

Applications of Newton's First and Third Laws

Goal To practice using your skills in applying Newton's laws.

Procedure Answer the following questions.

1. Describe how the following applications or natural processes make use of Newton's first or third law

– **Newton's first law**

(a) vehicle headrest

(b) centrifuge

(c) amusement park rides

– **Newton's third law**

(a) tides and the Earth-Moon system

(b) rocket

(c) walking

2. Use a separate page to answer this question. A squid with a mass of 15.0 kg ejects 1.8 kg of water downward through its funnel and moves from rest to a speed of 2.5 m/s[up] from the sea bottom in 0.5 s.

(a) Find the average force on the squid, neglecting drag forces and assuming constant acceleration.

(b) What is the acceleration of the ejected water mass?
(Hint: Use Newton's third law)