

Name: _____

Date: _____

Conceptual Physics

1. When you walk along a floor, what pushes you along? **Ans. The floor pushes back on your feet.**
2. When you jump up, the world really does recoil downward. Why can't this motion of the world be noticed? **Ans. The world has such a large mass that is acceleration downwards is negligible.**
3. In the interaction between an apple and an orange, how many forces are exerted on the apple? **Ans. One. The orange pulling on the apple.** On the orange? **Ans. One, the apple pulling the orange.** Are these forces equal in strength? **Ans. Yes.** Are these forces opposite in direction? **Ans. Yes.**
4. How can a rocket be propelled above the atmosphere where there is no air to "push against"? **Ans. The rocket doesn't push against the air, the rocket pushes against the hot gases coming out of its thrusters. The hot gases push back propelling the rocket forward.**
5. In the interaction between a hammer and the nail it hits, is a force exerted on the nail? **Ans. Yes.** ON the hammer? **Ans. Yes.** How many forces occur in this interaction? **Ans. Two forces, action and reaction.**
6. If the action is a bowstring acting on an arrow, identify the reaction force. **Ans. The arrow pushes back on the bowstring.**
7. When a hammer exerts a force on a nail, how does the amount of force compare with that of the nail on the hammer? **Ans. They are equal and opposite according to Newton's Third Law.**
8. When swimming, you push the water backward-call this action. What is the reaction force? **Ans. The water pushing you forward.**
9. When a rifle is fired, how does the size of the force of the rifle on the bullet compare with the force of the bullet on the rifle? **Ans. The forces are the same, equal and opposite.** How does the acceleration of the rifle compare with that of the bullet? Defend your answer. **Ans. The rifle will recoil backwards with less acceleration because it has a larger mass. $F = M \cdot a$**