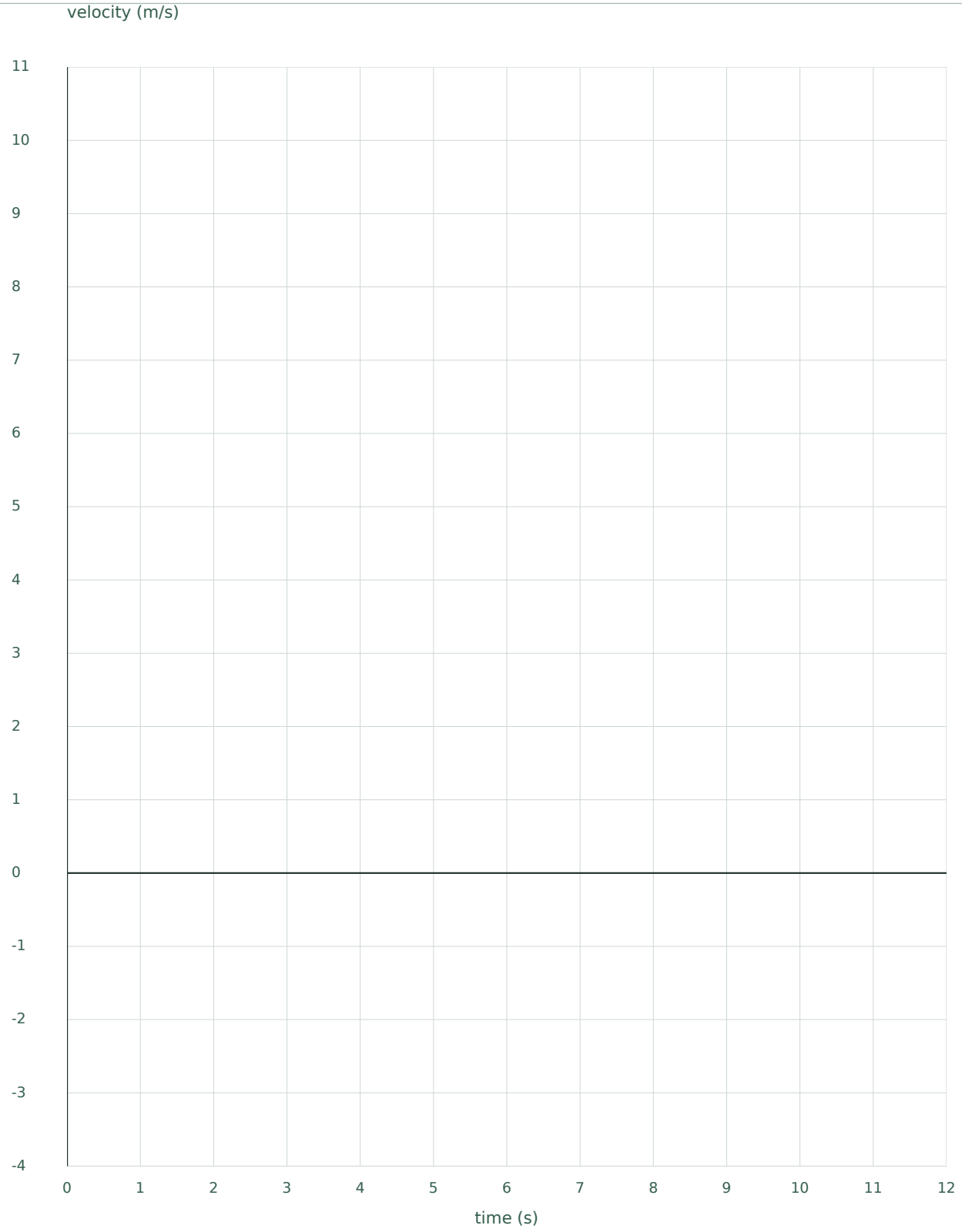
Draw Velocity-Time Graphs from Motion Descriptions: Slope as Acceleration

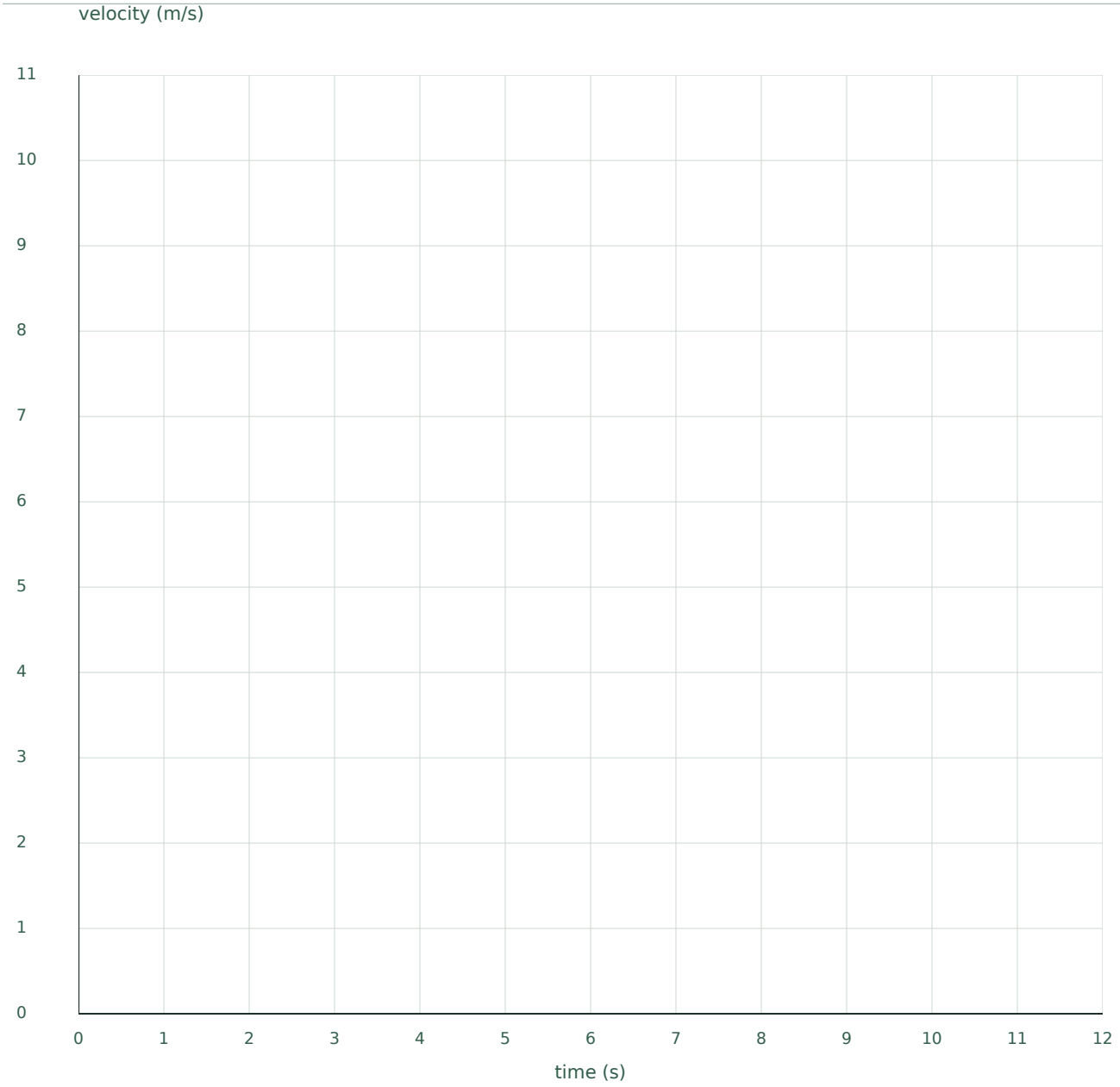
Blank velocity-time grid template



Student plotting space.

Draw Velocity-Time Graphs from Motion Descriptions: Slope as Acceleration

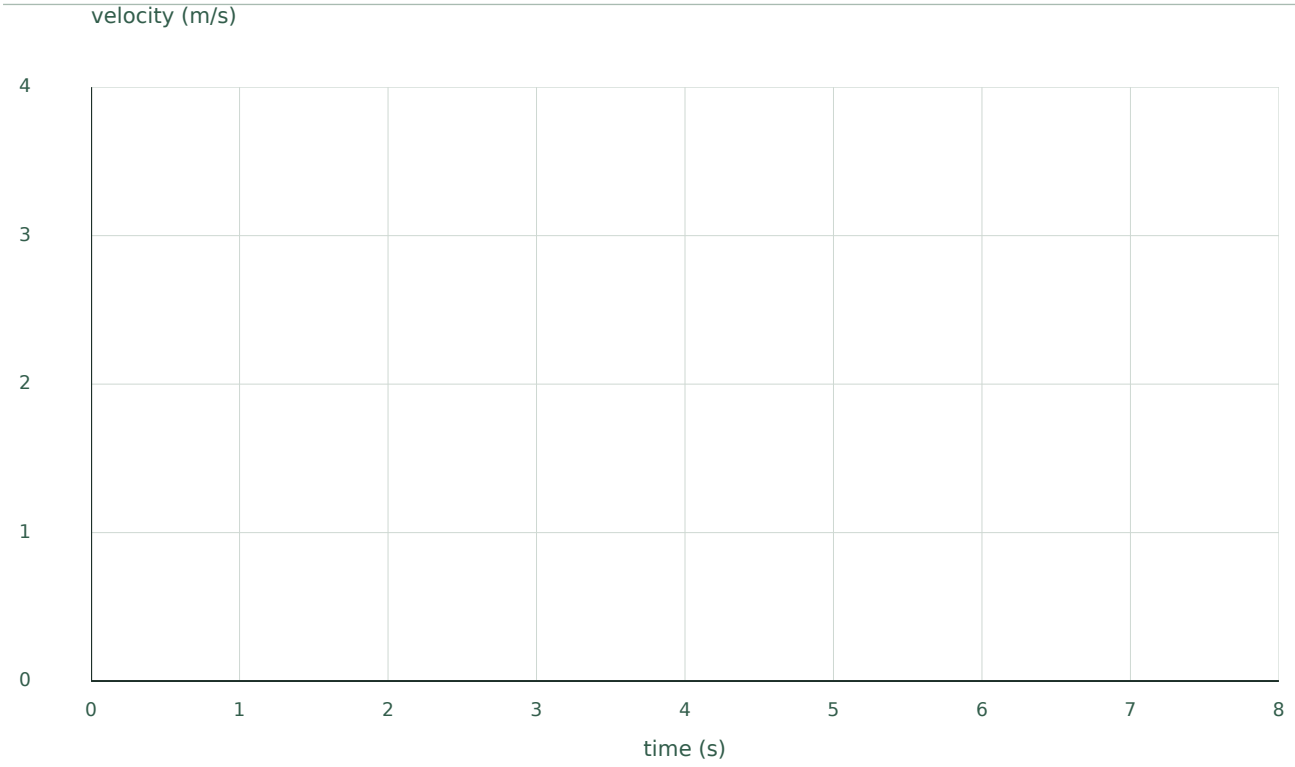
Exercise 1: cyclist velocity-time graph



Plot endpoints and compute slopes.

Draw Velocity-Time Graphs from Motion Descriptions: Slope as Acceleration

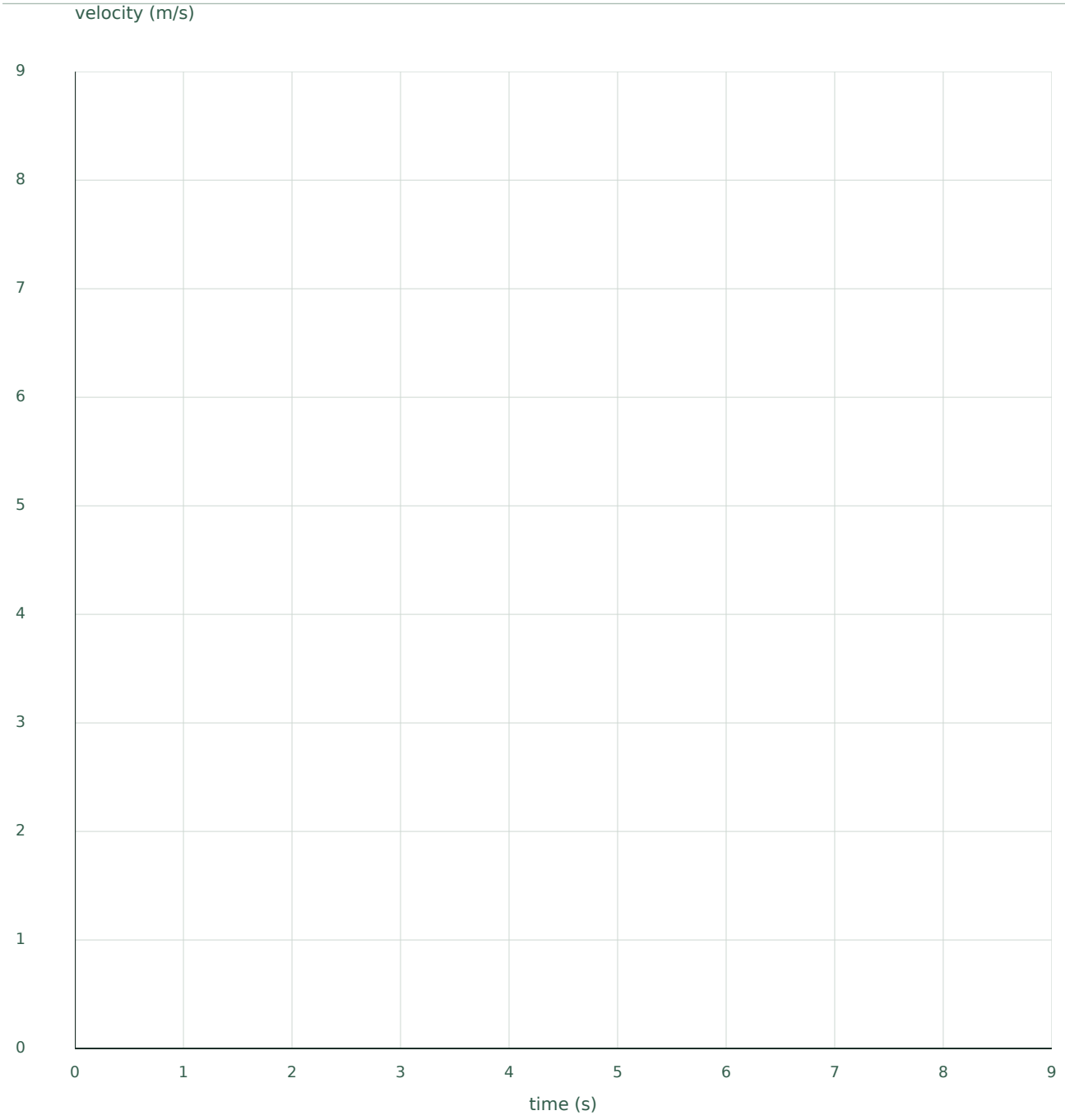
Exercise 2: lift velocity-time graph



Plot endpoints and compute slopes.

Draw Velocity-Time Graphs from Motion Descriptions: Slope as Acceleration

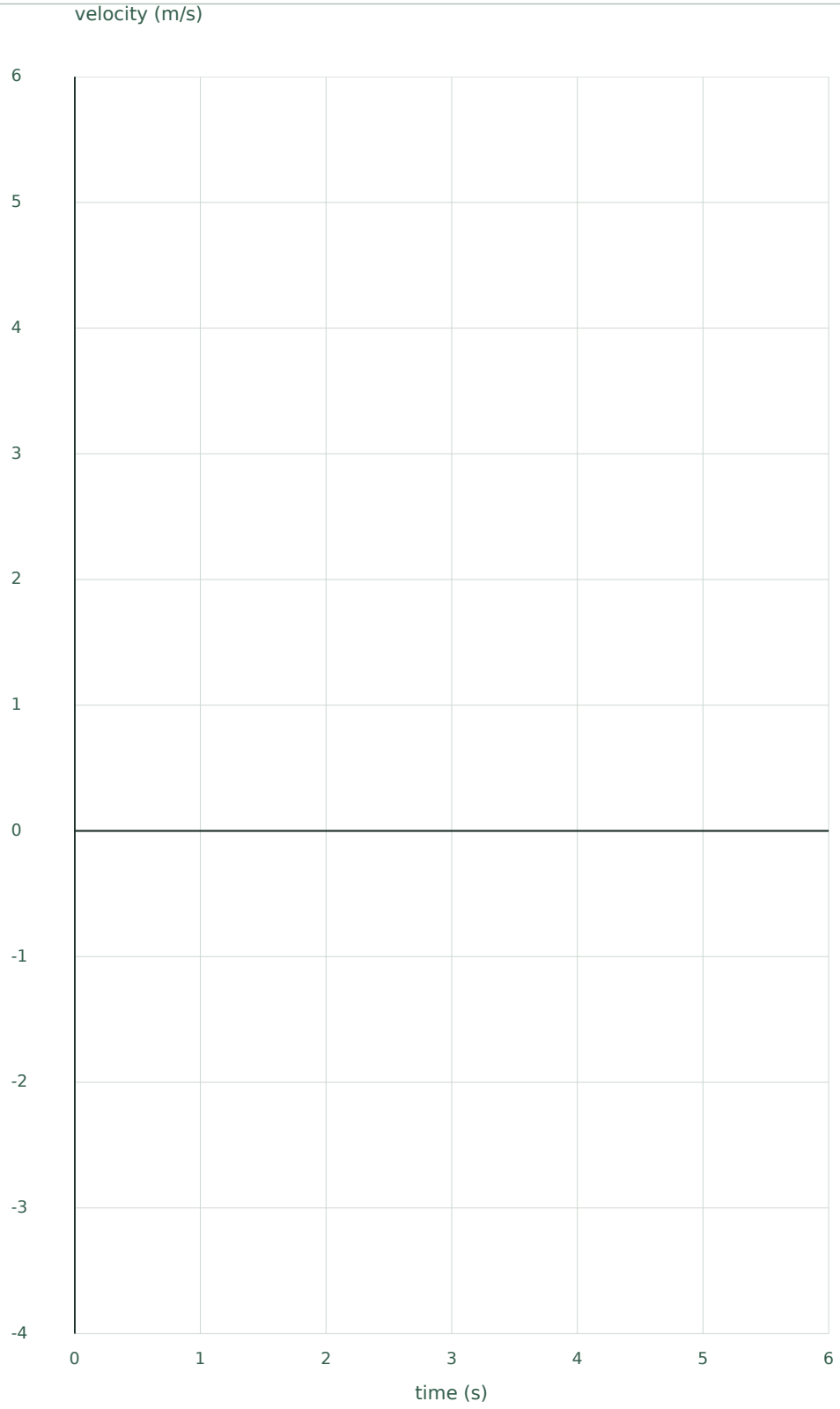
Exercise 3: toy car velocity-time graph



Plot endpoints and compute slopes.

Draw Velocity-Time Graphs from Motion Descriptions: Slope as Acceleration

Exercise 4: ball velocity-time graph



Plot endpoints and compute slopes.

Draw Velocity-Time Graphs from Motion Descriptions: Slope as Acceleration

Worksheet: motion scenarios and plotting prompts

Numerical values are hypothetical teaching examples.

Exercise 1: A cyclist moves at 4 m/s from 0 s to 5 s, then accelerates uniformly to 10 m/s from 5 s to 9 s, then stays at 10 m/s from 9 s to 12 s. Draw the velocity-time graph and give the acceleration for each segment.

Exercise 2: A lift starts at 0 m/s at 0 s, speeds up uniformly to 3 m/s at 2 s, holds 3 m/s until 6 s, then slows uniformly to 0 m/s at 8 s. Draw the velocity-time graph and state each acceleration.

Exercise 3: A toy car moves forward at 2 m/s from 0 s to 3 s, then accelerates uniformly to 8 m/s from 3 s to 7 s, then brakes uniformly to rest at 9 s. Draw the graph and compute all accelerations.

Exercise 4: A ball rolls forward at 5 m/s from 0 s to 2 s, slows uniformly to 0 m/s at 4 s, then continues to -3 m/s at 6 s. Draw the velocity-time graph and give the acceleration for each segment.

For each exercise: list each time interval with its starting and ending velocity; choose axis scales that include all listed times and velocities, including negative values if present; plot each endpoint as a point, then connect consecutive points with straight segments; label each segment with its time interval and compute its slope as acceleration; check that the graph returns to the stated velocity at each boundary time.

Draw Velocity-Time Graphs from Motion Descriptions: Slope as Acceleration

Original tasks 1, 2, 3 / blank responses

Task 1

A cyclist moves at 4 m/s from 0 s to 5 s, then accelerates uniformly to 10 m/s from 5 s to 9 s, then stays at 10 m/s from 9 s to 12 s. Draw the velocity-time graph and give the acceleration for each segment.

Task 2

A lift starts at 0 m/s at 0 s, speeds up uniformly to 3 m/s at 2 s, holds 3 m/s until 6 s, then slows uniformly to 0 m/s at 8 s. Draw the velocity-time graph and state each acceleration.

Task 3

A toy car moves forward at 2 m/s from 0 s to 3 s, then accelerates uniformly to 8 m/s from 3 s to 7 s, then brakes uniformly to rest at 9 s. Draw the graph and compute all accelerations.

Draw Velocity-Time Graphs from Motion Descriptions: Slope as Acceleration

Original tasks 4 / blank responses

Task 4

A ball rolls forward at 5 m/s from 0 s to 2 s, slows uniformly to 0 m/s at 4 s, then continues to -3 m/s at 6 s. Draw the velocity-time graph and give the acceleration for each segment.