Ch 3 Review

X = horizontal... v_x, x, etc all in the horizontal direction

y = vertical... v_{oy}, v_{fy}, y, etc all in the vertical direction

only ONE x equation:

many y equations:

READ carefully.....

examples:

What is v at top?

What is initial v if launched horizontal?

What is final v?

Be able to use only letters to solve for unknown

Example:

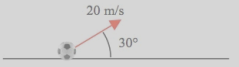
An object is launched so it goes a distance x from a height y, what is intial v if launched horizontal?

Be able to calculate speed or velocity when moving in 2 dimensions

Example:

A car goes 30 miles W in 1 hour and 40 miles N in 2 hours, what is its average speed and velocity?

Question:



A soccer ball is kicked to give it an initial velocity of 20 m/s at 30° relative to the ground, as shown. The maximum height reached by the ball will be about

a. 10 m
b. 1.0 m
c. 5.0 m
d. 20 m
e. 15 m

Question:

From the top of a tall cliff of height y, one soccer ball is released from rest so that it falls straight down, and another is kicked horizontally so that it leaves the cliff at the same time with a horizontal velocity v. Assuming air friction is negligible:

a. the ball falling straight down will reach the ground first
b. the kicked ball will reach the ground first
c. both balls will reach the ground at time $t = \frac{2y}{g}$
d. both balls will reach the ground at time $t = \sqrt{\frac{2y}{g}}$
e. both balls will reach the ground at time $t = \frac{-v \pm \sqrt{v^2 + 2g}}{a}$