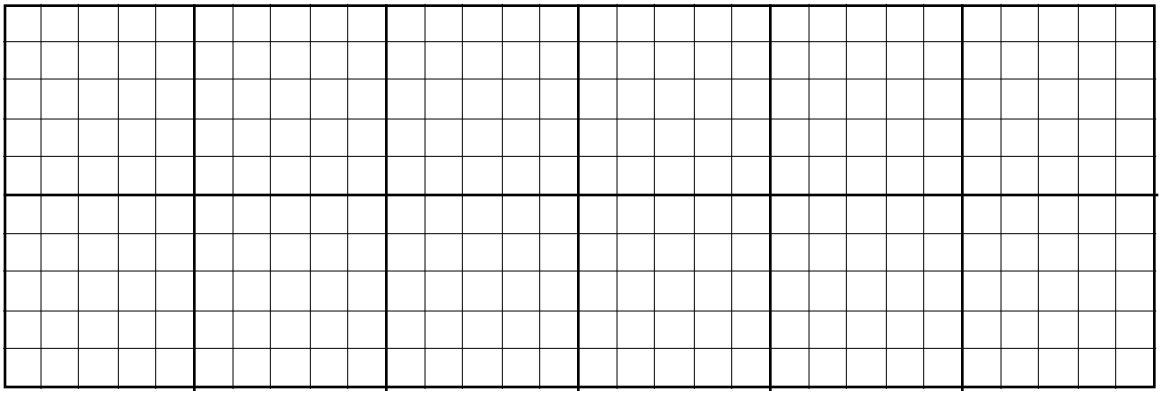
Kinematics From Graphs

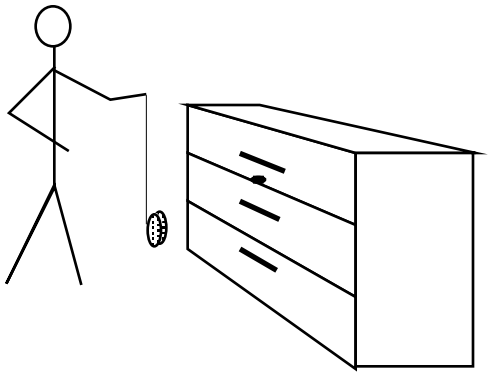
For each situation described below draw a displacement vs time graph that accurately as possible describes the situation.

1. A man steps out of his house and walks to the mail box in front of his house.

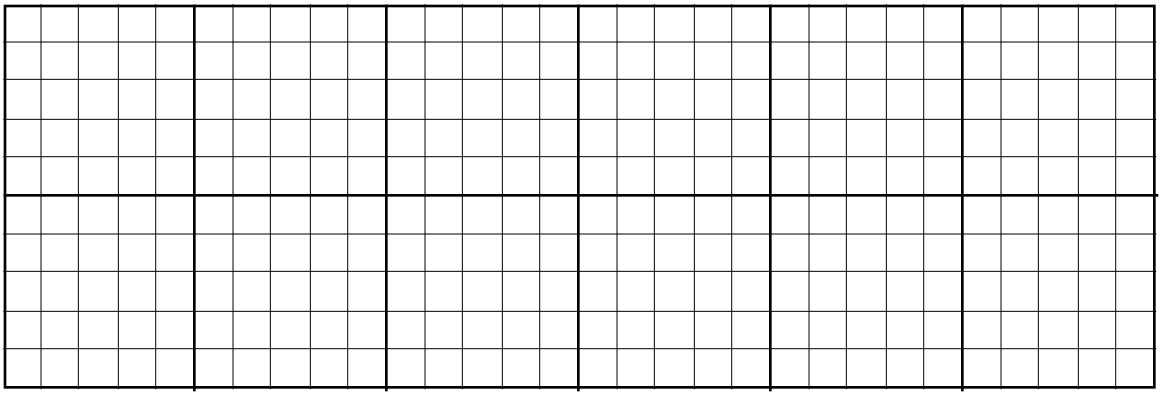
- At the mail box he pauses while fumbling through the mail.
- He turns and walks back to his house pausing half way there to smell a flower.
- After smelling the flower he runs into the house.



2. A flea watches a yo-yo pass him while he rests on a drawer that is at the mid-point of the yo-yo's motion.



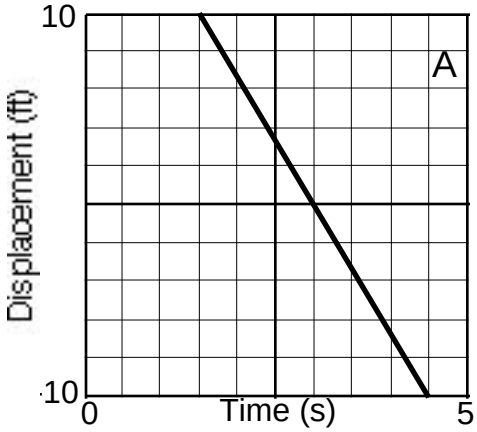
- The first thing the flea sees is the yo-yo passing him at a constant velocity on the way down.
- The yo-yo pauses at the bottom.
- It then travels past him on the way up to the yo-yo master's hand.
- The yo-yo's motion never ceases as the yo-yo master throws it down again.
- On the way down the string gets twisted and yo-yo stops at the exact height of the flea.
- After a moment it slowly drifts down to the end of the string.

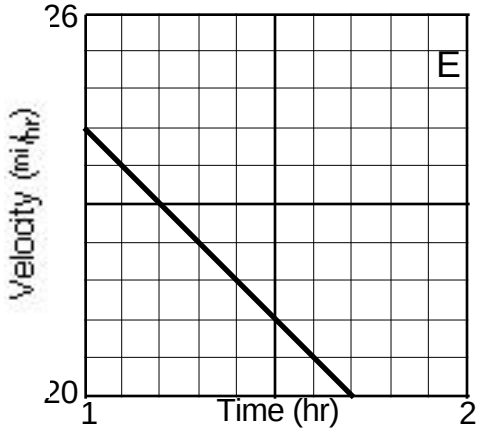


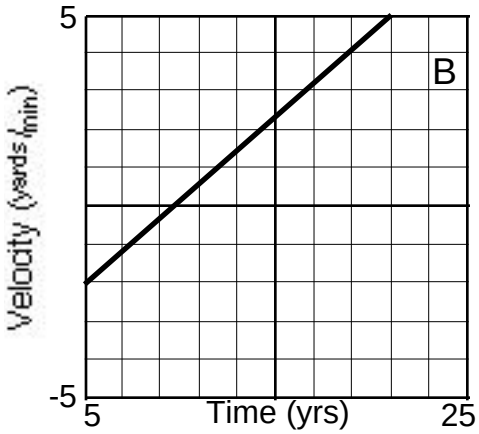
3. A cat and mouse are playing together. The cat has baited the mouse with a piece of cheese resting in front of himself.

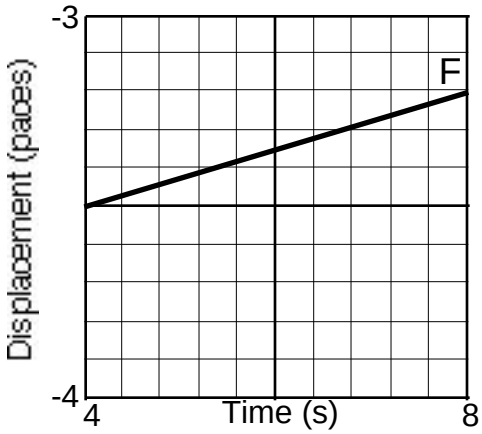
- The mouse slowly walks towards the cheese. 1/4 the way to the cheese he gets spooked and runs back to the safety of a small rock.
- The mouse, this time, walks more quickly towards the cheese. 1/2 the way to the cheese he gets scared and runs back to the safety of a small rock.
- The mouse runs towards the cheese. 3/4 the way to the cheese he gets nervous and runs back to the safety of a small rock. But 1/4 the way to the rock the changes his mind and runs back towards the cheese faster than ever before.
- The mouse picks up the cheese and begins to run back to the rock a little slower now.
- The cat begins to chase the mouse and the mouse begins to move his fastest yet by taking big jumps towards the rock.
- He passes the rock and continues 1/4 the distance past the rock
- Pauses (He realizes the cat was actually being chased by a dog)
- Walks back to the rock.

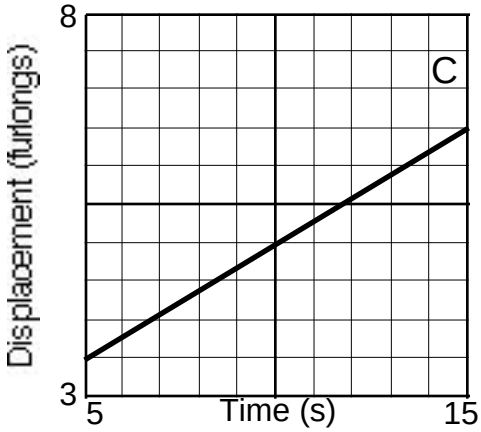
4Find the slope of the line with its appropriate units.

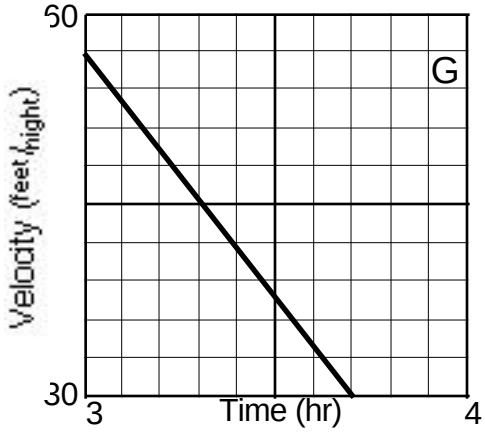


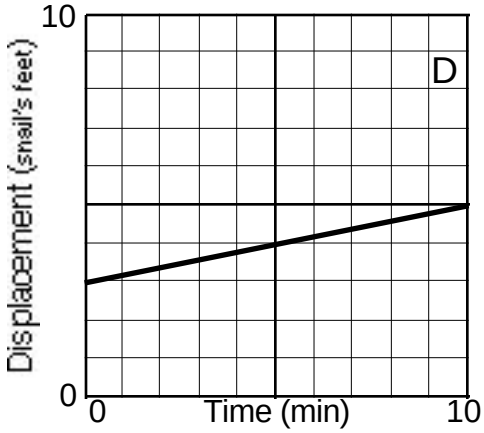


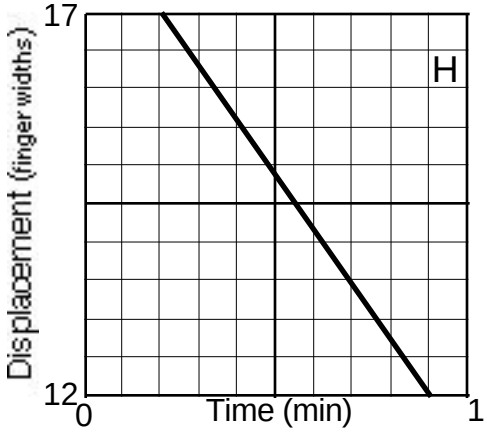












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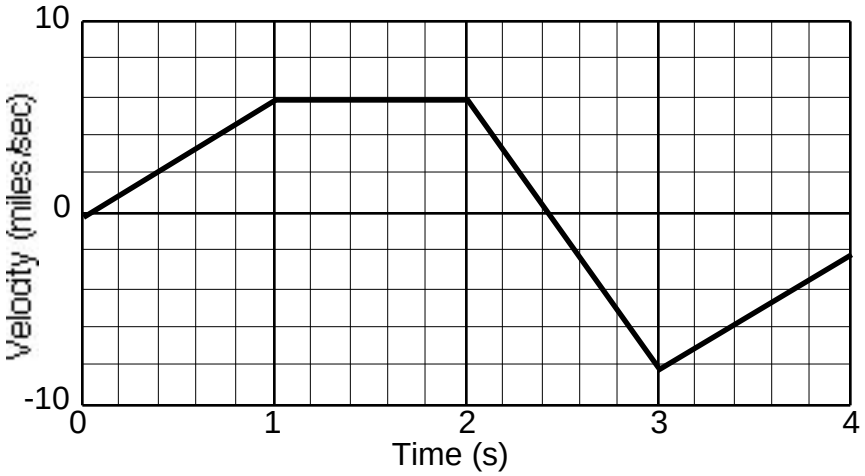
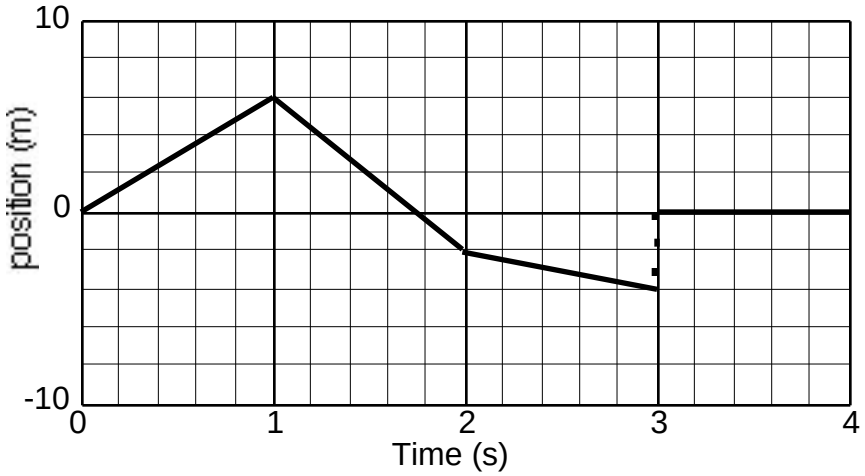


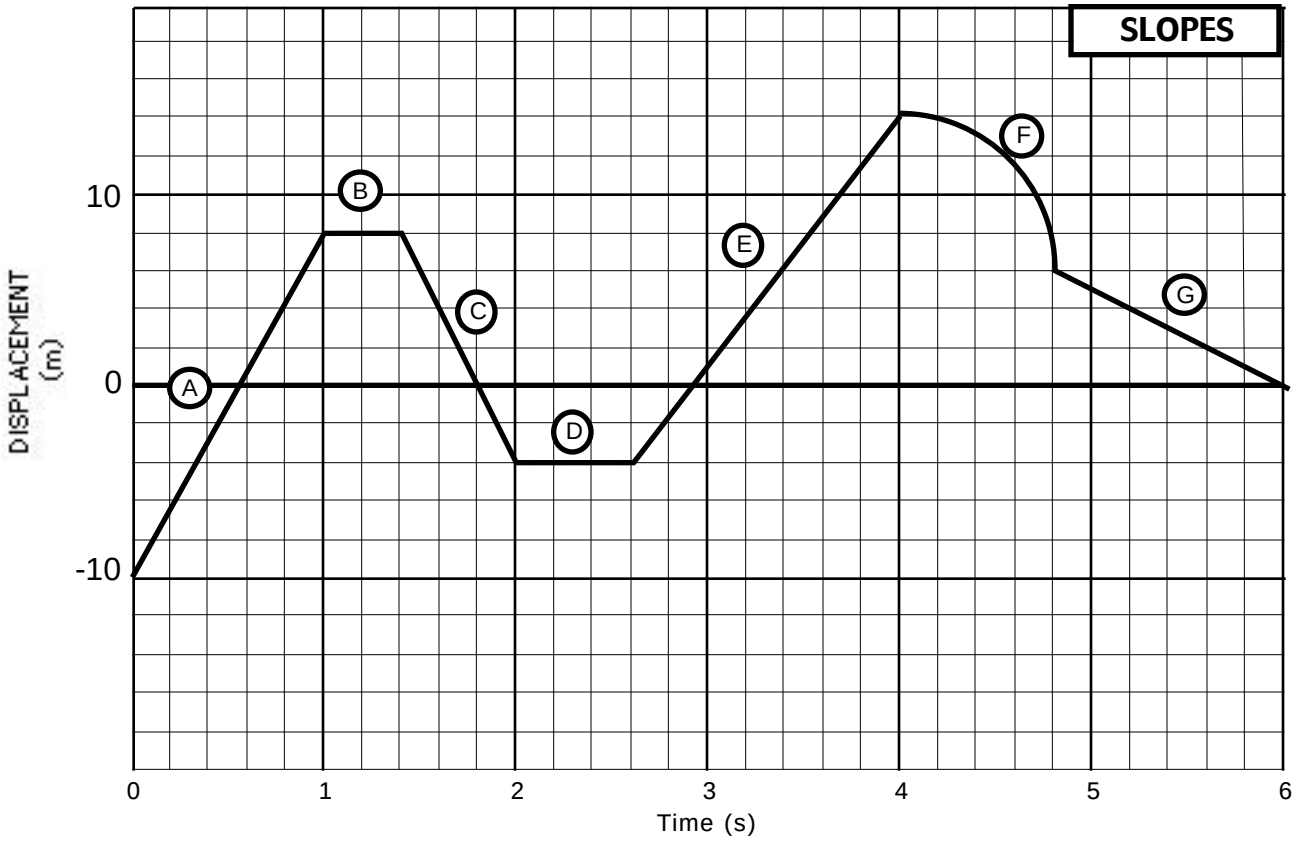
5 Which single second time interval contains the greatest positive velocity?

6 Which single second time interval or ppint in time contains the greatest negative velocity?



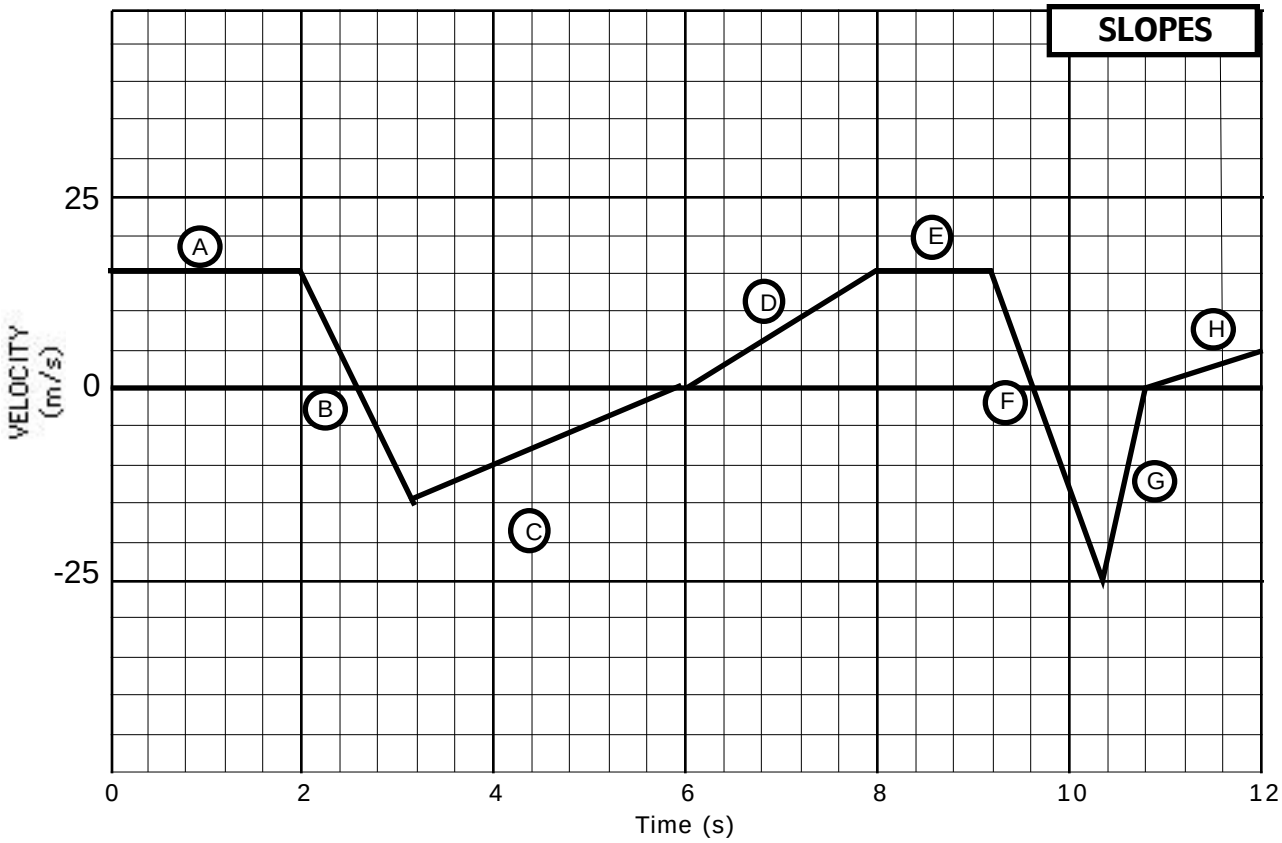
7 Which single second time interval contains the greatest positive velocity?

8 Which single second time interval contains the greatest negative velocity?



Each change or bend is a segment of the line. They are identified by the letters in the circles.

9 Which straight line segment(s) has the greatest absolute value of velocity?
10 Which line segment(s) contains the smallest non-zero velocity?(absolute value)
11 Which segment(s) shows a positive velocity?
12 Which segment(s) shows a negative velocity?
13 Which segment(s) shows the smallest non-zero velocity?
14 Which segment(s) has the greatest negative velocity?
15 Which segment(s) has the greatest positive velocity?
16 What is the velocity at 4.5 seconds?
17 What is the velocity at 1.8 seconds?
18 What is the velocity at 4.5 seconds?
19 What is the average velocity from 2.0 to 6.0 seconds?
20 What is the average velocity from 2.0 to 4.8 seconds?



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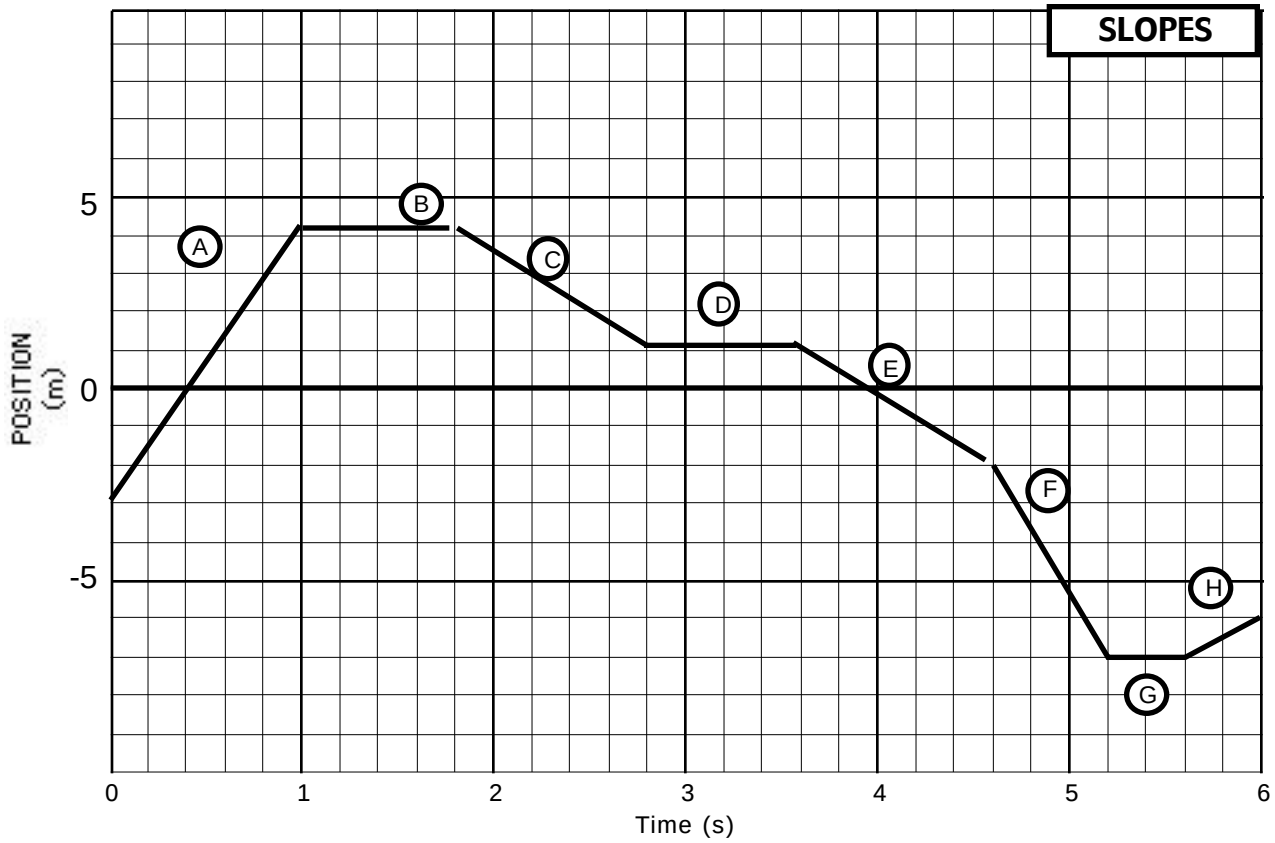
21 Which line segment(s) or point in time has the greatest absolute value of velocity?

22 Which segment(s) has the greatest negative velocity?

23 Which segment(s) has the greatest positive velocity?

24 What is the velocity at 9.0 seconds?



Each change or bend is a segment of the line. They are identified by the letters in the circles.

25 Which straight line segment(s) has the greatest absolute value of velocity?
26 Which straight line segment(s) has the smallest non-zero velocity?
27 Which segment(s) has the greatest negative velocity?
28 Which segment(s) has the greatest positive velocity?
29 What is the velocity at 0.8 seconds?
81 What is the velocity at 4.2 seconds?
82 What is the velocity at 5.0 seconds?
83 What is the average velocity from 1.8 to 5.4 seconds?
84 What is the average velocity from 0.4 to 3.2 seconds?