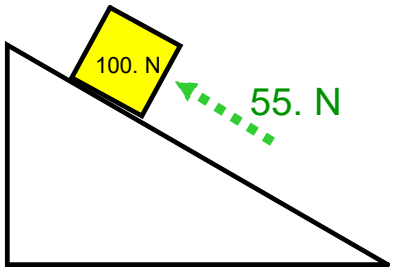
A ramp is 6.0 m long and 2.5 m high. A 55. N force is needed to push a 100. N box up the ramp. What is the AMA, IMA, W_o, W_i, and efficiency of the ramp?



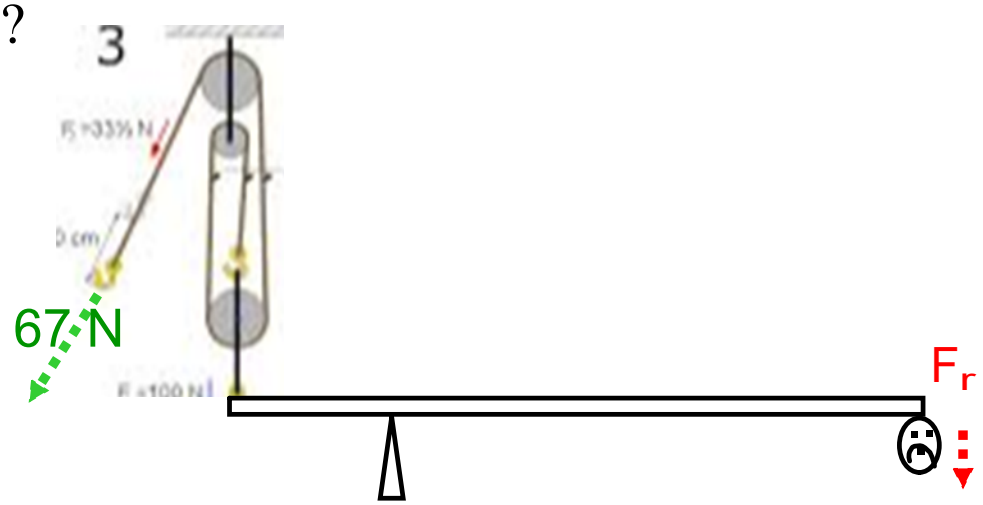
A first class lever has a 12 kg mass at one end and a 40 N force applied to the other end. If the 12 kg mass goes up .50 m, what is d_e? The efficiency is 93%

W_i
W_o
AMA
IMA

A ramp is 1.3 m high and is at a 21 degree angle. What is the effort force needed to move 24 kg mass up the ramp if the efficiency is 88%?

W_i
W_o
AMA
IMA

A 90% efficient pulley with an IMA of 3 and an d_e of 3.0 m activates a 95% efficient first class lever that has a d_r of 4.0 m. What is the output force of the lever if the input force on the pulley is 67 N?



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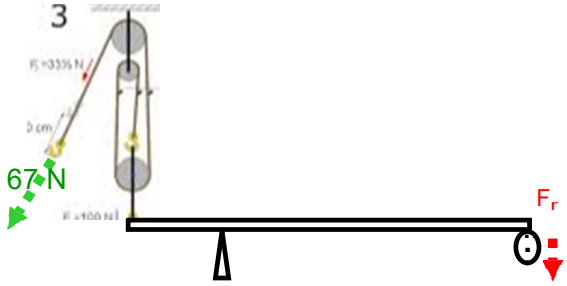

$Eff_t = .9 \times .95 = 86\%$

$Eff = W_o/W_i \times 100$
$F_r = (Eff\ W_i)/d_r$

$F_r = (.86 \times 67N \times 3m)/4m$
$F_r = 43N$

A ramp is 1.3 m high and is at a 21 degree angle. What is the effort force needed to move 24 kg mass up the ramp if μ is .33? What is its efficiency?

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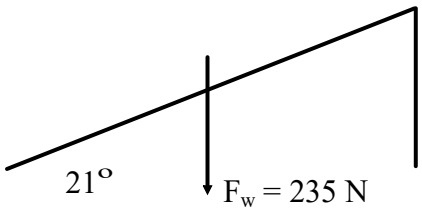

$\sin 21^0 = 1.3\ m/d_e$

$d_e = 3.6$ m

$F_N' = \cos 21(235\ N) = 219$ N

$F_p = \sin 21(235\ N) = 84$ N

$F_f = .33\ (219\ N) = 72$ N

$F_e = F_p + F_f = 84\ N + 72\ N = 156$ N

$Eff = F_r d_r / F_e d_e$

Eff = 235 N(1.3 m)/156 N(3.6 m)

Eff = 54%