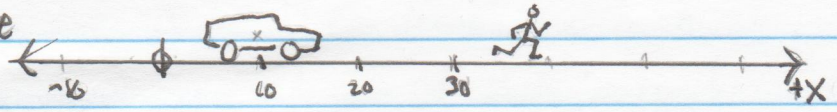
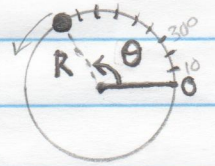
Ch. 2 Motion in 1-D

"1-D Motion"

- Motion along a line



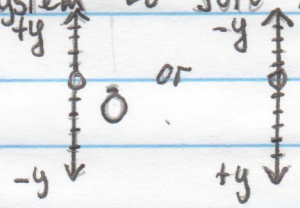
- Motion along a circle



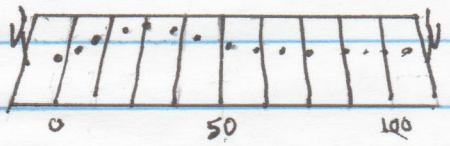
Ex) bead sliding on wire

- The position of the object is specified with 1 number.
- Choose coordinate system to suit the problem

Ex) Falling objects:



Ex) Football field

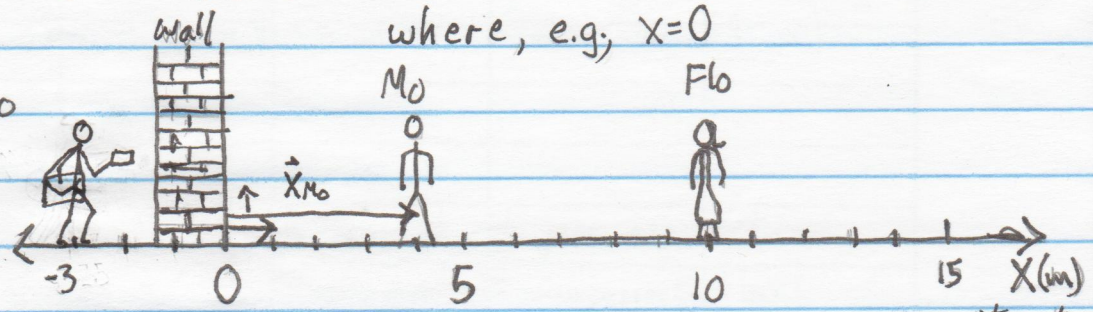


Not 1-D, 2-D!

Definitions

- Position (symbol: $x, y, z, \vec{x}$): a distance from a reference point where, e.g., $x=0$

Ex) M_0 & F_{10}



Q) Where is M_0? $x_{M_0} = 4\,m$ Position vector? $\vec{x}_{M_0} = 4\hat{i}\,m$ ← unit vector

Q) Where is F_{10}? $x_F = 10\,m$ $\vec{x}_F = 10\hat{i}\,m$

- Distance (symbol d): absolute value of the difference in two positions.

Q) How far is F_{10} from M_0? $|x_{F_{10}} - x_{M_0}| = |10-4| = 6\,m$

" " " M_0 from F_{10}? $|x_{M_0} - x_{F_{10}}| = |4-10| = 6\,m$