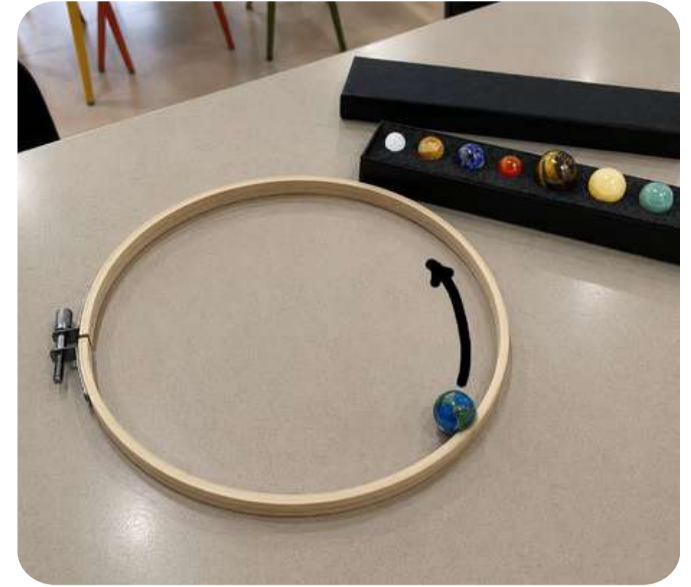


# THE RUNAWAY PLANET



9-12 yrs | 15 min | Stage 2 & 3

What happens when an orbit suddenly disappears?



## ? Wonder & Predict

If gravity suddenly vanished, what would Earth do?

- Keep moving around the Sun
- Fly away into space
- Stop moving or crash into the Sun.
- Something else: \_\_\_\_\_

There are no wrong predictions.

### WHY DO YOU THINK THAT?

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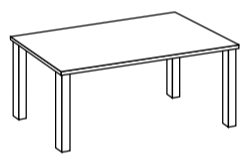
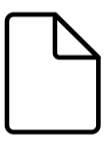



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## What you will need

-  • Wooden embroidery hoop
-  • Marble (different sizes)
-  • Smooth table
-  • A3 Paper
-  • Pencil

## Investigate

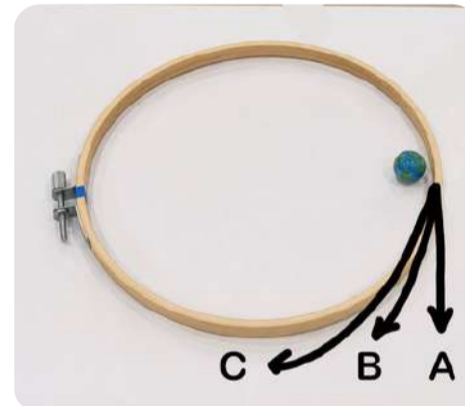
Follow the steps carefully while observing.

### 1 Place the marble inside the hoop.

Push the marble so it travels around the inside edge of the hoop.

### 2 Mark a point on the hoop (lift hoop point)

When the marble reaches this point, lift the hoop upwards. Predict where the marble will go when the hoop is lifted.



### 3 What actually happened?

- The marble travelled in a straight line    
  The marble curved outward    
  The marble stopped

### 4 Repeat & observe

Repeat and observe if it leaves along the same path.

## Observe & Record

Draw the path you observed.

### What did you observe?

Write or draw what happened.

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## What happened?

Fill in the sentences using words from the box.

orbit | force | direction | straight | gravity

1. When the hoop was removed, the marble travelled in a \_\_\_\_\_ line.
2. While the marble was moving around the hoop, something was constantly changing its \_\_\_\_\_.
3. A \_\_\_\_\_ can change an object's direction.
4. Planets stay in their \_\_\_\_\_ because gravity is always acting on them.
5. Without \_\_\_\_\_, a planet's path would change.



## The science behind it

### Why did the marble leave the circle?

While the marble was moving around the hoop, something was constantly changing its direction. When the hoop was removed, that influence disappeared.

The marble immediately continued moving in the direction it was already travelling.

### What does this have to do with planets?

Planets move through space just like the marble moves around the hoop.

Something is constantly affecting their motion and keeping them on a curved path.

In space, gravity is one of the forces that helps keep planets moving in curved paths around the Sun.



## Take it further - Alex's Space Challenge

### Can you make the marble escape differently?

Scientists change ONE thing at a time.

- Hoop size
- Marble size
- Speed of orbit

WHAT CHANGED?

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Alex



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