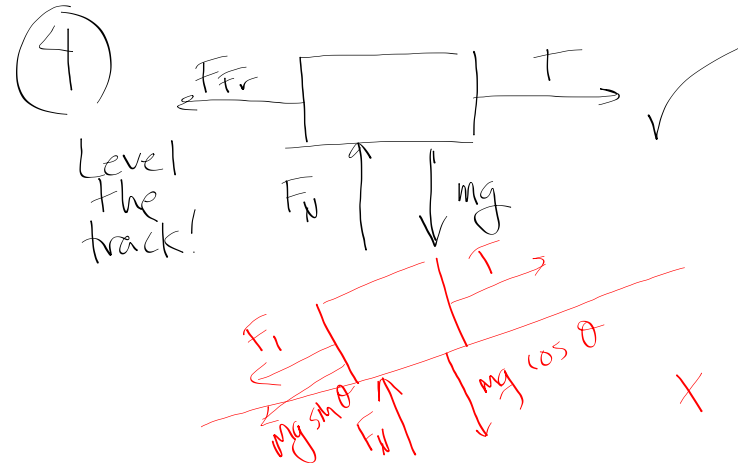# Move Your Mass:

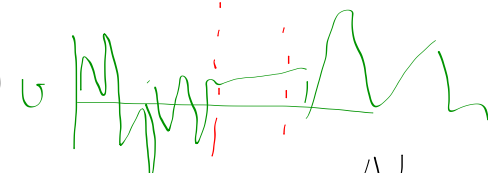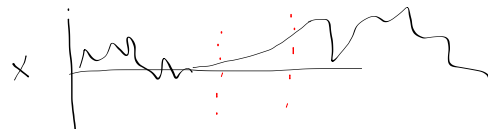• Time to work today – submit through Showbie by Wednesday

• Tips:

① Determine how to calculate friction (if you measure acceleration) on the moving cart

② Determine how to predict the acceleration of a cart (assuming you already know friction!)
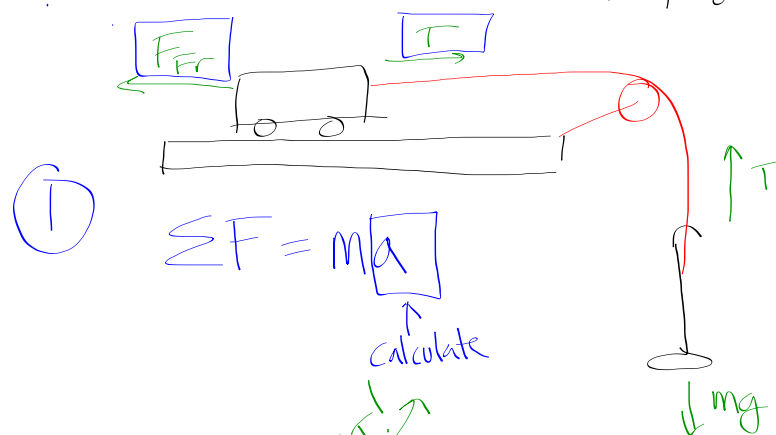
③ Collect data multiple times

④ Level the track!

F_{Fr} ⬜ T ✓

F_N mg

F_1 T

$mg \sin \theta$ F_N $mg \cos \theta$ X

⑤ Finding acceleration:

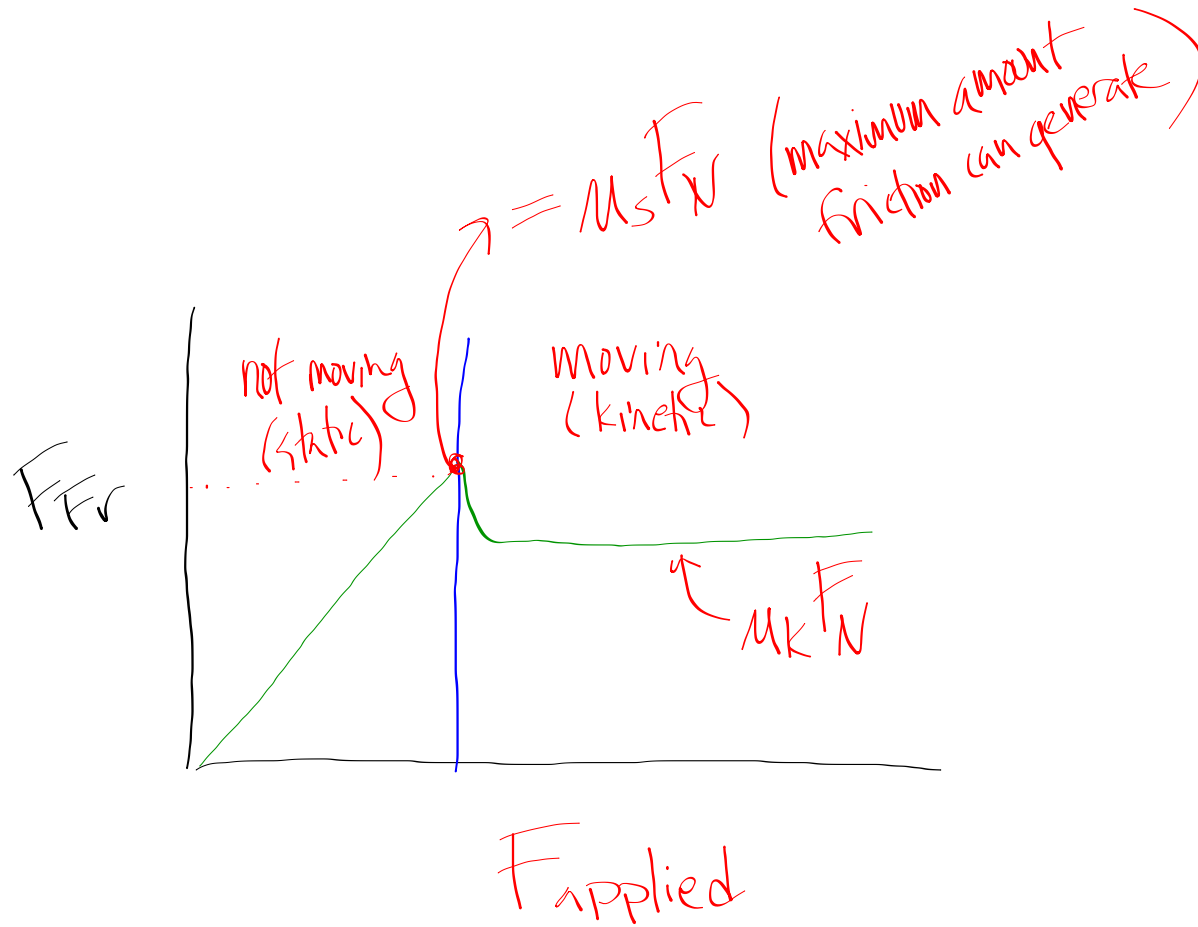| t	x	v
		0.08
		0.09
		0.10
0.3	0.56	0.11
0.32	0.57	0.12
0.34	0.59	0.13
0.36	0.61	0.14
0.38	0.64	0.15

x

v

→ Big 4!

Δt

$\Delta x, x, x_0$

$\Delta v, v, v_0$

F_{Fr}　　　T

① $\sum F = m\boxed{a}$
　　　　↑
　　calculate

↑T

↓mg

DON'T!

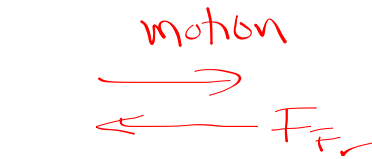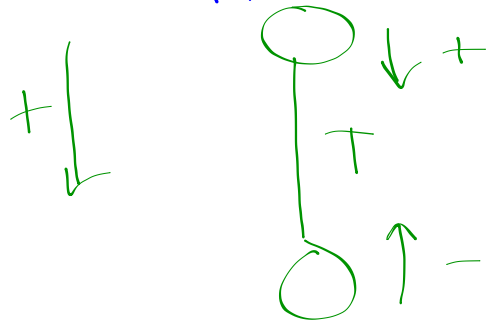② You know F_{Fr} ... your unknowns are T and accel.

$$= \mu_s F_N \text{ (maximum amount friction can generate)}$$

not moving (static)

moving (kinetic)

F_{Fr}

$\mu_k F_N$

$F_{Applied}$

Friction always opposes motion

$F_{Fr} = \oplus$

$-F_{Fr} = \ominus$

motion

$\longleftarrow F_{Fr}$

$\longleftarrow$ motion

$\longrightarrow F_{Fr}$

$T = \oplus$

$-T = \ominus$

$F_{Fr} \longleftarrow \square \longrightarrow T$

$-F_{Fr} + T = ma$