15. The (vertical) forces at points *A*, *B* and *P* are F_A , F_B and F_P , respectively. We note that $F_P = W$ and is upward. Equilibrium of forces and torques (about point *B*) lead to

$$F_A + F_B + W = 0$$
$$bW - aF_A = 0$$

(a) From the second equation, we find

$$F_A = bW/a = (15/5)W = 3W = 3(900 \text{ N}) = 2.7 \times 10^3 \text{ N}.$$

- (b) The direction is upward since $F_A > 0$.
- (c) Using this result in the first equation above, we obtain

$$F_{B} = W - F_{A} = -4W = -4(900 \text{ N}) = -3.6 \times 10^{3} \text{ N},$$

or $|F_B| = 3.6 \times 10^3 \,\mathrm{N}$.

(d) F_B points downward, as indicated by the minus sign.