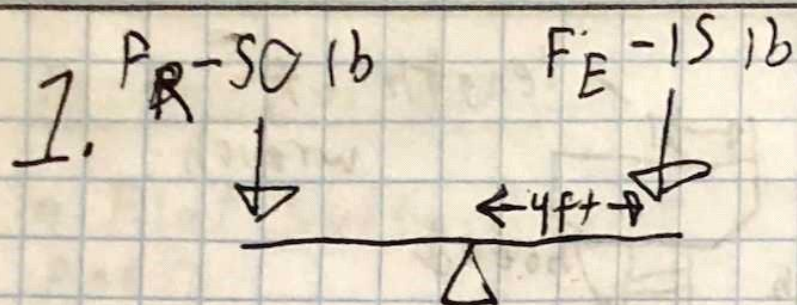


# 1.1.2 Simple Machines



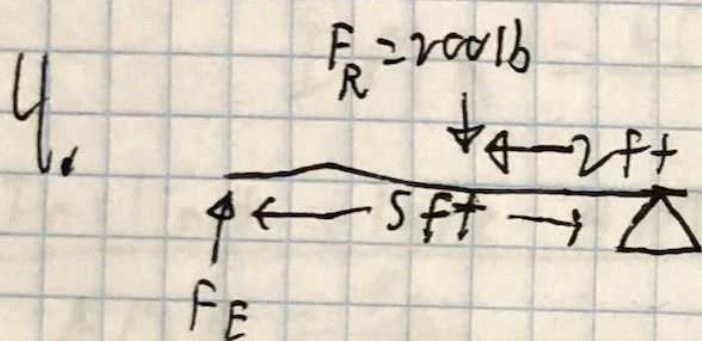
2.  $AMA = \frac{F_R}{F_E} = \frac{50}{15} = \boxed{3.33}$

3.  $M = Fd$

$M_E = (15)(4)$

$M_E = M_R$

$M_R = (50)(d_R)$



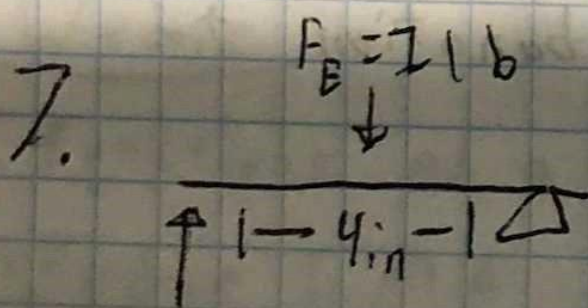
5.  $IMA =$

6.  $M = Fd$

$M_E = F_E \cdot 5$   $F_E (5 \text{ ft})$

$M_E = M_R$

$M_R = 200 \cdot 2$



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

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

9.  $M = Fd$

$M_E = (1 \text{ lb}) \cdot d_E$

$M_E = M_R$

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

$1(d_E) = (2)(4)$

3

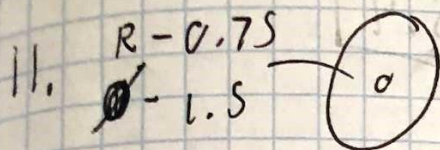
~~Don't do~~



10.  $C = \pi d$

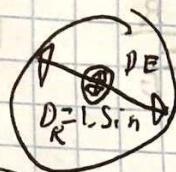
$C = \pi (3.6 \text{ in})$

$\boxed{11.3 \text{ in}}$



$F_R = 200 \text{ lb}$

$F_E = 30 \text{ lb}$



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

13.  $M = F d_{\perp}$  <sup>radius</sup>

$M_E = (30) D_E$

$D_E = (5) 2$

$M_R = M_E$

$M_R = (200 \text{ lb}) (0.75 \text{ in})$

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

$D_E = \boxed{10}$

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

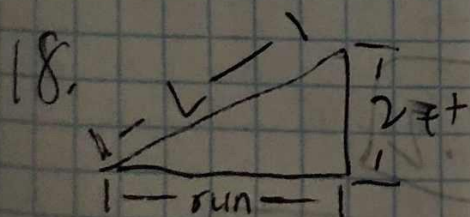
15.  $IMA = \frac{\# \text{ of standards}}{11.2 - 12}$

$\boxed{112}$

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

$\boxed{9}$

17.



19.  $\text{slope} = \frac{\text{rise}}{\text{run}} \quad \frac{1}{12} = \frac{2.00}{\text{run}}$

$\text{run} = \boxed{24 \text{ ft}}$

20.  $a^2 + b^2 = c^2$

$2^2 + 24^2 = c^2$

$24.083 \approx$

$\boxed{24.1 \text{ ft}}$

Q



# 1.1.2 Simple Machines Project

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

$$22. IMA \frac{P_R}{F_E} = 17.042 = \frac{185}{F_E} \quad \boxed{15.4}$$

23.

$$24. a^2 + b^2 = c^2 \quad (0.25)^2 + (0.25)^2 = c^2 \quad \boxed{0.354 \text{ in}}$$

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

26.

$$27. C = 2\pi r \text{ or } \pi d \quad \pi(1.5) \quad \boxed{4.71 \text{ in}}$$

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

$$29. IMA = \frac{C}{\text{pitch}} = \frac{4.71}{0.05} = \boxed{94.2}$$

$$30. \frac{F_R}{F_E} \approx 94.2 = \frac{F_R}{5} \quad F_R = \boxed{471 \text{ lb}}$$