

Part A

You need three people for this part of the lab. One person must throw the ball (medicine ball or basketball) at another person who has volunteered to sit on the skate board. A third person will have the speed detector and be behind the person on the skate board.

When the person on the skateboard catches the ball, they should be propelled backwards.

You can measure the mass of the ball, the skateboard and the person. You must then use the law of conservation of momentum to calculate the initial velocity of the ball. Try this experiment 3 times and average your results.

Part B

Again we will need 3 people for this portion of the lab. Get a football and head outside. The most athletic partner needs to be the one to catch.

Have one partner stand on a mark and make sure that they can jump straight up. Practice this first. It is natural to jump a little forward or backward. Make sure that you can jump and land on the same mark.

One partner should throw the ball to the other so that the partner must jump to catch it. The third partner should film this and see if the partner goes backwards when they do.

No calculations for this part. Comment on how far back the partner went, if at all? Use the law of conservation of momentum to explain your results.