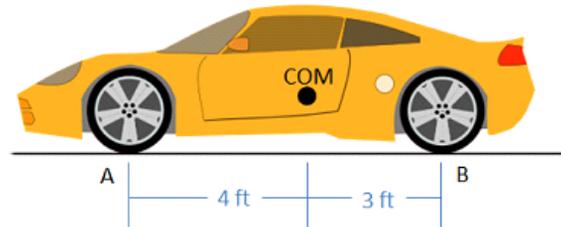
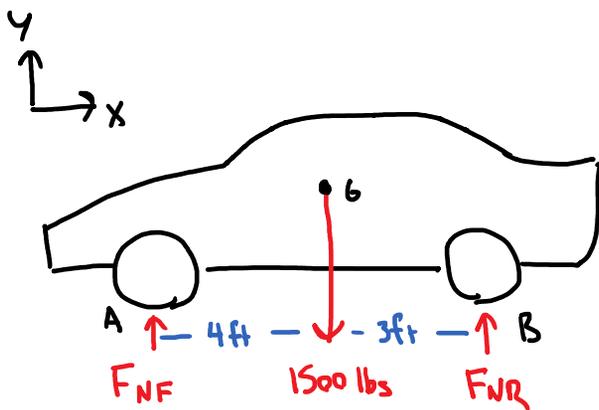


# Question 1

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?



Adapted from the public domain image by Ebaychatter0



$$\sum F_x = 0 = 0$$

$$\sum F_y = F_{NF} + F_{NR} - 1500 = 0$$

$$\sum M_G = -(4)(F_{NF}) + (3)(F_{NR}) = 0$$

$$F_{NF} = \frac{3}{4} F_{NR}$$

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

$$F_{NR} = \frac{1500}{1.75} = \boxed{857.14 \text{ lbs}}$$

$$F_{NF} = 1500 - F_{NR} = \boxed{642.86 \text{ lbs}}$$