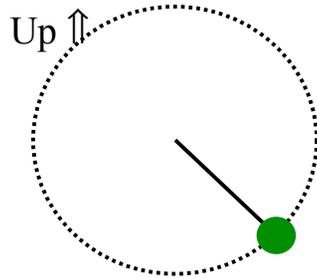
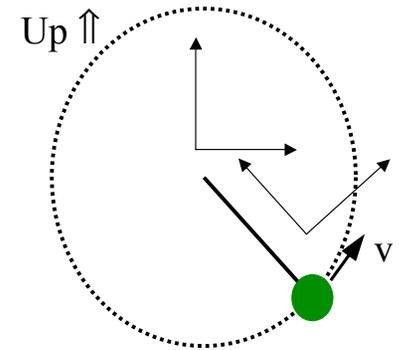


An object is swinging on a string. At the instant that it stops at the highest point of its swing, which of the following is true?



- 1) The object stops so its acceleration is zero.
- 2) The acceleration in the direction the ball was moving is zero.
- 3) The string tension must balance gravity so the vertical acceleration is zero.
- 4) The acceleration in the direction of the string is zero.
- 5) The acceleration in the horizontal direction is zero.
- 6) Both 2 & 3 are true.
- 7) Both 2 & 5 are true.
- 8) Both 4 & 3 are true.
- 9) Both 4 & 5 are true.
- 10) None of the above are true (hit 0 on PRS).

An object is moving in a vertical circle. At one instant, it is moving at a speed v as shown. Think about force equations for the different axes shown. Without solving any equations, for which of the 4 components is it **guaranteed** that there is a non-zero component of the acceleration (i.e. there are clearly unbalanced forces or some other indication)?



- 1) Only one out of the four
- 2) Only two out of the four
- 3) Only three out of the four
- 4) All four