

# Wobbly ball

## Materials

- Plasticine
- Plastic wrap or small plastic bag
- Sticky tape
- Ball

## Instructions

1. Squash the plasticine to make a flat, round shape.
2. Cover the plasticine with plastic wrap or plastic bag.
3. Use the sticky tape to attach the plasticine to the side of the ball.
4. Roll the ball across the floor and watch it wobble and roll in crazy ways.
5. Try throwing the ball and watch it wobble through the air.



With a group of children, you could try this fun game:

Sit the children in a large circle on the floor. Start with the plain ball. Choose a child, say their name and roll the ball slowly to them. Ask the children to take it in turns to roll the ball across the circle in this way, saying the name of the person they are rolling the ball to. Now add the plasticine and repeat the game. Watch as the ball wobbles and curves away from the person it is supposed to roll towards!

## What happens?

The centre of gravity of a ball is right in the middle of the ball. This is the centre of all the weight, so the weight (or more correctly, the mass) is evenly spread out on all sides around the centre of gravity. A ball will roll smoothly along the ground as the ball rolls around its centre of gravity.

By adding plasticine to the ball, you change the location of the centre of gravity. The plasticine has quite a lot of mass, so the centre of gravity is no longer at the centre of the ball, but it has shifted close to the plasticine. As the ball and plasticine roll along the ground, the centre of gravity of the ball tends to move as low as possible until the ball stops with the plasticine sitting on the floor. This is the most stable position for the ball and plasticine.

### **Why does it matter?**

When a wheel on a car spins, the car tire moves around the centre of gravity of the wheel. It is important that the weight of the tire is spread evenly because if it isn't, the tire is said to be 'unbalanced' and the wheel will start to wobble, similar to how the ball wobbled in this activity.

### **Related activities**

Throw a ball through the air and notice that the path of the ball is a rainbow shape (parabola). Does adding plasticine to the ball change how it flies through the air? The centre of gravity of the wobbly ball will still follow a rainbow-shaped path as it flies through the air, but the uneven weight means the ball tumbles around the centre of gravity in a crazy way.

### **Health and safety considerations**

- Choking hazards for young children (plasticine, plastic wrap or plastic bag)