Name: _____ **Class:** _____ **Date:** _____ **ID: A**

Newton's Second Law: F=ma

Problem

1. You push with 10.0 N on a 5.0-kg block and there are no opposing forces. How fast will the block accelerate?

2. You push with 27 N on a 10-kg chest, and there is a 7-N force of friction. How fast will the chest accelerate?

3. A 400,000-kg airplane in takeoff uses the 40,000 N thrust of each one of its four engines. What is the acceleration of the plane during takeoff?

4. An unbalanced force of 30 N gives an object an acceleration of 6.0 m/s^2. What force would be needed to give it an acceleration of 1.0 m/s^2?

5. A certain unbalanced force gives a 20-kg object an acceleration of 2.0 m/s^2. What acceleration would the same force give a 30-kg object?

6. A net force of 1.0 N acts on a 4.0-kg object, initially at rest, for 4.0 seconds. What is the distance the object moves during that time?

7. When air resistance on a falling skydiver builds up to 0.3 the weight of the skydiver, what is the acceleration of the skydiver?

8. Suppose that you exert 300 N horizontally on a 50-kg crate on a factory floor, where friction between the crate and the floor is 100 N. What is the acceleration of the crate?

9. A 20-kg block of cement is pulled upward (not sideways!) with a force of 400 N. What is the acceleration of the block?

10. Bronco the skydiver, whose mass is 80 kg experiences 200 N of air resistance. What is the acceleration of his fall?