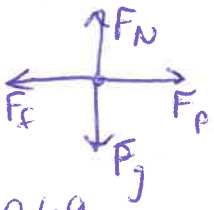
17. $F_N = mg = 52\,N$

$F_f = \mu_k F_N$

$\mu_k = \frac{F_f}{F_N} = \frac{36\,N}{52\,N} = 0.69$



18. $F_N = mg = 1029\,N$

$F_f = \mu_s F_N$

$\mu_s = \frac{F_f}{F_N} = \frac{102\,N}{1029\,N} = 0.1$

19. $F_N = 134\,N$

$\mu_s = 0.55$

$F_p = F_f = \mu_s F_N$

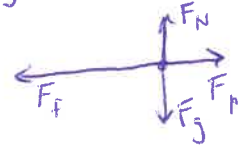
$F_p = F_f = (0.55)(134\,N) = 73.7\,N$

20. $F_N = 650\,N$

$\mu_k = 0.12$

$F_F = \mu_k F_N = (0.12)(650\,N) = 78\,N$

22. $m = 1.4\,kg$ $a = 1.25\,m/s^2$ $\mu_k = ?$



$F_N = F_g = mg = 13.72\,N$

$F_{Net} = F_p - F_f$

$ma = F_p - \mu_k F_N$

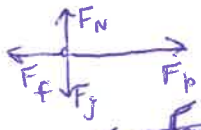
$(1.4\,kg)(1.25\,m/s^2) = F_p - \mu_k (13.72\,N)$

$1.75\,N = F_p - \mu_k (13.72\,N)$

$\frac{1.75\,N}{13.72\,N} = \mu_k$

$\mu_k = 0.13$

23. $m = 41\,kg$ ~~$m = 1.4\,kg$~~ $\mu_k = ?$



~~$a = 1.25\,m/s^2$~~ $a = 0.12\,m/s^2$ $F_p = 65\,N$

~~$F_N = mg$~~

~~$F_N = (1.4\,kg)(9.8\,m/s^2) = 13.72\,N$~~

$F_{Net} = F_p - F_f$

$ma = F_p - F_f$

$ma = F_p - \mu_k F_N$

$ma = F_p - \mu_k mg$

$ma - F_p = -\mu_k mg$

$\frac{ma - F_p}{mg} = -\mu_k$

$\mu_k = \frac{F_p - ma}{mg}$

$\mu_k = \frac{65\,N - (41\,kg)(0.12\,m/s^2)}{(41\,kg)(9.8\,m/s^2)}$

$\mu_k = 0.15$

27. Both types of friction will slow the motion of an object or stop it from moving. Both act in the opposite direction of motion. Static friction only occurs when things were at rest while kinetic friction only occurs when things are moving.

28. $\mu_k = 0.15$ $m = 25\,kg$ $F_f = ?$

$F_f = \mu_k F_N = (0.15)\,mg = (0.15)(25\,kg)(9.8\,m/s^2) = 36.75\,N$