Name	Date	Period
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## Lab: Newton's Third Law

CONCEPTUAL PHYSICS: UNIT 3

**DIRECTIONS**: Go to the PHET simulations website at: <a href="http://phet.colorado.edu/en/simulation/collision-lab">http://phet.colorado.edu/en/simulation/collision-lab</a> and click "Run Now" on the "Collision Lab" simulation.

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- 1. Change the mass of the green ball to 3.0 kg.
- 2. Click the "more data" button below the masses data location.
- 3. Click the "play" button.

Answer each of the following questions:

- 1. Record the velocity of each of the two spheres.
- 2. How many forces are there when the two spheres collide?
- 3. If the forces are equal when they hit, why did the green ball have a smaller velocity than the red ball?

4. How does this show Newton's 3rd Law?

5. Adjust the masses and length of the arrows (amount of force) and conduct a new experiment. Explain how making those adjustments demonstrate Newton's 3rd Law.

**Directions**: Go to the following website: www.physicsclassroom.com

- on left, click on *Physics Tutorial*
- click on Newton's Laws
- Lesson 4 : Newton's Third Law of Motion

## Click on

a. Newton's Third Law

Read & then answer the questions 1-4 in the Check Your Understanding section

1. Which of the two forces is greater: the force on the firefly or the force on the bus? explain

- 2. a. ... space is void of air so the rockets have nothing to push off of.
  - b. ... gravity is absent in space.
  - c. ... space is void of air and so there is no air resistance in space.
- d. ... nonsense! Rockets do accelerate in space and have been able to do so for a long time.
- 3. a. greater than the acceleration of the bullet.
  - b. smaller than the acceleration of the bullet.
  - c. the same size as the acceleration of the bullet.
- 4. a. with more force when the rope is attached to the wall.
  - b. with more force when the rope is attached to the elephant.
  - c. the same force in each case

Now choose Next Section: Identifying Action and Reaction Force Pairs

- a. Identifying Action and Reaction Force Pairs Read and then identify the action/reaction pairs for each.
- 1. Catcher glove and ball-
- 2. Bowling ball and Pin-

3. Balloon-
4. Two feet-
5. Tractor and Elephant-
<b>Application</b> : Give three examples of Newton's Third Law in your own life and explain what the action and what is reaction.