Some challenging free-body diagrams

① box on a ramp

F_N

θ

F_g
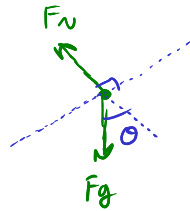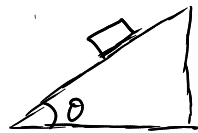
② 2 people playing Tug-o-war

Person 1   Person 2

Person 1   **Person 2**

F_{pull} T   T F_{pull}

these tensions
always have the
same magnitude (equal &
opposite forces)

③ 2 objects suspended

m_1

m_2

m_1: T_2

T_1 $F_g = m_1 g$

m_2: T_1

$F_g = m_2 g$