Name: Date: Period:

Unit 04 Review (Forces & Newton's Laws)

$F_{NET} = ma$	$F_{NET} = \pm F_1 \pm F_2 \pm \cdots$	$F_G = mg$	$g = 9.8\,\mathrm{m/s^2}$

1. A penguin by the name of Pickles ($m = 23$ kg) is standing on a scale in an elevator on the top floor of a building. The elevator begins to go down towards the ground floor and does so by accelerating downward at 2.7 m/s^2. What is the normal force?

2. A new sports car ($m = 980$ kg) is capable of applying a force of 5500 N with its engine. If the force of friction on the car is 500 N, what is the car's acceleration (assume no air resistance)?

3. You are pushing a large tub of chocolate, which has a mass of 455 kg, with an acceleration of 0.4 m/s^2. The force of friction is 88 N. What is the force with which you are pushing the tub?

4. A fish ($m = 9.1$ kg) is pulled straight up out of the water by a fisherman. What is the acceleration of the fish if the force applied by the fisherman is 120 N?

Answers: (1) 163.3 N; (2) 5.10 m/s^2; (3) 270 N; (4) 3.39 m/s^2