

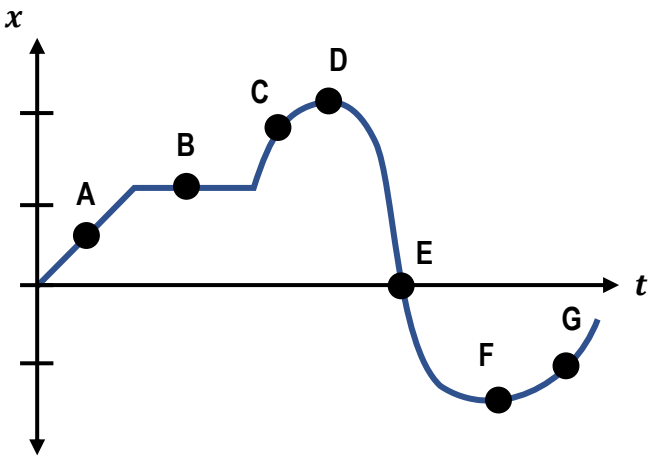
CONCEPT: CONCEPTUAL PROBLEMS WITH POSITION-TIME GRAPHS

You'll need to interpret position-time graphs to solve conceptual questions about position, velocity & acceleration.

EXAMPLE: The figure shows a position-graph for a moving object. At which lettered point(s):

- 1) is the object at the origin?
- 2) is the object the farthest away from the origin?
- 3) is the object moving forwards?
- 4) is the object moving backwards?
- 5) is the object at rest?
- 6) is the object's acceleration positive?
- 7) is the object's acceleration negative?

STEPS
1) Identify Variable: [Position Velocity (Speed) Accel.]
2) Identify Graph Feature: [Value Slope Curvature]
3) Identify Qualifier: [+ - 0 Up Down Sign Change max. min.]
4) Interpret from Graph

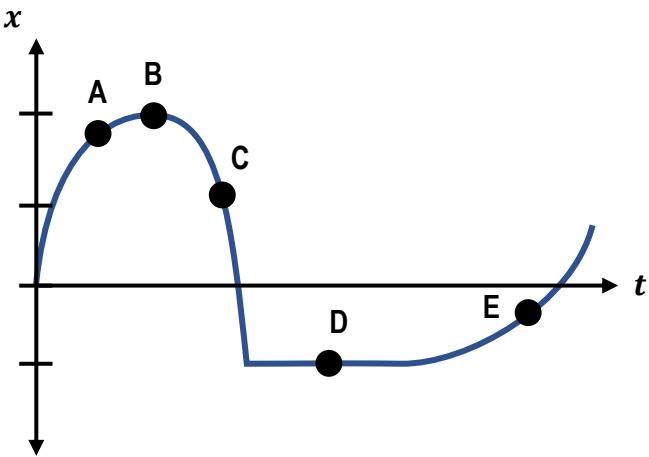


	Position (x)	Velocity (v) (or Speed)	Acceleration (a)
	Value	Slope	Curvature
X-T			

EXAMPLE: Using the position-time graph for a moving car, determine the lettered point(s) where the car:

- 1) is moving *fastest*?
- 2) is moving *slowest*?
- 3) turns around?
- 4) is speeding up?
- 5) is slowing down?

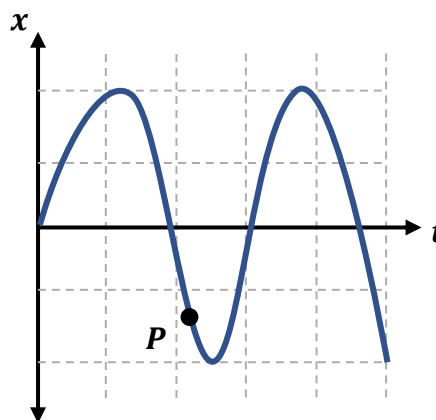
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PRACTICE: The position of an object vibrating on a moving spring is represented by the diagram below. Which of the following answer choices is true of the velocity and acceleration at Point **P**?

- (a) The velocity is **positive** and the acceleration is **positive**
- (b) The velocity is **positive** and the acceleration is **negative**
- (c) The velocity is **negative** and the acceleration is **positive**
- (d) The velocity is **negative** and the acceleration is **negative**



EXAMPLE: The figure shows the position-time graphs for two moving bicycles, labeled **A** and **B**.

(a) At what time(s) do the bicycles have the same position?

(b) At what time(s) do the bicycles have roughly the same velocity?

