

## 4.2 Investigation: Rolling cars

### Aim

To design a LEGO car (or other car building pieces) that will move the longest distance along the ground after being pulled down a ramp by gravity.

### Equipment

Model cars building set or a LEGO machines Kit with wheels and axles.

Wooden ramp ( 1 metre long 30cm wide).

Cardboard and tape

Stickers for floor markers.

Measuring tape.

### Explore

Make a model car using LEGO or other building pieces (*see 4.2B Building A LEGO Car*) or other material.

**Record what type of design you will make:**

#### 1. Wheels

**Number of wheels**

**Size of wheels:**

small ( less than 3 cm) front  back

big (more than 3 cm) front  back

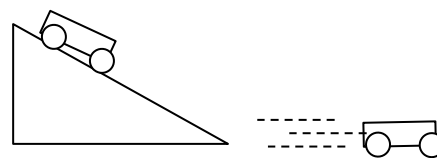
#### 2. Size of car:

**Length** small (less than 15cm)  big (more than 15cm)

**Width** narrow (less than 5cm)  wide (more than 2 cm)

Run it along the ground.

If it doesn't work well check the wheels move freely (the wheels or bushes may be too tight and stuck against the beam).



**Investigate Question**

How could you increase the distance the car travels down a ramp?

Decide what **one change** will you make to test if the car goes further:

I will change:

Number of wheels  Wheel size

Car length  Car width  Car height  Car weight

**Method**

Set up a ramp 1 meter long leaning on a chair or box 50cm high. Set it up so that there is no gap at the bottom by using a piece of cardboard taped to the ramp.

**Prediction:** The best kind of car will have: \_\_\_\_\_

**Run and Measure**

1. Run the car from the same point on the ramp. Release (don't push) it down the ramp.
2. Using a tape measure and measure how far it run along the ground.
3. Repeat for the same car one more time.
4. Rebuild the car with the one change you decide and retest.
5. Repeat for this car one more time.

**Results**

What I made First time	Tests	Distance travelled
Number of wheels	Test 1	
Size of wheels	Test 2	
Size of car		
other		
<b>What I changed Second Time</b>		
Number of wheels	Test 1	
Size of wheels	Test 2	
Size of car		
other		

**Conclusion**

1. Which car build made the car go the longest distance?
2. Is this what you predicted?
3. Why do you think the change was better or worse?
4. What else would you like to try that might make it go further?