

# The vector nature of momentum

## Background

The principle of conservation of momentum is important throughout Physics. Most calculations focus on the magnitude of the velocity or mass after a collision. However, since momentum is a vector quantity the direction of motion is also important.

## You will need...

- ✓ A basketball and
- ✓ a tennis ball

## Follow these steps

1. Hold the basketball directly above the tennis ball and in contact.
2. Let them fall to the floor at the same time.

## So what happened?

When they landed they travel in exactly opposite directions. The tennis ball with less mass travelled further than the more massive basketball.



The event was repeated several times and it was observed that the directions were always opposite and quite random. Quite often the balls bounced a bit, but sometimes they rolled along the floor without any bounce. It depended on how they landed.

## What next?

Try it with different types of ball.