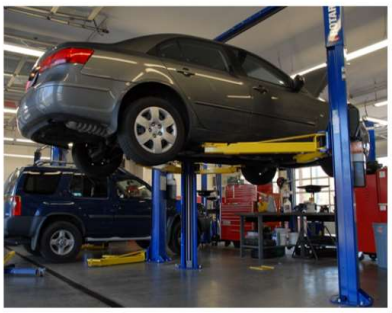
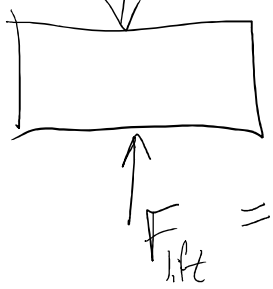
- Your car broke down and now needs to be repaired. How much power is required for a lift to raise your 1.2 ton car 6 ft off the ground in 15 seconds?



$200\frac{lb}{ton}(1.2 tons) = 2400 lb$



$F_{lift} = 2400 lb$

$\Delta h = 6 ft$

$W = \Delta PE + \cancel{\Delta KE}^{0}$

$W = mg(\Delta h) = 2400 lb\ (6 ft)$

$= 14400\ ft\ lb$

$P = \frac{W}{\Delta t} = \frac{14400\ ft\ lb}{15 s} = 960\ \frac{ft\ lb}{s}$

$550\frac{ft\ lb}{s} = 1 hp$

$= 1.745 hp$