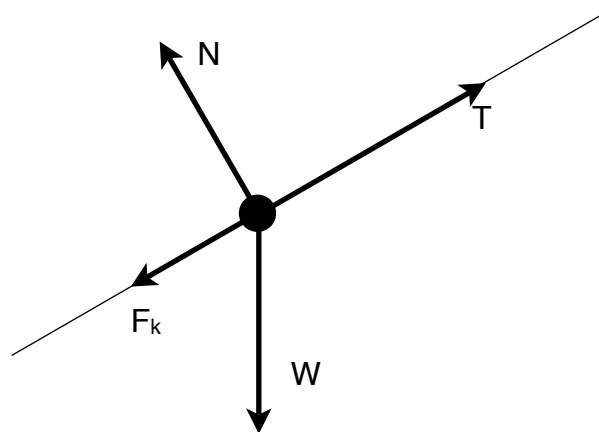


2008 exam Q10: Elephant pulling logs up slope

An elephant drags a tray of logs of total weight $10,000\text{ N}$ up a uniform slope. The slope is 20 m in length and is inclined at an angle of 30° to the horizontal. The value of the coefficient of kinetic (sliding) friction between the tray of logs and the slope is 0.50 . The elephant walks at a constant speed.

Solution:

(a) Free-body diagram:



(b) The elephant is walking at constant speed, therefore the logs are sliding at constant speed. By Newton's laws, there is no acceleration of the logs and therefore the net force on the logs is *zero*.