

Note: For all problems, positive values (+) imply a direction of right or up, while negative values (-) imply a direction of left or down, unless otherwise specified.

1. (a) $F_{net} = 50\text{ N}$
(b) $F_N = 98\text{ N}$
(c) $a = 5\text{ m/s}^2$
2. (a) $F_{net} = 20\text{ N}$
(b) $a = 2\text{ m/s}^2$
3. (a) $F_g = -9800\text{ N}$
(b) $F_{net} = 5000\text{ N}$
(c) $F_{engine} = 14800\text{ N}$
4. (a) $F_{push} = 200\text{ N}$
(b) $F_{push} = -900\text{ N}$
5. (a) $a = 20\text{ m/s}^2$
(b) $F_{thrust} = 30\text{ N}$
6. (a) $F_N = 9800\text{ N}$
(b) $W = -9800\text{ N}$
(c) $F_{net} = 0\text{ N}$
7. Pushing a book on the floor downwards with some force
8. (a) $T = 4900\text{ N}$
(b) $T = 5650\text{ N}$
(c) $T = 4150\text{ N}$