

What's in my tray?

# Speed Tray

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## Speed Tray - instructions

Investigate forces and motion by performing your own experiments. Take pictures or video to capture your work. Write the answers to the questions on your answer sheet.

- **Q1.** Explore the pairs of matching objects in the tray insert. What do you notice about them?
- **Q2.** Predict what would happen if you carried out a race between a pair of matching objects using the parallel sloping channels. Which object would hit the back wall of the bottom tray first?
- Perform a few test runs to get used to holding the two matching objects at the top of the channels and releasing them simultaneously. Was your prediction correct?
- Weigh each object using the balance and record their mass in the table.
- Time how long it takes for each object to travel from the top of the channel to the back wall of the bottom tray. Repeat the test three times on each object. Record the times in the table.
- Calculate the average speed of each object. Does the data support your prediction?
- **Q3.** Label the apparatus with the cards provided to illustrate what is happening. Only some of the cards are appropriate. Take a photograph to evidence your work.
- **Q4.** Explain your results using the terms gravity, potential energy and kinetic energy.
- **Q5.** Suggest a further investigation you could carry out using the equipment provided.

**Tidy up time:** Place the test objects, labels and stopwatch back into the 4 section tray insert and replace the lid. Leave the channels set up in parallel, the same as you found them.

**Gravity**



**Point of  
highest  
potential  
energy**

**Point of  
lowest  
potential  
energy**

**Kinetic  
Energy**



**Kinetic  
Energy**



**Forces are  
balanced.  
Object is  
stationary.**

**Direction of  
momentum**



**Direction of  
momentum**



 **The point at which the force of gravity could not overcome friction and the object began to roll**

**Gratnells**



**Learning  
Rooms**

**Speed Tray.**

Print, cut out, laminate (optional) and cut out these forces cards. Place all cards into one section of the tray insert.

## What's in my tray?

Answer sheet

Team Name \_\_\_\_\_

Completed by participating team

Completed by marking team

### Speed Tray (10 points available)

Q1. What do you notice about the pairs of matching objects? (1 point) \_\_\_\_\_

\_\_\_\_\_

Q2. Race prediction (1 point) \_\_\_\_\_

Object name	Mass (g)	Time (s)			Average <b>speed</b> (m/s)
Heavy tennis ball					
Light tennis ball					
Heavy can					
Light can					

(1 point per completed row)

Q3. Photograph of labelled apparatus taken? Yes / No (circle when completed) (1 point)

Q4. Explanation of results (2 points) \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Q5 . Suggest a further investigation you could carry out using the equipment available (1 point)

\_\_\_\_\_

\_\_\_\_\_

Points awarded = \_\_\_\_\_