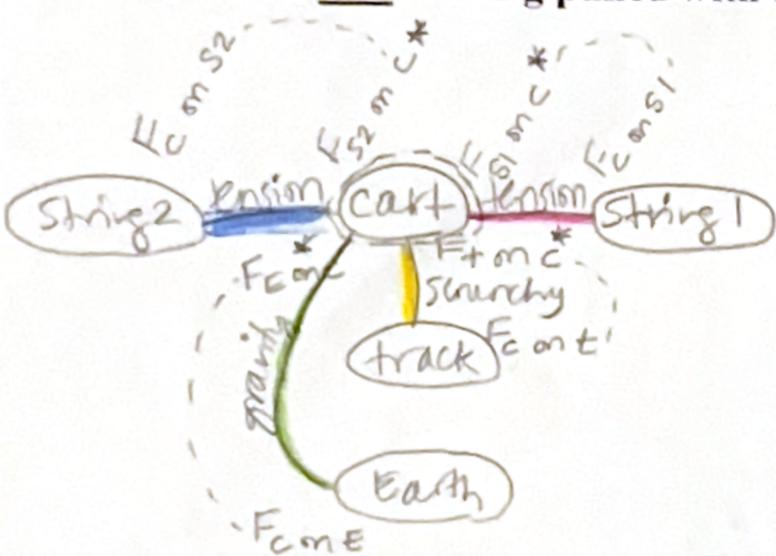
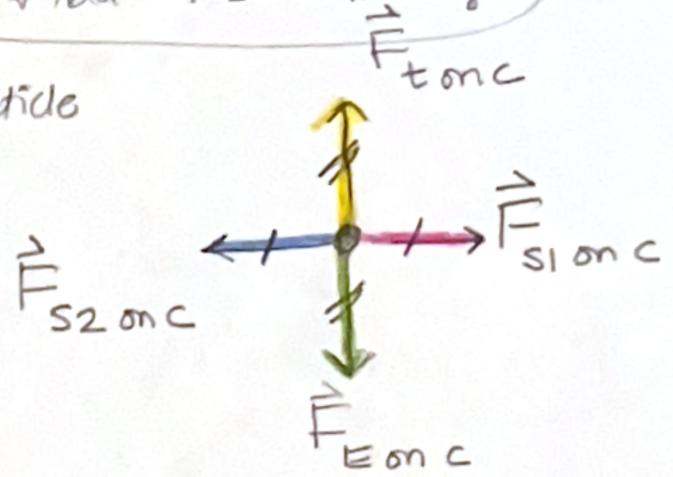


D. A cart is being pulled with two horizontal strings, one to the left and one to the right

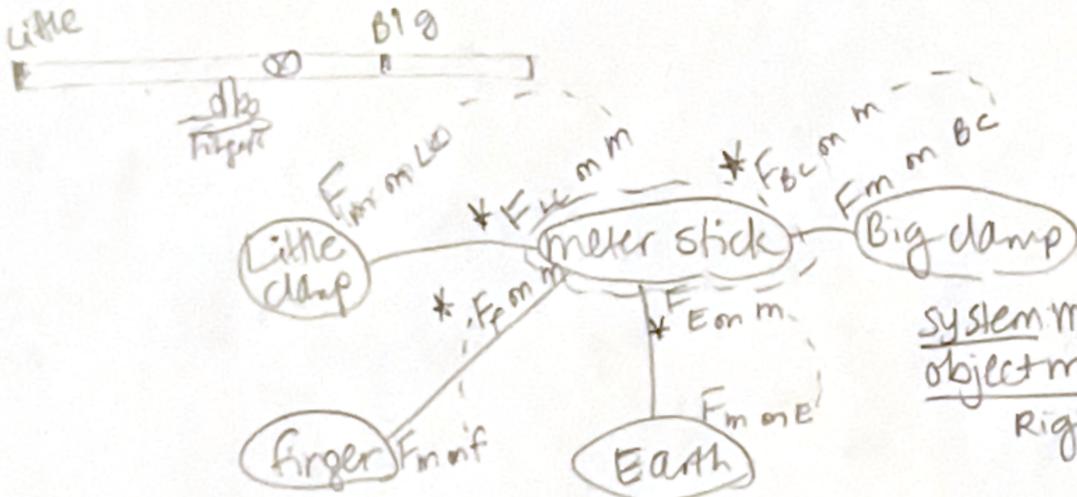
*Add: It is not moving.



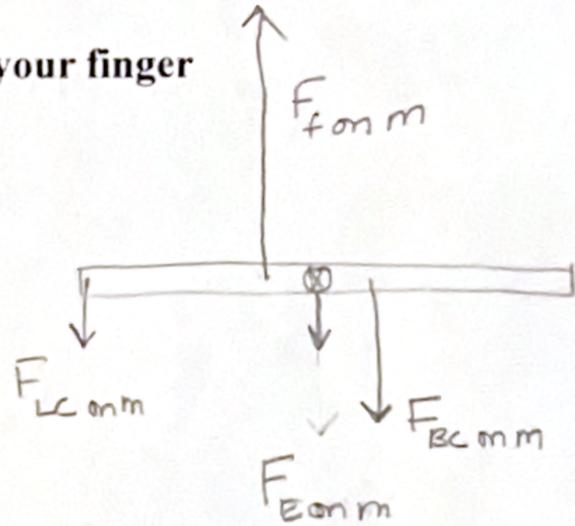
System: cart
Object model: point particle



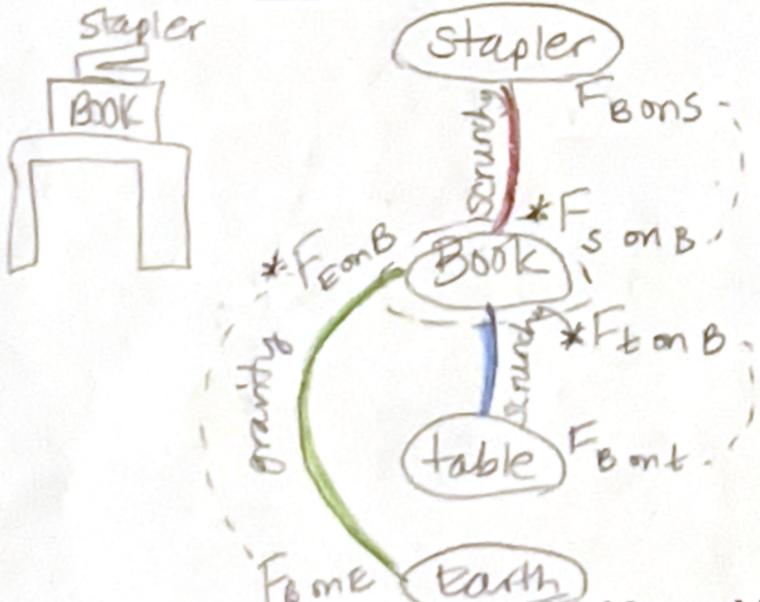
E. A meterstick has 2 C-clamps on it and it is balanced on your finger



System: meterstick
Object model: Rigid Body

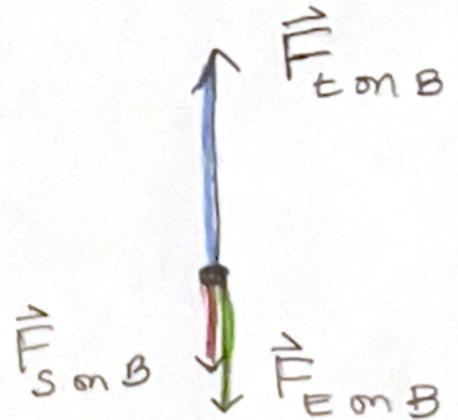


F. A book is on the table, and a stapler is on the book.

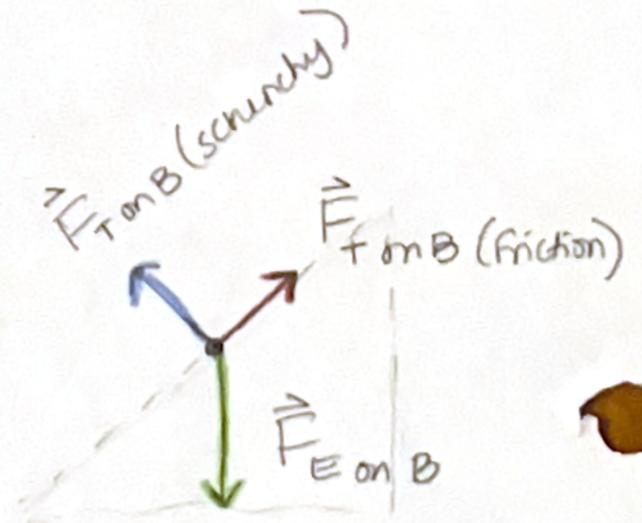
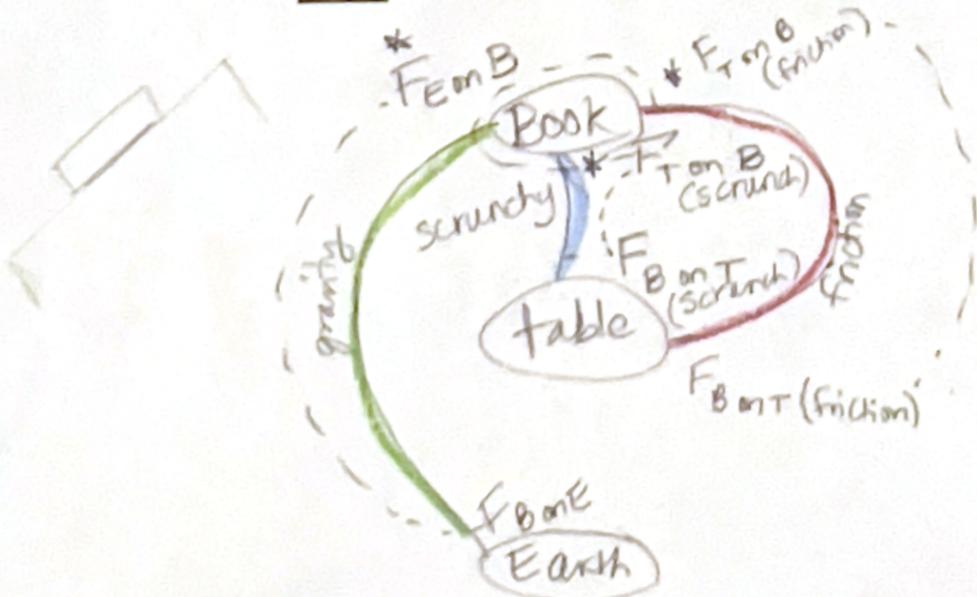


System: Book
Object model: point particle

3 external forces:
one up, 2 down



G. A book is on tilted table, and it is not sliding.



Applying Newton's Law of Universal Gravitation

Analysis Problem #1

Using the scenario shown by the top diagram,

- Find an expression for the force of Earth on the satellite when it is at A. Justify your answer with a fact.

When two objects interact gravitationally, they both experience the same force of attraction given by $F_{1on2} = F_{2on1} = \frac{G m_1 m_2}{r^2}$.

In this situation, the masses are M_E and m , and their centers of mass are separated by a , so the force is $F = \frac{G M_E m}{a^2}$.

- Find an expression for the force of Earth on the satellite when it is at B. Justify your answer with a fact.

When two objects interact gravitationally, they both experience the same force of attraction given by $F_{1on2} = F_{2on1} = \frac{G m_1 m_2}{r^2}$.

In this situation, the masses are M_E and m , and the distance between their centers of mass is b , so the force is $F_{E on s} = \frac{G M_E m}{b^2}$.

Analysis Problem #2

- Find an expression for the force of star A on star B. Justify your answer with a fact.

When two objects interact gravitationally, they both experience the same force of attraction given by $F_{1on2} = F_{2on1} = \frac{G m_1 m_2}{r^2}$.

In this situation, the masses are M_a and M_b , and the distance between their centers of mass is $r_a + r_b$, so the force on star B

$$\text{is } F_{A on B} = \frac{G M_a M_b}{(r_a + r_b)^2}$$

- Find an expression for the force of star B on star A. Justify your answer with a fact.

When two objects interact gravitationally, they both experience the same force. Stars A and B are interacting gravitationally,

so $F_{B on A} = F_{A on B}$, which is $\frac{G M_a M_b}{(r_a + r_b)^2}$ as found in the

previous question.