

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.)