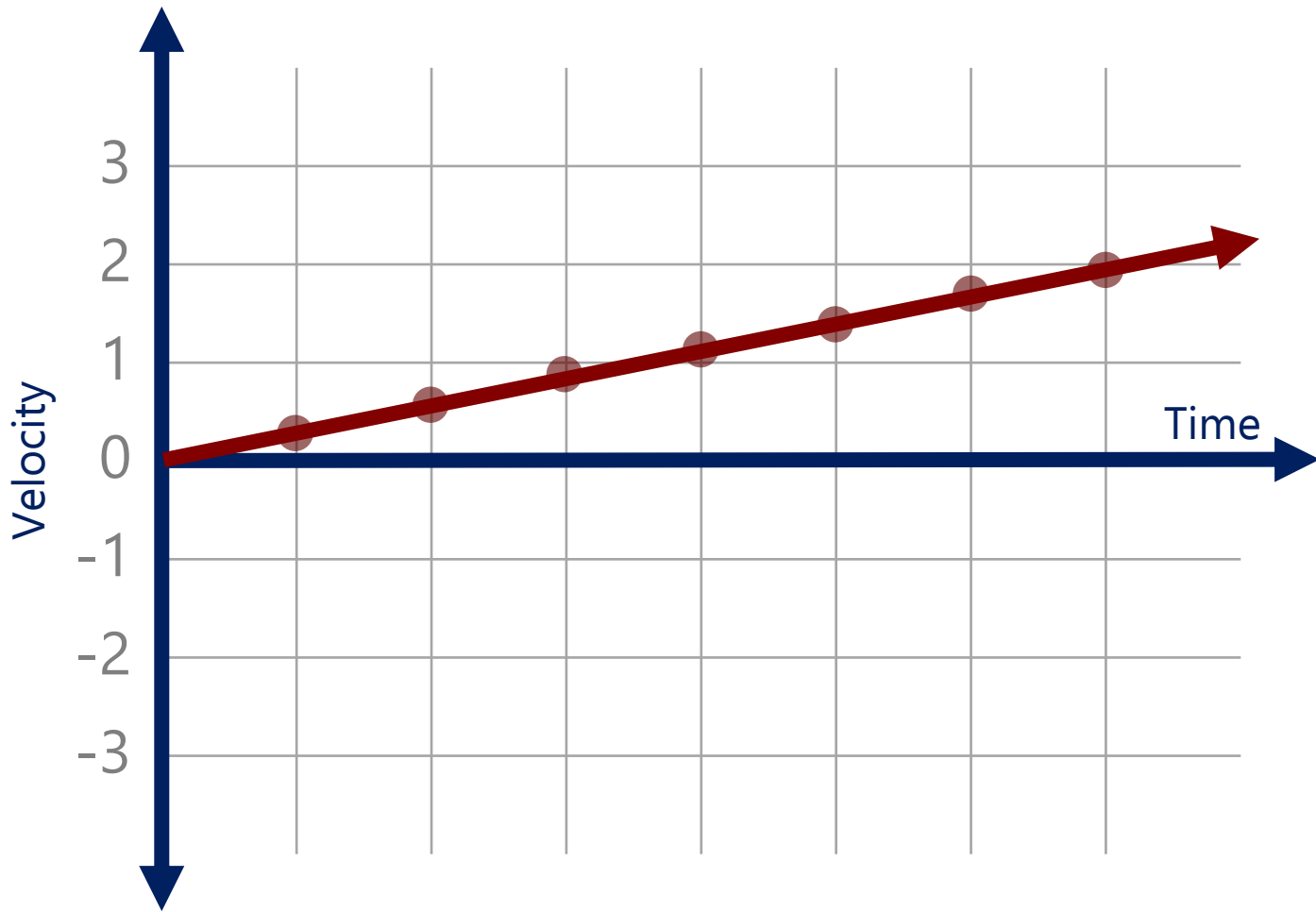
An object moving backward



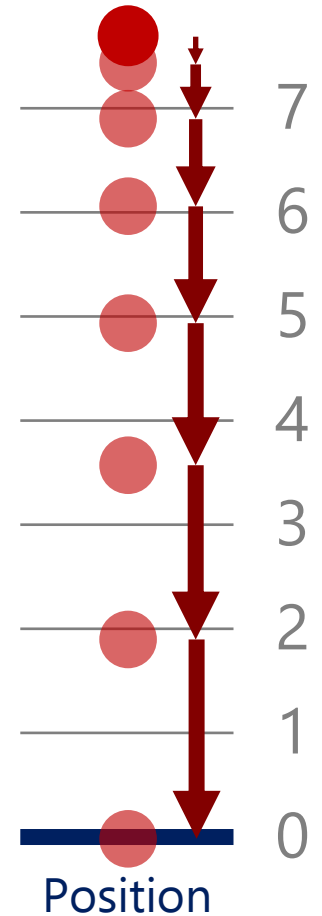
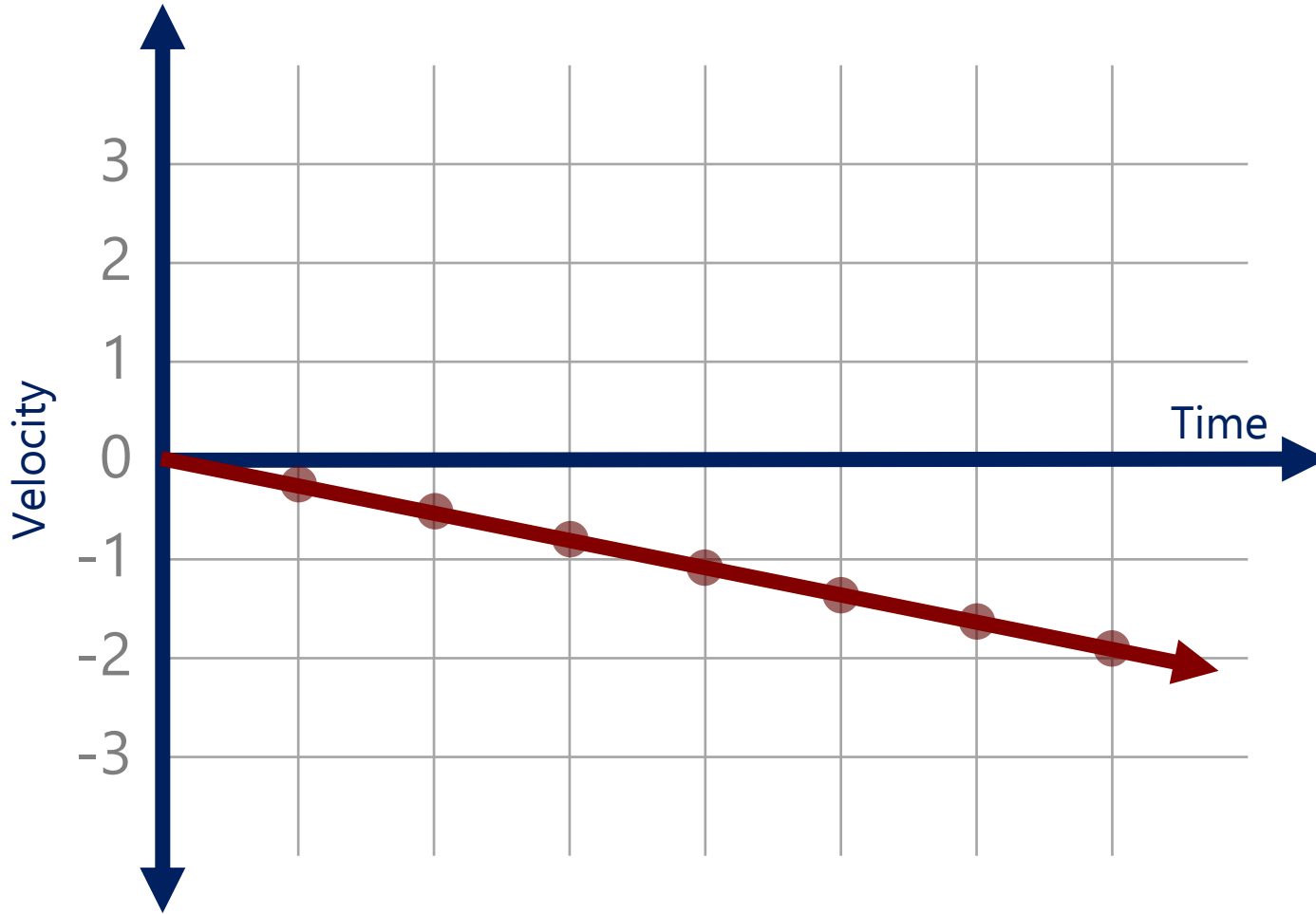
Showing Velocity



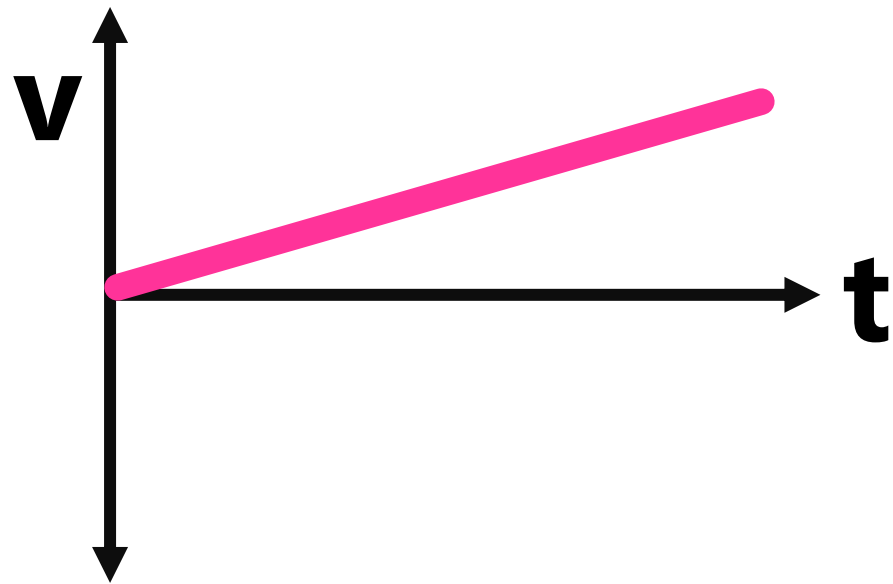
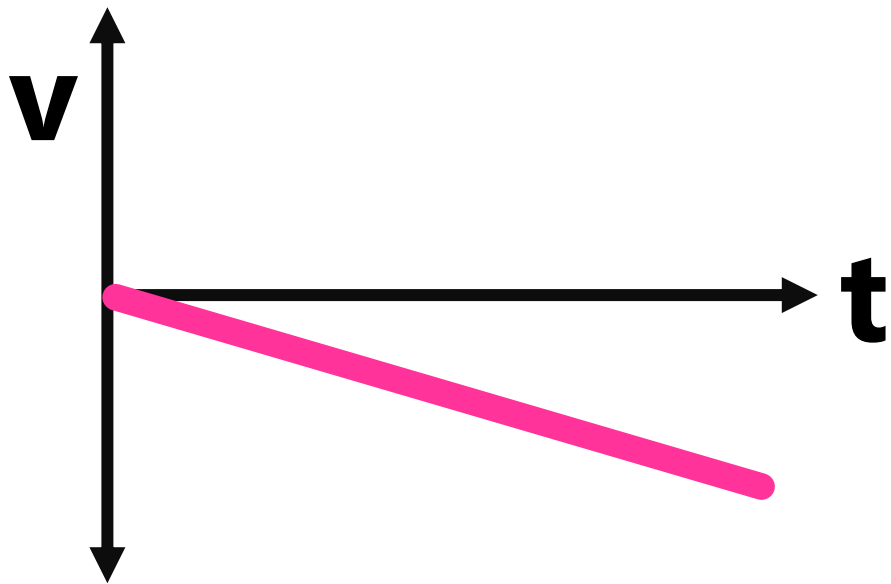
Speeding Up (moving positive)



Speeding Up (moving negative)

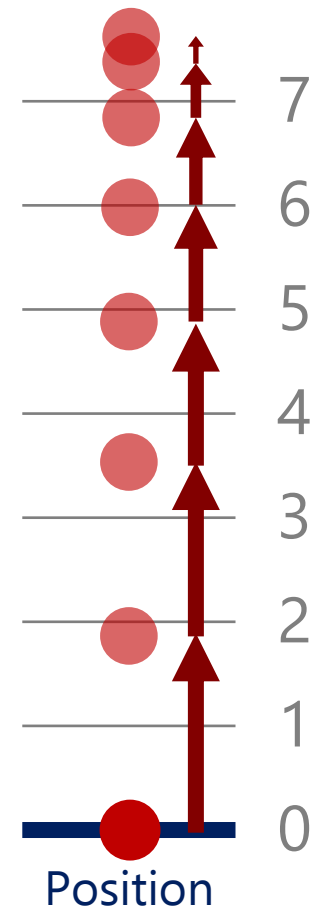
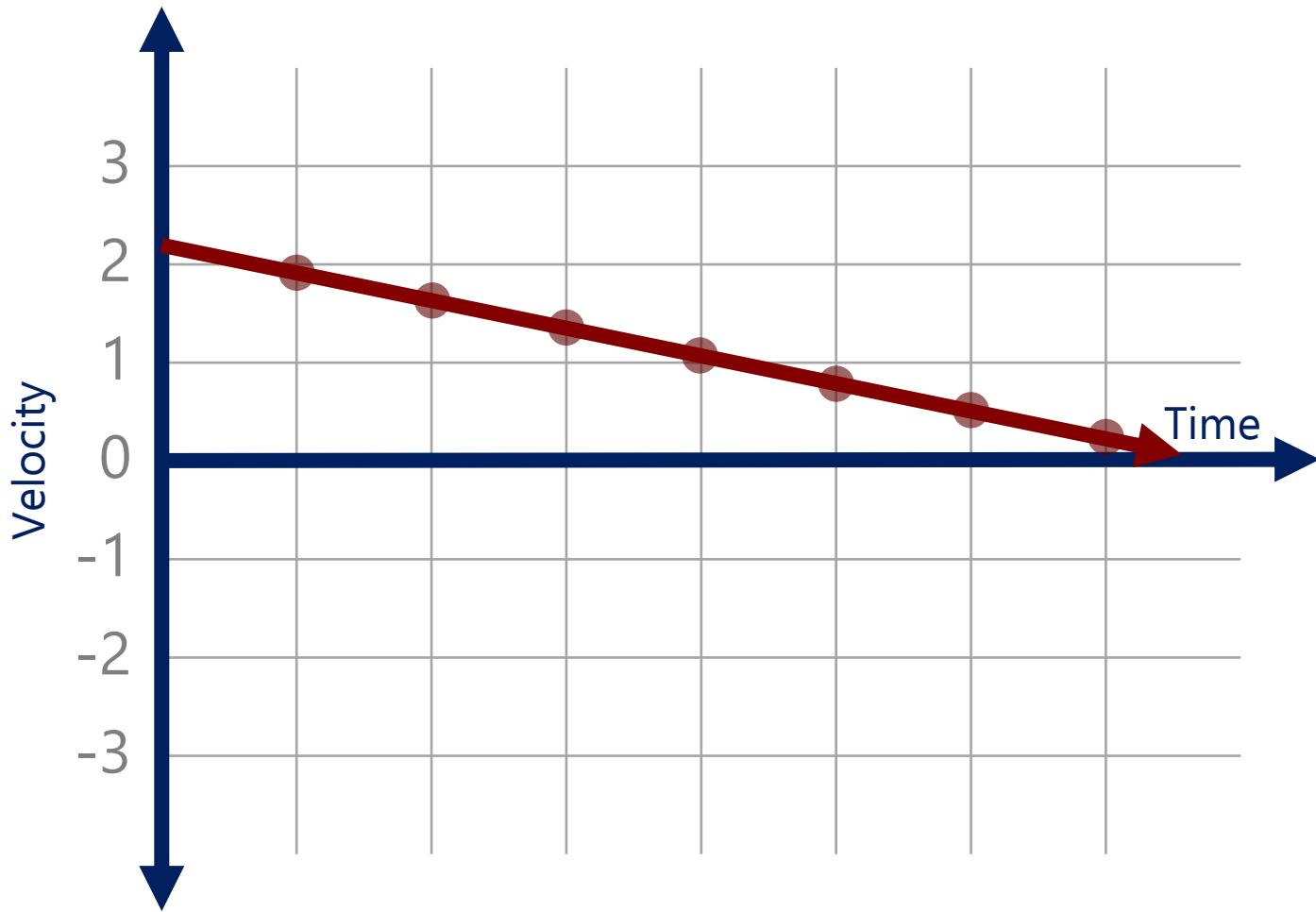


How are these Similar?

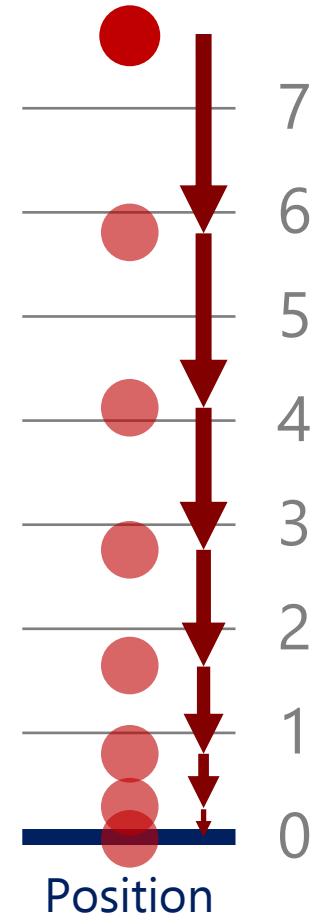
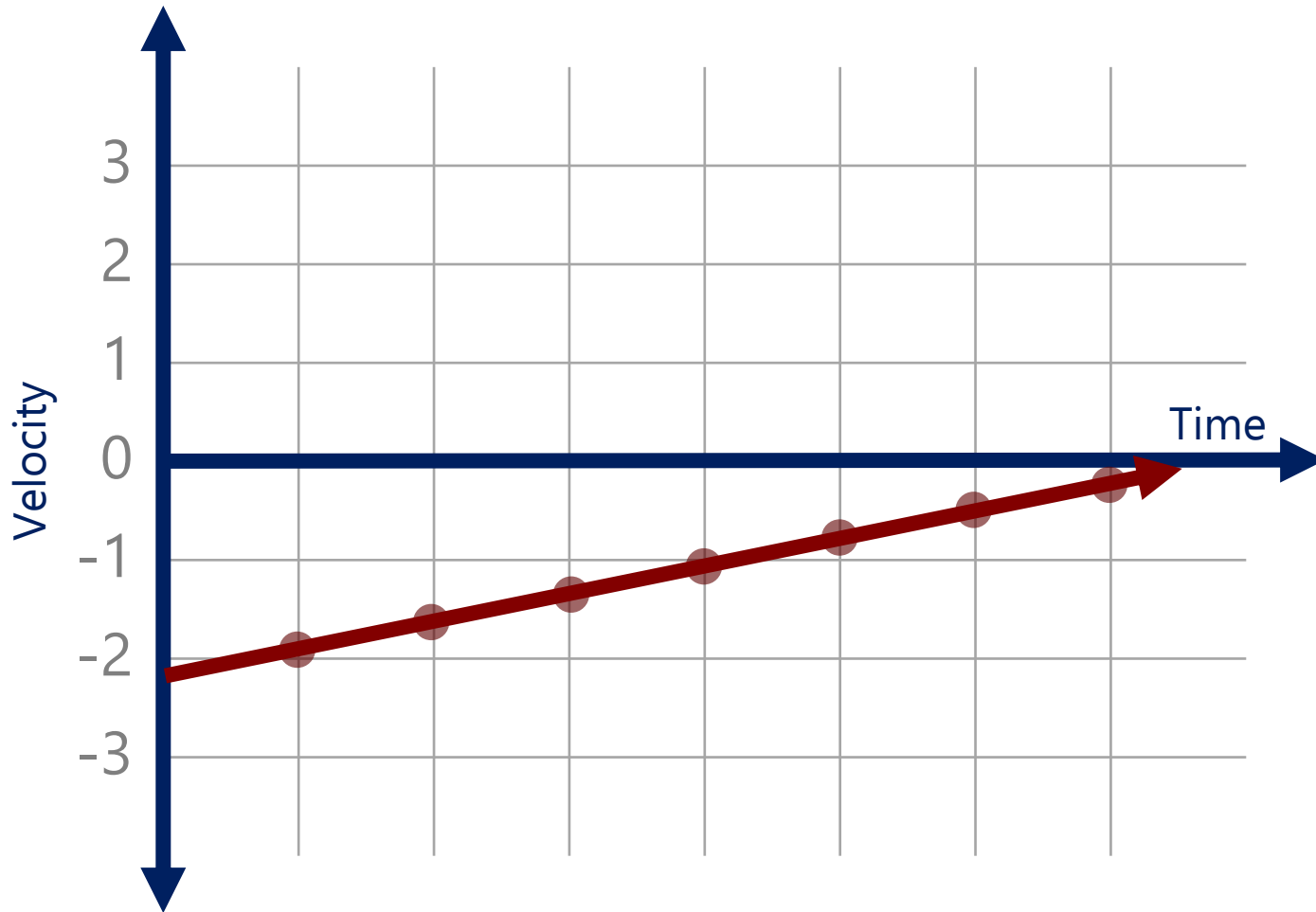


Getting faster because velocity is getting farther from zero

Slowing Down (moving positive)



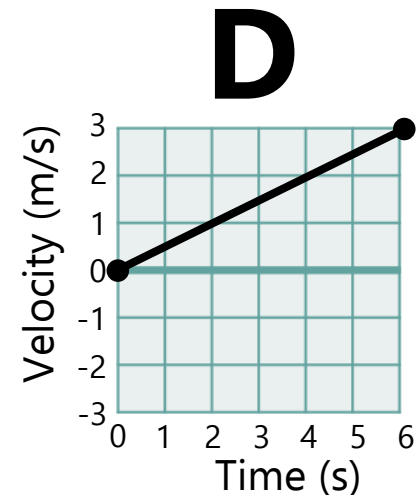
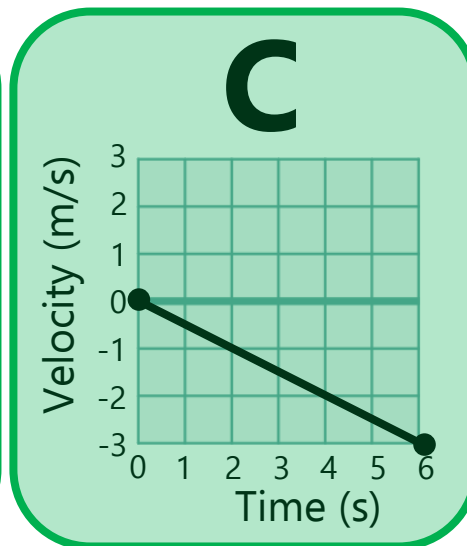
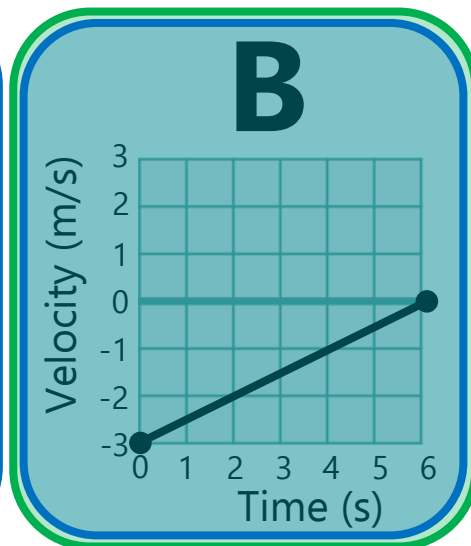
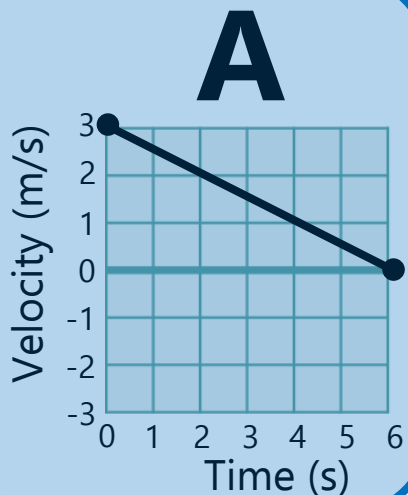
Slowing Down (moving negative)



Velocity vs Time Graphs

Which graph(s) represent an object moving in the negative direction?

Which graph(s) represent an object slowing down?



Lesson Takeaways

- I can describe the difference between speed and velocity
- I can compare the difference between a vector and scalar quantity
- I can plot constant velocity on a velocity vs time graph
- I can plot changing velocity on a velocity vs time graph
- I can use a velocity vs time graph to identify if an object is moving in the positive or negative direction as well as if it is speeding up or slowing down