1. $\boxed{D}$. In equilibrium, the sum of forces is zero, which means $F_1 + F_2 + F_3 = 0$. Therefore, the magnitude of the resultant of F_1 and F_2 must equal to that of F_3, but in opposite directions. Thus, the answer is $\boxed{70 \text{ N}}$.

2. $\boxed{C}$. Larger mass, small the acceleration. To have constant acceleration, we must have different forces acting on the two cars. However, the compressed spring asserts the same force, in opposite direction on the two cars.

3. $\boxed{A}$. Draw a force diagram and write the Newton's Law equation

$$mg - T = ma$$
$$T - 1 \cdot g = 1 \cdot a$$

Solve for m, we have

$$m = \frac{g + a}{g - a} = \frac{10 + 5}{10 - 5} = \boxed{3 \text{ kg}}$$

4. $\boxed{E}$. We write Newton's Law equation for each block. For the 1-kg block, we have

$$T = ma, \text{ which leads to } a = \frac{2}{1} = 2 \text{ m/s}^2.$$

For the 3-kg block, we have

$$F - T = ma, \text{ or } F = T + ma = (1 + 3)(2) = \boxed{8.0 \text{ N}}.$$

5. $\boxed{A}$. From the free-body diagram, $P > f$ for the homeowner to push the lawn mower. N is the sum of W and the vertical component of P. Therefore, A is the correct answer. (B) is incorrect because $N \neq W$. (C) is incorrect because $N > W$. (D) is incorrect for $P = f$. (E) is incorrect because (A) is correct.