

# No way! How Geckos Help Space Travel

## Have you ever heard of biomimicry?

It is when we mimic (in other words copy) events or actions that happen in nature. It helps us design and invent things and systems to solve problems.

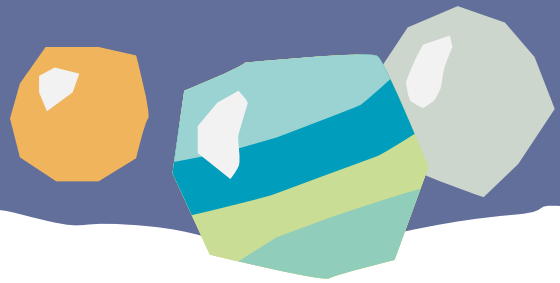
### Biomimicry in action

Geckos have thousands of very tiny hairs on their feet. They use these to hang onto ceilings and walls. When these tiny hairs make contact with a surface there is friction and forces being used. This forms a type of stickiness that lasts in many different environments and can be used over and over again. If you are interested, "Van der Waals forces" is how a gecko's stickiness is created.

NASA scientists were curious to invent something that would stick for longer than sticky tape and would work inside and outside a space rocket. They worked on a system of stickiness, based on the very tiny hairs on gecko's feet. When it was tested, it could hold up a 250-pound (100 kilogram) person! It was tested again and again and it lasted for more than 30,000 tests. NASA are also inventing space robots using the same gecko process.

Different surfaces create different levels of friction, this can speed up or slow down objects as they travel over them.

**Try the Marble run & friction Curiosity Challenge.**



Are you curious enough to take on our challenge?

## Marble run & friction

1.

### The question

Which materials speed up or slow down a rolling marble and why?

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2.

### The equipment

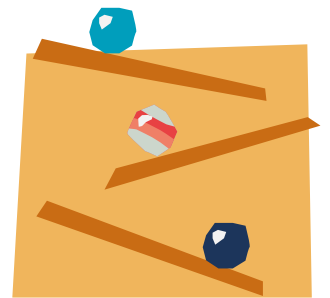
- A large cardboard box
  - Strips of cardboard in a V shape or cardboard tubes cut in half lengthways
  - Bubble wrap
  - Sand paper
  - Rubber bands or other materials to try
  - Sticky tape / glue
  - Marble
  - Scissors
  - Timer
- .....



3.

### Create a fair test

- To measure which materials cause the most friction and slow down a travelling marble.
  - Stick the tubes of cardboard to the cardboard box, creating a run for the marble.
  - Time the journey from the top to the bottom.
  - Add the different materials onto the marble run.
  - What do you think will happen to the speed of the marble?
  - Try the marble run again and time it. Record the time. Repeat and time with different materials.
- .....



4.

### Sharing results

Tick your chosen method

- Graph       Presentation       Photographs  
 Pie Chart       Report

**Where will your curiosity take you?**