

Acceleration in Two Dimensions

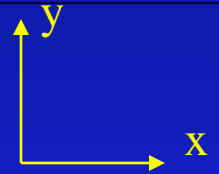
A ball is rolling on a horizontal surface at 5 m/s. It then rolls up a ramp at a 25 degree angle. After 0.5 seconds, the ball has slowed to 3 m/s. **What is the average acceleration?**

x-direction

$$a_x = \frac{-2.28 \text{ m/s}}{0.5 \text{ s}} = -4.56 \text{ m/s}^2$$

y-direction

$$a_y = \frac{1.27 \text{ m/s}}{0.5 \text{ s}} = 2.54 \text{ m/s}^2$$



$$|a| = \sqrt{a_x^2 + a_y^2} = 5.21 \text{ m/s}^2$$

