Name: _____ Score: _____

Program, Year & Section: _____ Date: _____

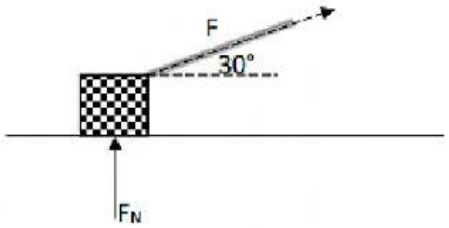
Worksheet 7b
Newton's Laws of Motion

A. Identify the law of motion that applies to the following situations. Write 1, 2, or 3 for the First, Second and Third Laws of motion, respectively.

_____ 1. A ball that hits the ground bounces upward
_____ 2. A box remains stationary on the floor
_____ 3. A skateboarder jumps forward from the skateboard
_____ 4. A car travels along a level road gradually increasing its speed
_____ 5. A coin that was dropped from the roof of a tall building

B. Solve the problem below. Show your complete solutions.

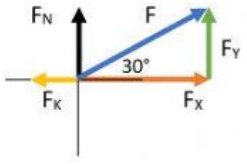
1. A boy pulls a 10.0-kg box by the attached cord along the smooth floor. The boy exerts a force of 40.0 N along a 30.0°. Assuming that the box starts from rest and a friction (f_k) of 12. 0 N exists, calculate (a) the acceleration of the box, and (b) the horizontal distance traveled by the box if the boy pulls it for 5.00 s. **(Express all answers to 3 s.f.)**



Given:

F = _____ N m = _____ kg
θ = _____ ° t = _____ s

Find: (a) **a** and (b) **d**



For the following questions, write the letter of your answer.

_____ Which of the following is the force responsible to move the box horizontally?

a. F b. f_K c. F_X d. F_Y

_____ Which forces (when combined) will give the net force to make the box accelerate horizontally?

a. F & F_N b. f_K & F_X c. F_X & F_Y d. F_Y & F_K

_____ What is the value of the net force to make the box accelerate horizontally?

a. 5.40 N b. 8.00 N c. 20.0 N d. 22.6 N

$$a = \frac{F_{net}}{m}$$

$$a = \frac{N}{kg}$$

$$a = \frac{m}{s^2}$$

$$d = v_i t + \frac{at^2}{2}$$

$$d = \left(\quad\frac{m}{s}\right)(\quad s) + \frac{\left(\quad\frac{m}{s^2}\right)(\quad s)^2}{2} = \quad m$$