SiQuENC: Newtonian dynamics for linear motion

Neatly and graphically represent situation(s)

Carefully read the problem three times.
Draw system and relevant aspects of environment.
B – Use dashed **b**ubble(s) to indicate object(s) in system (right now).
Identify requested unknowns.

Graphically represent quantities and their relationships

Free-body diagram

E – Is the **E**arth nearby (right now)?
T – Is anything **t**ouching the system (right now)?
A – Draw **a**xes (indicate $+x$ and $+y$ directions)

Identify relevant allowed starting point equation(s)
including Newton's laws (stated at bottom row)

	Force	F_x	F_y
1			
2			
3			
4			
5			
6			
7	$\sum$	ma_x (is $a_x = 0$?)	ma_y (is $a_y = 0$?)

Analyze

Communicate

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Example: Complete a force component chart for a block resting on a rough plane inclined at an angle of θ above the horizontal.

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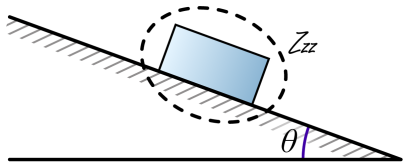

?: FBD

Graphically represent quantities and their relationships

Free-body diagram

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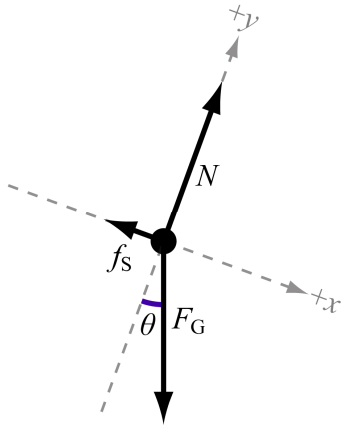

Identify relevant allowed starting point equations
Including Newton's laws (stated at bottom row)

	Force	F_x	F_y
1	F_G	$+F_G \sin\theta$	$-F_G \cos\theta$
2	N	0	$+N$
3	f_S	$-f_S$	0
4			
5			
6			
7	Σ	ma_x (is $a_x = 0$?)	ma_y (is $a_y = 0$?)

Analyze

Communicate