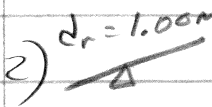




Physics
Simple Machines
Practice WS

1)  WT = 3000N MA = $\frac{F_r}{F_e} = \frac{3000N}{200N} = 15.0$
 $F_e = 200.N$

2)  $M_c = 70.0 \text{ kS}$ A) IMA = $\frac{d_e}{d_r} = \frac{3.00m}{1.00m} = 3.00$
 $d_e = 3.00m$ $M_{ce} = 50.0 \text{ kS}$

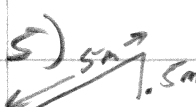
B) $F_r = ?$ F_{A_2} MA = $\frac{F_r}{F_e}$ $F_{A_2} = (F_e) MA = (850.N)(3.00) = 2550N$

3)  $r = 30.0cm$ $d_r = 2\pi r = 2\pi(.300m) = 1.885m$
 $d_r = 2.00cm = 0.0200m$
 IMA = $\frac{d_e}{d_r} = \frac{1.885m}{0.0200m} = 94.2$

4)  $F_e = 20.0N$ A) IMA = $\frac{2\pi(.400m)}{2\pi(.100)} = 4.00$
 $r_H = .400m$
 $r_A = .100m$


$F_r = 60.0N$ B) MA = $\frac{F_r}{F_e} = \frac{60.0N}{20.0N} = 3.00$

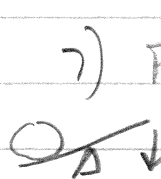
C) EFF = $\frac{MA}{IMA} \times 100 = \frac{3.00}{4.00} \times 100 = 75.0\%$

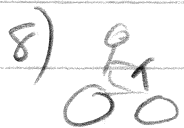
5)  A) IMA = $\frac{d_e}{d_r} = \frac{5.00m}{.500m} = 10.0$

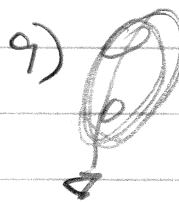
$F_r = 3500N$ B) MA = $\frac{F_r}{F_e} = \frac{3500N}{450N} = 7.78$

C) EFF = $\frac{MA}{IMA} \times 100 = \frac{7.78}{10.0} \times 100 = 77.8\%$

6)  $F_r = 466. N$ $MA = \frac{F_r}{F_e} = \frac{466. N}{60.0 N} = 7.67$
 $F_e = 60.0 N$

7)  $F_e = 225 N$ $EFF = \frac{W_o}{W_i} = \frac{F_r d_r}{F_e d_e} \times 100$
 $F_r = 1.25 \times 10^3 N$
 $d_r = .130 m$
 $EFF = 88.7\%$
 $d_e = \frac{F_r d_r (100)}{F_e EFF} = \frac{(1.25 \times 10^3 N)(.130 m)(100)}{(225 N)(88.7)}$
 $d_e = .814 m$

8)  $IMA = 6.00$ $IMA = \frac{d_e}{d_r}$ $d_e = (IMA)(d_r)$
 $r_w = .500 m$
 $R_s = ?$
 $d_e = (6.00)(.500 m)$
 $d_e = 3.00 m$

9)  $IMA = 10.0$
 A) $F_e = 14500$ $IMA = \frac{d_e}{d_r} = MA = \frac{F_r}{F_e}$
 $d_e = 4.00 m$
 $F_e = \frac{F_r}{MA} = \frac{14500 N}{10} = 1450 N$

B) $d_e = ?$ $d_e = (d_r)(IMA)$
 $= (4.00 m)(10) = 40.0 m$

C) 10 ropes