

Student Worksheet - Newton's Three Laws of Motion

- 1) An astronaut in deep space throws a rock. Describe its motion. What forces act on the rock? For how long will it travel?

- 2) An elephant is chasing you in the middle of nowhere. What is the best way to avoid the elephant?

- 3) You push a car which causes it to accelerate. If some of your friends help push too, and together you push with twice the force, what happens to the acceleration of the car?

- 4) You push a car which causes it to accelerate. If a bunch of friends jump in the car and causes the mass of the car to double as you're pushing, what happens to the acceleration of the car?

- 5) When you jump off the table, why do you bend your knees as you land?

- 6) You're in a car and all of the sudden the driver stops the car quickly. The book in the backseat suddenly flies forward. Why? What forward force acts on the book?

- 7) A seat belt is used to keep you in your seat when you slow down quickly. Describe the action - reaction forces on the seatbelt and you.

- 8) Give a few ideas on how you can use Newton's Three Laws of Motion to solve the challenge problem. (Find a way to reduce the force on the driver.)