

# Newton's 2nd Law Applied

Name \_\_\_\_\_

## Concepts

- 1.) What is the relationship between mass and acceleration if the force is constant?
- 2.) What is the relationship between mass and force if the acceleration is constant?
- 3.) What is the relationship between force and acceleration if the mass is constant?

## Simple review problems

- 4.) Find the weight in Newtons for a 150 kg person.
- 5.) Find the acceleration of a 20 kg mass when a 120 Newton force is applied
- 6.) What is the mass of a block that is accelerating at 3 m/s/s if a force of 30 N at  $0^\circ$  and a force of 55 N at  $0^\circ$  is acting on it.

## Find the normal force

- 7.) If the surface is horizontal, what is the normal force on a 30 kg mass?
- 8.) If the surface is horizontal, what is the normal force on a 75 kg mass?

Concepts in friction

- 9.) If a force is applied in the positive x direction on an object resting on a rough surface which way will the force of friction be?
- 10.) What is the equation for friction?
- 11.) What are the two types of friction and how are they different?
- 12.) Which type has a greater coefficient of friction?
- 13.) What causes the friction? Explain fully.
- 14.) What does a coefficient of friction of zero mean? Of 1 mean?
- 15.) If the object is moving at a constant velocity what must be true about the force applied to the object and the friction between the object and the surface?

Problems involving friction

- 14.) What is the force due to friction if the object weighs 120 N and the coefficient of friction ( $\mu$ ) is .3?
- 15.) What force must be applied to an object that has a mass of 5 kg and is moving at a constant velocity if the coefficient of friction is .5?
- 16.) What is the coefficient of friction for an object that has a force of friction of 85 N and a mass of 12 kg?