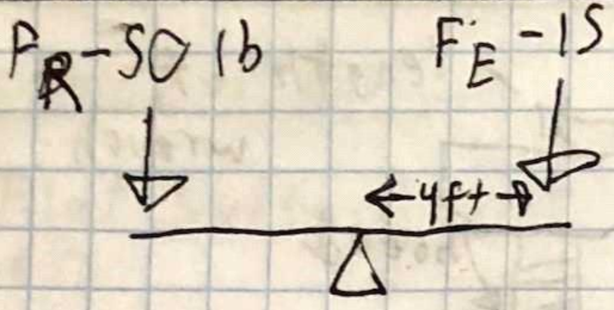
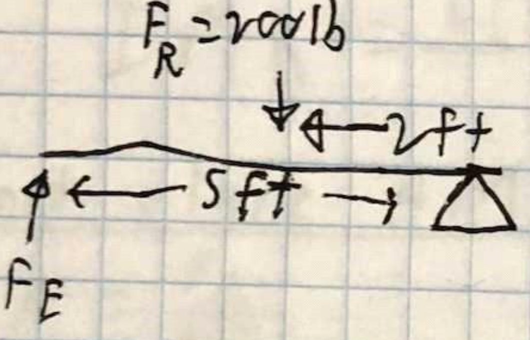
1.1.2 Simple Machines

1. 

2. $AMA = \frac{F_R}{F_E} = \frac{50}{15} = \boxed{3.33}$

3. $M = Fd$ $\quad M_E = (15)(4)$ $\quad D_R$

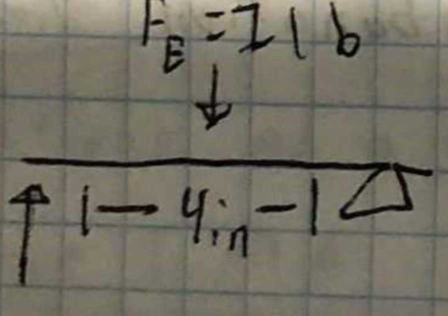
$M_E = M_R$ $\quad M_R = (50)(d_R)$

4. 

5. $IMA =$

6. $M = Fd$ $\quad M_E = F_E \cdot 5$ $\quad F_E$ (5f

$M_E = M_R$ $\quad M_R = 200 \cdot 2$

7. 

$F_R = \frac{1}{5}$ lb

8. $AMA = \frac{F_R}{F_E}$

9. $M = Fd$ $\quad M_E = (1\text{ lb}) \cdot D_E$

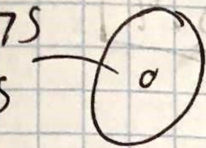
$M_E = M_R$ $\quad M_R = (.2\text{ lb}) \cdot 4\text{ in}$

$1(D_E) = (.2)(4)$

10. $C = \pi d$ $\quad C = \pi(36 in)$ $\quad$ **113 in**

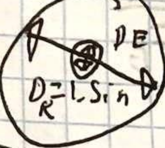
11. R - 0.75

$\varnothing$ - 1.5



$F_R = 200 lb$

$F_E = 30 lb$



12. $AMA = \frac{F_R}{F_E} = \frac{200}{30} =$ **6.67**

13. $M = F d_{\perp}$ (radius)

$M_R = M_E$

$M_E = (30)\, D_E$

$M_R = (200 lb)(0.75 in)$

$(30)\, D_E = (200)(0.75)$

$D_E = (5)\,2$

$D_E =$ **10**

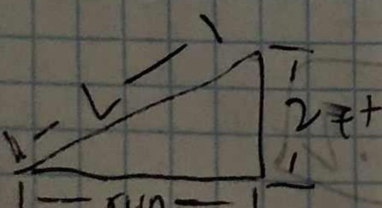
14. $AMA = \frac{F_R}{F_E} = \frac{560}{50} =$ **11.2**

15. IMA = # of strands $\quad$ 11.2 - 12 $\quad$ **12**

16. $IMA = AMA = \frac{F_R}{F_E}$ $\quad 9 = \left(\frac{F_R}{100}\right) 100$ $\quad$ **9**

17.

18.



19. $slope = \frac{rise}{run}$ $\quad \frac{1}{12} = \frac{2.00}{run}$ $\quad run =$ **24 ft**

20. $a^2 + b^2 = c^2$ $\quad 2^2 + 24^2 = c^2$ $\quad 24.083 \approx$ **24.1 ft**

1.1.2 Simple Machines Project

21. $IMA = \frac{L}{H} = \frac{24.1}{2} \approx$ **12.0**

22. $IMA \quad \frac{F_R}{F_E} \quad 12.042 = \frac{185}{F_E}$ **15.4**

23.

24. $a^2 + b^2 = c^2$ $(0.25)^2 + (0.25)^2 = c^2$ **0.354 in**

25. $\frac{0.25}{0.25} =$ **1.0** $= IMA$

26.

27. $C = 2\pi r$ or πd $\pi(1.5)$ **4.71 in**

28. $pitch = \frac{1}{TPI} = \frac{1}{20} =$ **0.05 in**

29. $IMA = \frac{C}{Pitch} = \frac{4.71}{0.05} =$ **94.2**

30. $\frac{F_R}{F_E}$ 94.2 $= \frac{F_R}{5}$ $F_R =$ **471 lb**