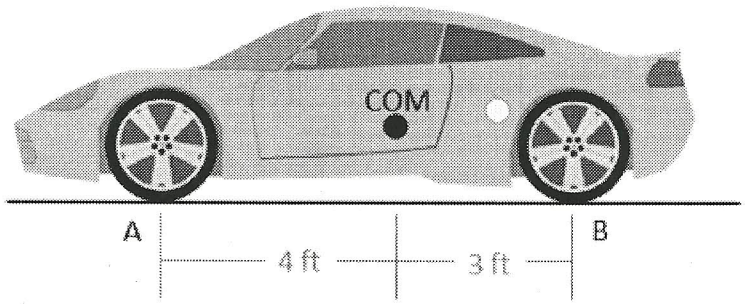
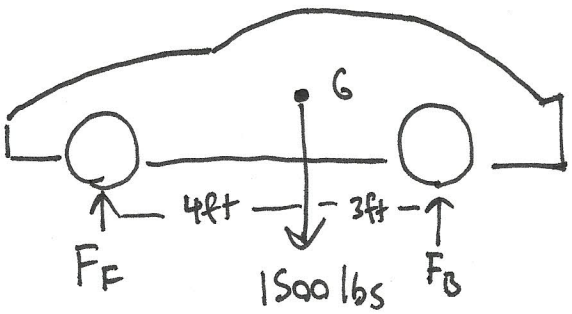
Question 1:

The car below has a mass of 1500 lbs with the center of mass 4 ft behind the front wheels of the car. What are the normal forces on the front and the back wheels of the car?





$$\Sigma F_x = 0 = 0$$

$$\Sigma F_y = F_F + F_B - 1500 = 0$$

$$\Sigma M_G = -(4)(F_F) + (3)(F_B) = 0$$

$$F_F = \frac{3}{4} F_B$$

$$\frac{3}{4} F_B + F_B - 1500 = 0$$

$$1.75 F_B = 1500$$

$$\boxed{F_B = 857.14 \text{ lbs}}$$

$$F_F = \frac{3}{4} F_B$$

$$\boxed{F_F = 642.86 \text{ lbs}}$$