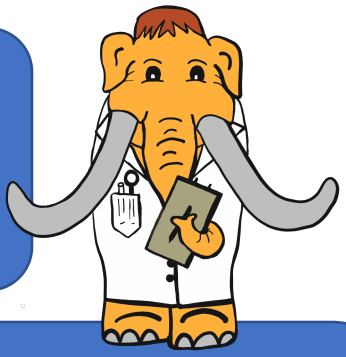
# Science Saturday @ Home
# Effects of Mass on Distance



## Gathering Supplies:

Toy Cars
Flat moveable surface like a large piece of card board or cooking sheet
Tape
Nickels or Quarters

## How To Steps:

1: Set up your ramp making sure it is on an incline, but not too steep. This will be your test ramp. You will need an open space at the bottom of the ramp to see how far the cars travel.

2: See how far your test cars travel as they head down the ramp, without any added weight. For the first test you want to try to find two toy cars that travel down the ramp at about the same speed and distance.

3. Now tape a quarter or nickel onto the top of one of the cars and race it against the other car to see how far each car travels. The added coins increase the mass of the test car. Which car goes the greater distance?

4. Tape another 1 or 2 coins on top of the test car and try again. How does the added weight affect the distance the car travels compared to the car without any added weight?

5. Why might there be a difference in the distance they travel? What happens if you increase the height of the ramp?

# Max's Distance Test!

## Did You Know?

Acceleration is the rate at which motion changes. Think of the car rolling down the ramp. As the cars roll down the ramp their speed increases, or accelerates. The steeper the ramp the greater the acceleration.

By adding the coins to the test car we are increasing the mass of the car. Mass is the amount of matter or stuff that an object contains. The greater the mass of the test car the greater the acceleration of the car down the ramp. The greater acceleration also means the car has more momentum. This is the force that keeps the car going even when it reaches the flat surface of the floor. The more momentum the test car has the farther it will travel.

So an increase in the mass of the test car by adding more coins to the top of it should give the car more momentum to travel a greater distance.

What did your experiment show? How would increasing the height of the ramp change the distance the cars travel?