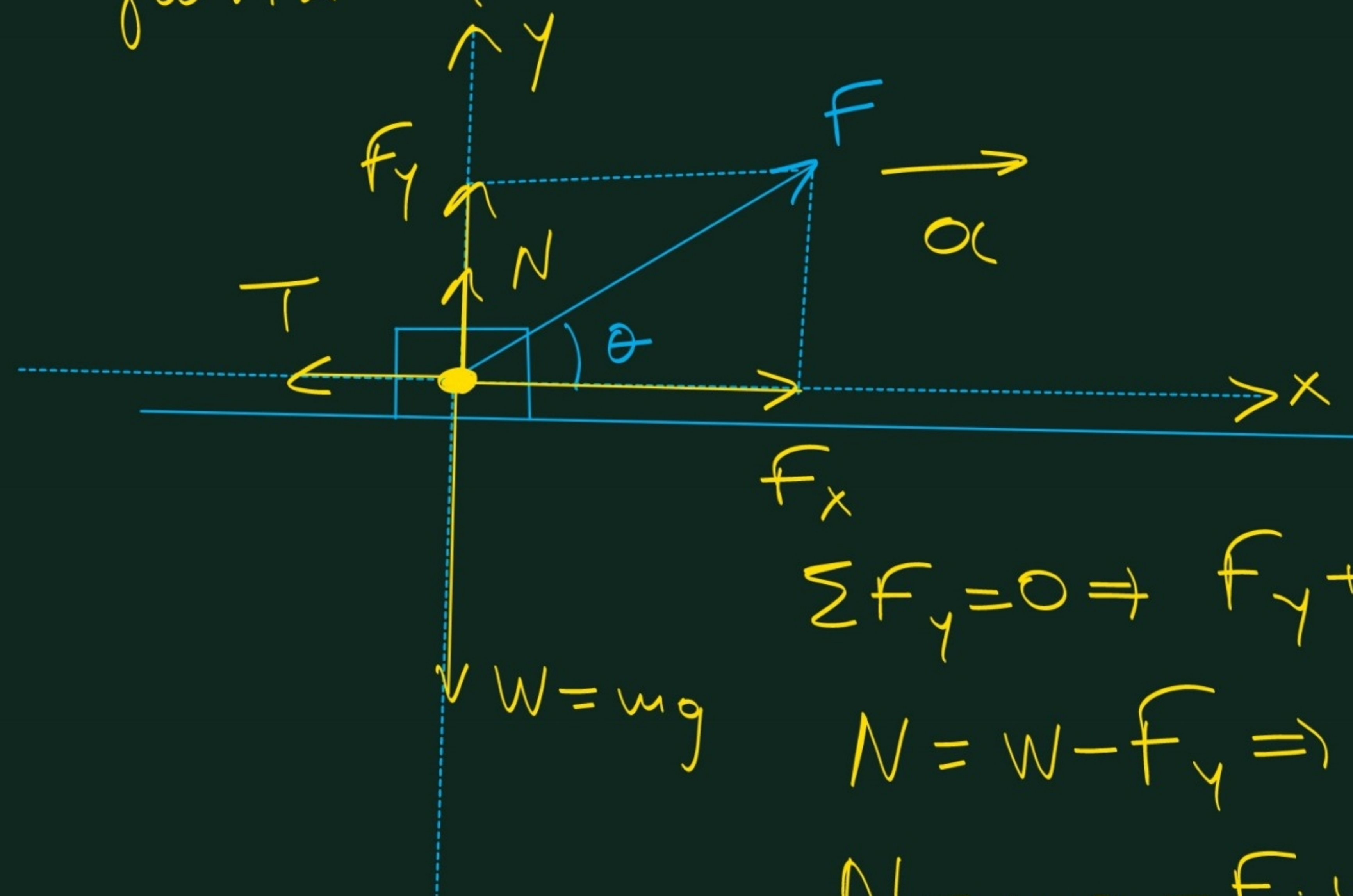


Αν η δύναμη σχηματίζει
γωνία προς τα πάνω έχουμε:



$$\Sigma F_y = 0 \Rightarrow F_y + N = W =$$

$$N = W - F_y \Rightarrow$$

$$N = mg - F \cdot \sin \theta$$

$$T = \mu N = \mu mg - \mu F \cdot \sin \theta$$

$$S = \frac{v_1^2}{2a'}$$

$$\Sigma F_x = ma \Rightarrow F_x - T = ma \Rightarrow$$

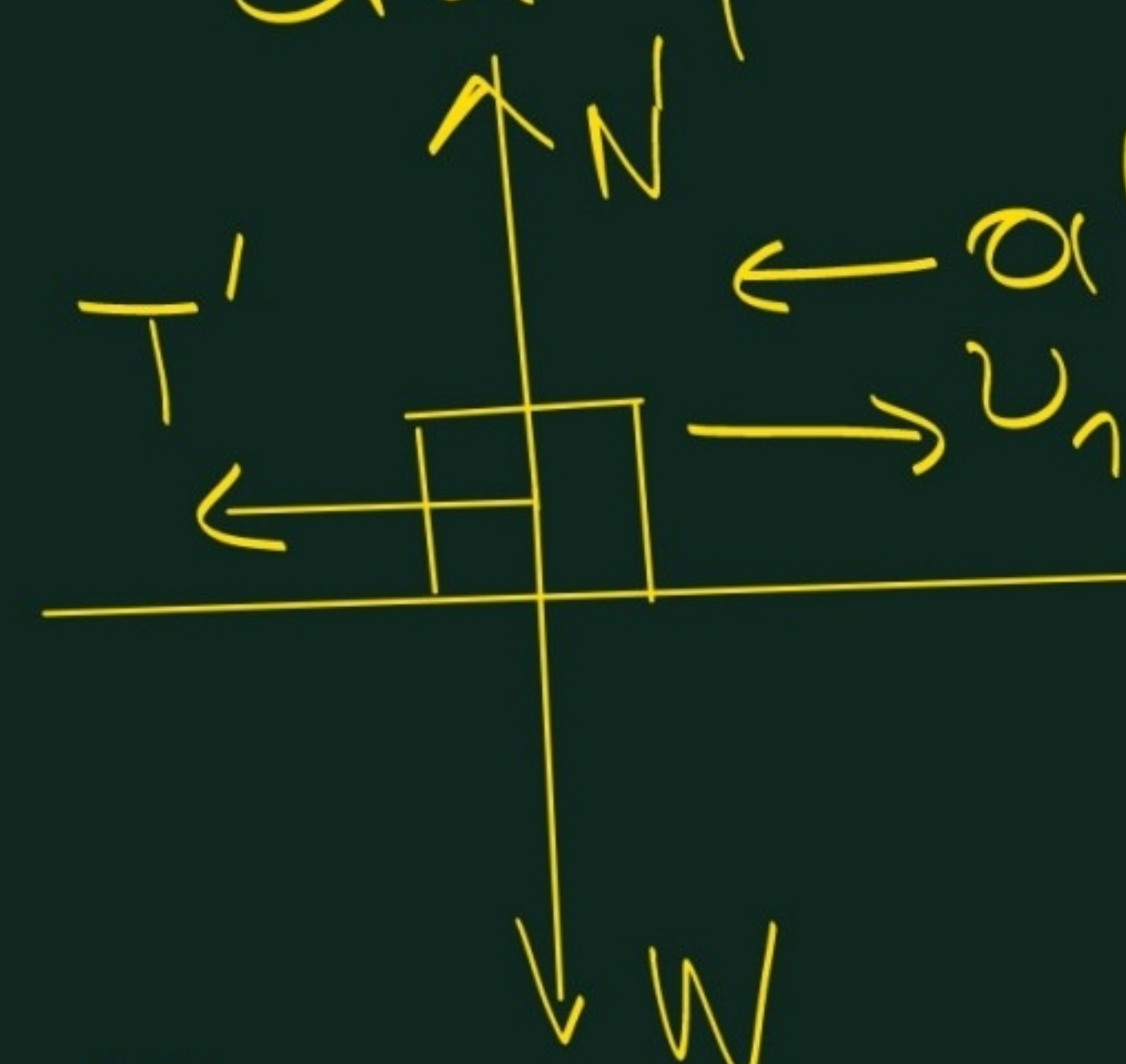
$$F \cdot \cos \theta - (\mu mg - \mu F \cdot \sin \theta) = ma \Rightarrow$$

$$F \cdot \cos \theta - \mu mg + \mu F \cdot \sin \theta = ma \Rightarrow$$

$$F \cdot (\sin \theta + \mu \cos \theta) - \mu mg = ma.$$

$$\Rightarrow a = \dots$$

Αν υπαρχούσε η F έχουμε
ευθύγραμμο α'



$$\Sigma F_y = 0 \Rightarrow N' = W$$

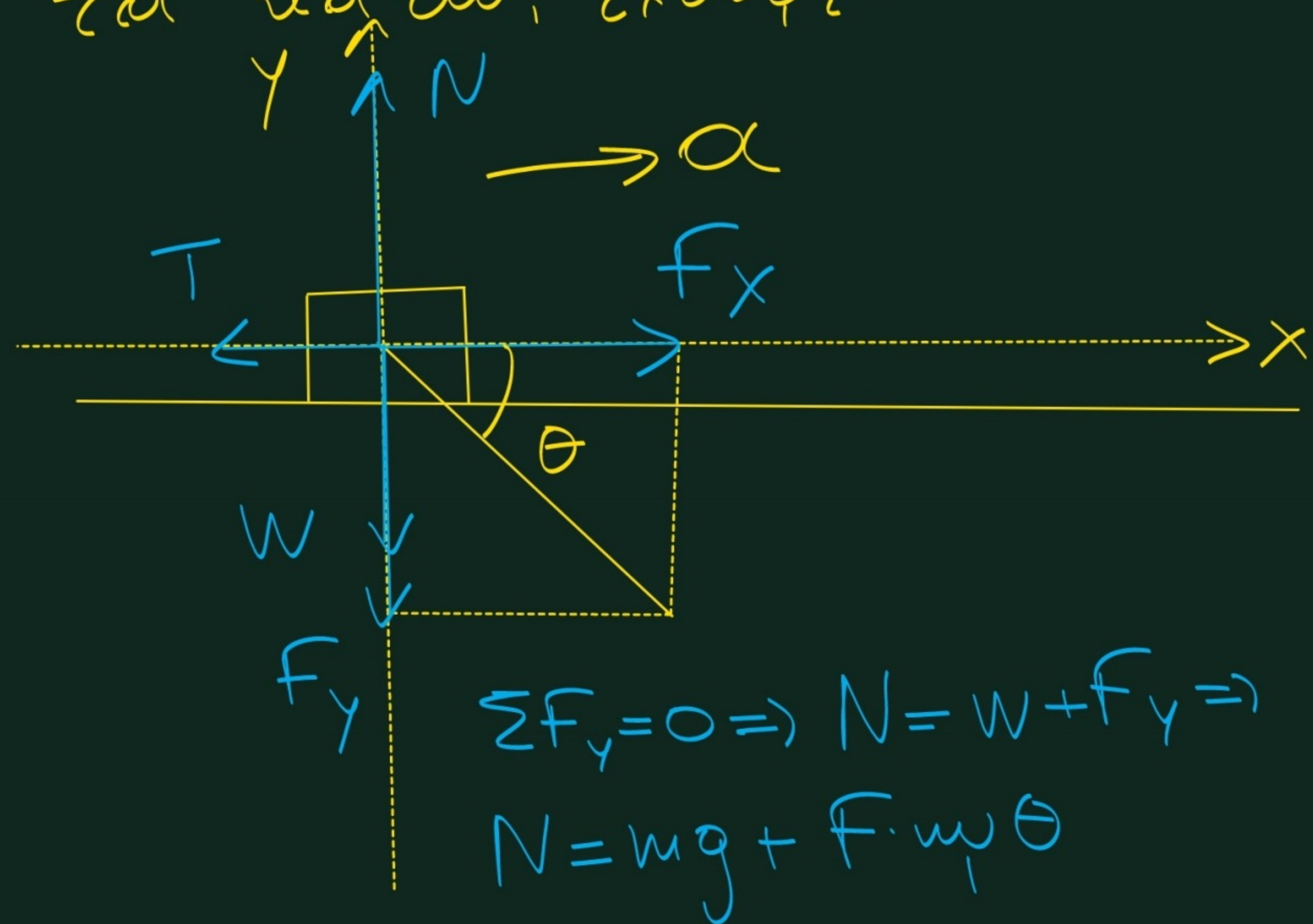
$$\Sigma F_x = ma' \Rightarrow$$

$$T' = ma' \Rightarrow$$

$$\mu N' = ma' \Rightarrow$$

$$\mu mg = ma' \Rightarrow a' = \mu g$$

Αν η δύναμη είναι υπό γωνία προς τα κάτω, έχουμε:



$$T = \mu N = \mu mg + \mu F \cdot \sin \theta$$

$$\Sigma F_x = ma \Rightarrow F_x - T = ma \Rightarrow$$

$$F \cdot \sin \theta - (\mu mg + \mu F \cdot \sin \theta) = ma \Rightarrow$$

$$F \cdot \sin \theta - \mu mg - \mu F \cdot \sin \theta = ma \Rightarrow$$

$$F(\sin \theta - \mu \sin \theta) - \mu mg = ma \Rightarrow a = \dots$$

Αν καταργηθεί η F έχουμε την ίδια επιβράδυνση $a' = \mu g$.

$$v_1 = at_1$$

$$S = v_1 t_2 - \frac{1}{2} a' t_2^2 \Rightarrow S = v_1 \frac{v_1}{a'} - \frac{1}{2} a' \frac{v_1^2}{a'^2} \Rightarrow$$

$$0 = v_1 - a' t_2 \Rightarrow$$

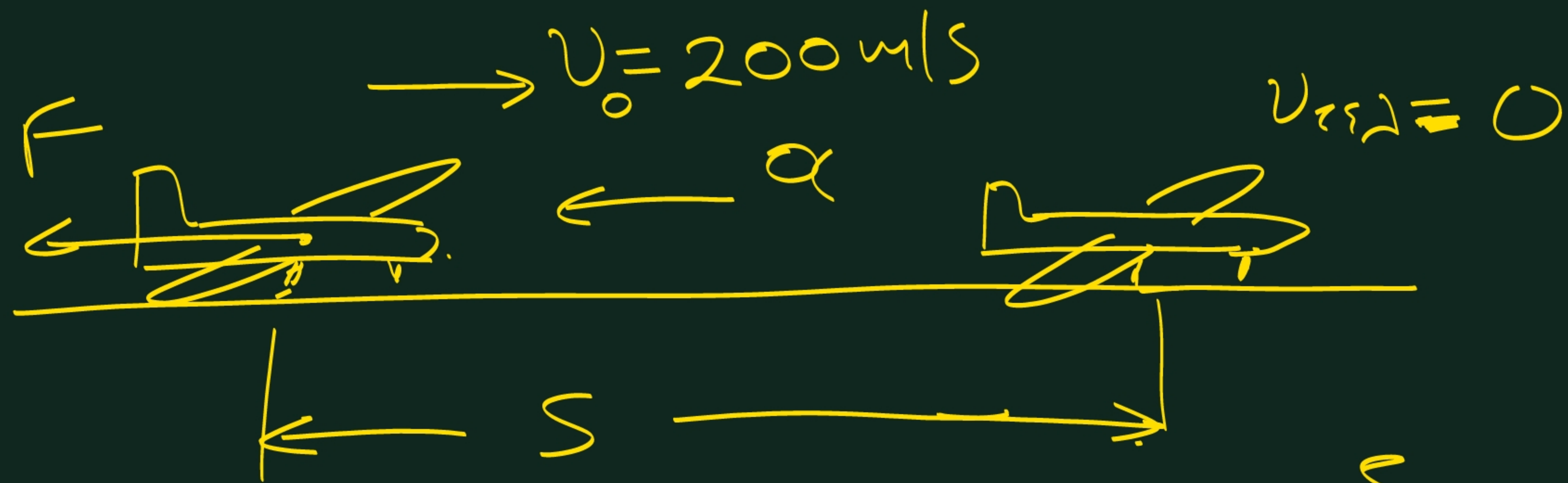
$$t_2 = \frac{v_1}{a'}$$

$$S = \frac{v_1^2}{a'} - \frac{1}{2} \frac{v_1^2}{a'} = \frac{v_1^2}{2a'}$$

Δραστηριότητα 168.

β) $m = 3,5 \cdot 10^5 \text{ kg}$.

$$F = 1,75 \cdot 10^6 \text{ N}$$



$$F = m\alpha \Rightarrow 1,75 \cdot 10^6 = 3,5 \cdot 10^5 \alpha \Rightarrow$$

$$\alpha = \frac{1,75 \cdot 10^6}{3,5 \cdot 10^5} = \frac{1,75 \cdot 10}{3,5} = \frac{17,5}{3,5} = 5 \text{ m/s}^2$$

$$S = \frac{v_0^2}{2\alpha} = \frac{200^2}{2 \cdot 5} = \frac{40.000}{10} =$$

$$S = 4.000 \text{ m}.$$

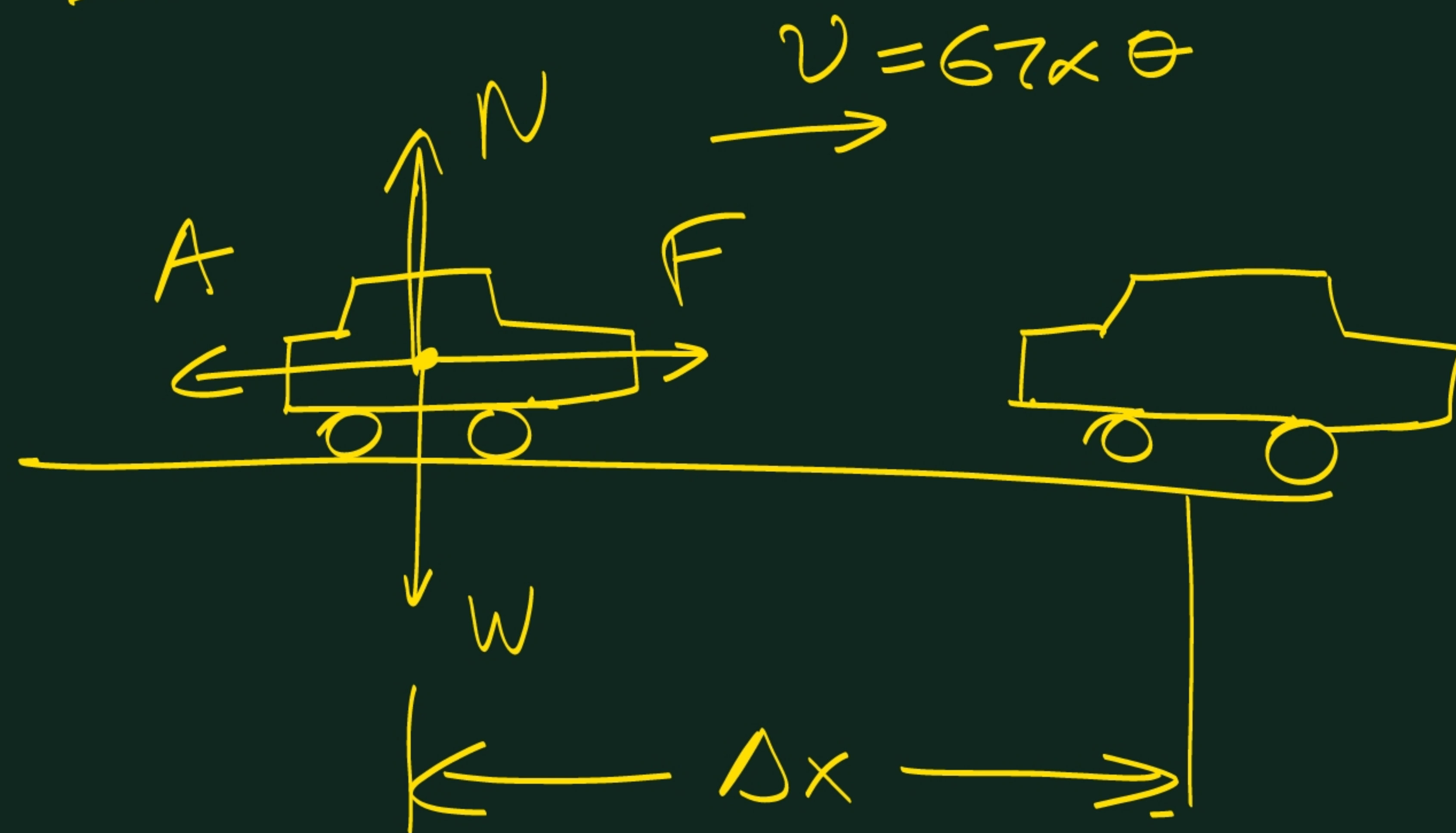
$$v = v_0 - \alpha t \Rightarrow 0 = v_0 - \alpha t_1 \Rightarrow t_1 = \frac{v_0}{\alpha}$$

$$S = v_0 t_1 - \frac{1}{2} \alpha t_1^2 =$$

$$= v_0 \cdot \frac{v_0}{\alpha} - \frac{1}{2} \cancel{\alpha} \cdot \frac{v_0^2}{\alpha^2} =$$

$$= \frac{v_0^2}{\alpha} - \frac{v_0^2}{2\alpha} = \frac{v_0^2}{2\alpha}$$

Ass. 1 682.193.



$$W_A = -A \cdot \Delta x = -6000 \text{ J}$$