

Name: \_\_\_\_\_

Class: \_\_\_\_\_

Due Date: \_\_\_\_\_

**Physics Topic 13 – Newton's Third Law of Motion**

**Answer the following questions. The solutions to this worksheet can be found on the YouTube channel Go Physics Go.**

1. C: State the name of *Newton's third law of motion*. State the equation for *Newton's third law of motion*.
  
2. C: Give three examples of *Newton's third law of motion* (For each example you need two sentences: one for the action and one for the reaction.). Three examples have been given to you:
  - a. Man pushes wall forward. Wall pushes man backwards.
  - b. Fish pushes water backwards. Water pushes fish forwards.
  - c. Earth pulls man down. Man pulls Earth up.

3. E: An 80.0 kg man on Earth jumps vertically upwards. The acceleration due to gravity near the surface of the Earth is approximately  $9.81 \frac{\text{m}}{\text{s}^2}$ . The mass of the Earth is approximately  $5.97 \times 10^{24}$  kg. Use *Newton's third law of motion* to determine the acceleration of the Earth after the man jumps.
4. E: A machine punches a stationary piece of paper to the right, which has a mass of 5 grams, which brings the speed of the paper to 30 m/s in a time of 0.04 s.
- a. What is the acceleration of the paper?
  - b. What is the force in which the machine punches the paper?
  - c. What is the reaction force in which the paper punches the machine?