



Graphs of Motion

Constant Acceleration

Slope and Area – Complete the chart below. NOT all boxes have an answer.

	What does the _____ of a graph provide?	
Graph	Slope	Area Beneath the Curve
x vs t		
v vs t		
a vs t		

Shapes of Graphs – Circle the correct choice(s).

	What is the shape of a _____ graph experiencing constant acceleration?		
Graph	$a \neq 0$	$a = 0$ (but moving)	$a = 0$ (at rest)
x vs t	curved – parabolic angled or slanted flat – not on zero flat – on zero	curved – parabolic angled or slanted flat – not on zero flat – on zero	curved – parabolic angled or slanted flat – not on zero flat – on zero
v vs t	curved – parabolic angled or slanted flat – not on zero flat – on zero	curved – parabolic angled or slanted flat – not on zero flat – on zero	curved – parabolic angled or slanted flat – not on zero flat – on zero
a vs t	curved – parabolic angled or slanted flat – not on zero flat – on zero	curved – parabolic angled or slanted flat – not on zero flat – on zero	curved – parabolic angled or slanted flat – not on zero flat – on zero

Is there a pattern to the sequence of graphs as you move from acceleration to velocity to position?

Sign Relationships

Complete the chart below by placing either a +, - and/or zero in each box. (+ = away; - = towards)

Motion	Velocity	Acceleration
At Rest – Standing Still		
Moving Away at a Constant Velocity		
Moving Towards at a Constant Velocity		
Moving Away and Speeding Up		
Moving Towards and Speeding Up		
Moving Away and Slowing Down		
Moving Towards and Slowing Down		

Directions - Complete each sentence using ONE word.

When an object is moving at a constant velocity its acceleration is _____.

When an object is speeding up, velocity and acceleration have the _____ signs.

When an object is slowing up, velocity and acceleration have the _____ signs.

Draw the graphs of motion for each of the descriptions below. R.P. = reference point.

Circle the correct sign representing the direction of the velocity and acceleration; + = away; - = towards.

Use a ruler to draw straight lines.

	Graphs	Standing still at the R.P.	Standing still away from the R.P.	Moving away from the R.P.	Moving towards the R.P.
Constant Motion	x vs t				
	v vs t	 <i>Sign: +, - or zero</i>	 <i>Sign: +, - or zero</i>	 <i>Sign: +, - or zero</i>	 <i>Sign: +, - or zero</i>
	a vs t	 <i>Sign: +, - or zero</i>	 <i>Sign: +, - or zero</i>	 <i>Sign: +, - or zero</i>	 <i>Sign: +, - or zero</i>
Changing Motion		Moving away from the R.P. and slowing down	Moving towards the R.P. and speeding up	Moving towards the R.P. and slowing down	Moving away from the R.P. and speeding up
	x vs t				
	v vs t	 <i>Sign: +, - or zero</i>	 <i>Sign: +, - or zero</i>	 <i>Sign: +, - or zero</i>	 <i>Sign: +, - or zero</i>
a vs t	 <i>Sign: +, - or zero</i>	 <i>Sign: +, - or zero</i>	 <i>Sign: +, - or zero</i>	 <i>Sign: +, - or zero</i>	
Changing Motion		Moving away from then towards the R.P. returning to starting position.		Moving towards then away from the R.P. returning to starting position.	
	x vs t				
	v vs t	 <i>Sign: + then -, - then +, or zero</i>		 <i>Sign: + then -, - then +, or zero</i>	
a vs t	 <i>Sign: +, - or zero</i>		 <i>Sign: +, - or zero</i>		