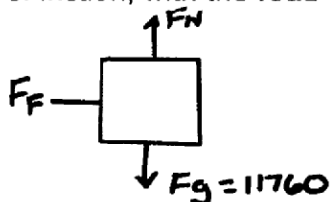


Friction Worksheet

1. Calculate the force of friction on Mr. S's car, if it has a weight of 11760 N and the coefficient of friction, with the road of .045.

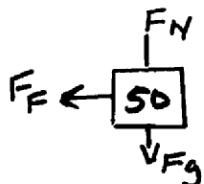


$$F_N - mg = 0$$

$$F_N = mg = 11760$$

$$F_F = \mu F_N = 0.045(11760) = \underline{529\text{ N}}$$

2. Calculate the force of friction on a baseball player as he slides into first base if the player has a mass of 50 kg and his coefficient of friction, with the ground is 0.45.



$$F_N - F_g = 0$$

$$F_N = F_g = mg = 50(9.8)$$

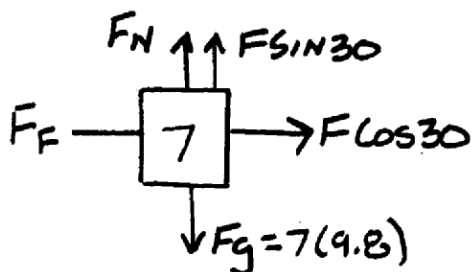
$$F_N = 490\text{ N}$$

$$F_F = 0.45 F_N$$

$$0.45(490)$$

$$F_F = 220\text{ N}$$

3. Mr. S decides to give his cat, Tigger, a bath. Tigger decides he does not want a bath, digs his claws in to the carpet and refuses to move. The coefficient of friction between Tigger and the floor is 0.056 and Tigger has a mass of 7 Kg. Find Tigger's acceleration if Mr. S pulls him at a 30° angle to the horizontal with a force of 10 N. (DRAW A FBD!)



$$F_N + F \sin 30 - F_g = 0$$

$$F_N = 7(9.8) - 10 \sin 30 = 63.6\text{ N}$$

$$F_F = \mu F_N = 0.056(63.6) = 3.6\text{ N}$$

$$F_{NET_x} = F \cos 30 - F_F = ma$$

$$10 \cos 30 - 3.6 = 7a$$

$$a = \frac{5.06}{7} = 0.72\text{ m/s}^2$$