

I-69

Construct free-body diagrams for the objects described below.

a. A 4000 kg rocket's engine produces a thrust of 70,000 N for 15 s. The rocket is fired vertically upward.

while the engine is firing

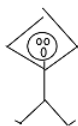


after the engine turns off



b. Tired of walking up the stairs, an 80 kg engineering student designs an ingenious device for reaching his third floor dorm room. An 84 kg block is attached to a rope that passes over a pulley. The student holds the other end of the rope. When the 84 kg block is released, the student is pulled up to his dorm room.

the student



the block



c. A 1.0 kg block is stacked on top of a 2.0 kg block on the floor of an elevator moving downward at constant speed.

the 1.0 kg block



the 2.0 kg block



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