

## Task:

## Ipu Māwhene — Muffin Drop

|                   |   |
|-------------------|---|
| <b>Approach:</b>  | One to one  |
| <b>Focus:</b>     | Gravity and air resistance  |
| <b>Resources:</b> | 2 small muffin cases, 4 large muffin cases, orange and green A4 sheets of paper |

|              |   |
|--------------|---|
| <b>Kupu:</b> | whakatepou = vertical<br>whakatepae = horizontal<br>kōpenupenua = crush; hopuoro = microphone<br>papatahi = flat; ipu māwhene = muffin case |
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## Questions / instructions:

**Ka whakaotia te mahi tuatahi ki te tēpu.**

Ko tēnei mahi, he āta whakaaro ki te āhua o te taka mai o tētahi mea. Ka whakamahia ētahi pepa e rua.

**Hoatu te pepa karaka me te pepa kākāriki (A4 te rahi) ki te ākonga.**

Puritia whakatepou te pepa karaka, kia pēnei (māu e whakaatu). Puritia whakatepae te pepa kākāriki (māu e whakaatu). Tukuna ngā pepa e rua i te wā kotahi, mai i te teiteitanga ōrite.

**Kia rite ki te teitei o te mahunga o te ākonga te wāhi tuku ai i ngā pepa e rua.****This first activity is done at the table.**

In this activity you'll be thinking about how things fall through the air. We're going to use two sheets of paper.

**Give student sheet of orange and green A4 paper.**

Hold the orange one vertically, like this [demonstrate]. Hold the green one horizontally, like this [demonstrate]. Drop them from the same height at the same time.

**Drop from height of student's head.**

1. Ko tēhea te pepa i tau tuatahi ki te papa – te mea kākāriki, te mea karaka rānei?  
Which one hit the table first — the orange one or the green one? **orange**
2. He aha tēnā pepa i tau tuatahi ai ki te papa?  
Why do you think that one hit the table first?  
**less air resistance**

Ināianei, ka whakamātarua he ipu māwhene.

**Hoatu ngā ipu māwhene ki te ākonga.**

Me whakaoti tēnei mahi ki mua i te aroaro o te kāmera.

**Āwhinatia te ākonga ki te kimi i tētahi wāhi wātea hei tuku i ngā ipu. Me tū ia ki mua i te kāmera.****Waihotia te hopuoro ki te wāhi e tika ana.**

Tangohia tētahi ipu māwhene iti me tētahi ipu māwhene nui. Puritia ngā ipu ki te teiteitanga ōrite. Tukuna i te wā kotahi. Kia 3 ngā mahinga pēnei.

**Waiho te ākonga kia mahi i tāna mahi.**

Now we're going to use paper muffin cases.

**Give student paper muffin cases.**

You need to stand in front of the camera to do this experiment.

**Assist student to find a clear space to stand and drop objects.**

Take a small paper case and a large paper case. Hold the paper cases upright at the same height. Then let them go at the same time. Do this 3 times.

**Allow time.**

3. Ko tēhea te mea i tau tuatahi ki te papa?

Which one hit the floor first — the small case or the large case? **small case**

| % responses | % responses |
|-------------|-------------|
| 98          | 10          |
| 21          | 24          |
| 58          | 100         |
|             | 20          |
|             | 15          |
|             | •           |
|             | 26          |
|             | 11          |
|             | 34          |
|             | 19          |
|             | 36          |

**Commentary:**

With the exception of the last experiment, a majority of the students accurately observed what happened. Less than a quarter could explain the effects of air resistance.