



Name: **Answers**

## Introduction

The ability to use both hands equally is increasingly becoming more important in many sports. Scientists develop tests using the scientific method to determine how well an athlete can use both hands. In this activity you will test the accuracy of each of your hands and then evaluate the fairness of the test that has been developed.

1. Name two sports where it is an advantage to use both hands equally.

Range of sports for students to choose from

## Aim

To determine how handedness affects accuracy.

## Hypothesis

My  hand will be more accurate as it is my  preferred hand.

## Materials and method

- Cup (such as a coffee cup/mug)
  - Measuring tape
  - Cone (or something similar such as a bottle)
  - 5 x scrunched up small pieces of waste paper (make sure all are the same size)
1. Place the cup on the ground in the centre of a large space (can be outdoors if not windy).
  2. Use the tape to measure a distance of two metres away from the cup and place your cone (or bottle) at this point.
  3. Sit down behind the cone and try to get the pieces of paper in the cup by throwing them individually with your **right** hand.
  4. Measure the distance that each piece of paper landed from the cup and enter it in the results table (if it lands in the cup then this should be measured as 0 cm).
  5. Repeat the experiment but this time use your **left** hand.



2 m



# Results

1. Calculate the mean (average) for the distance the paper lands from the cup after you have completed the experiment.

Distance paper lands from cup (cm).

Throw	Right hand	Left hand
1	Valuecm	Valuecm
2	Valuecm	Valuecm
3	Valuecm	Valuecm
4	Valuecm	Valuecm
5	Valuecm	Valuecm
Mean	Valuecm	Valuecm

2. Use excel to create a column graph that compares the mean results. Instructions on how to create a column graph on excel can be found here:

<https://www.youtube.com/watch?v=dwaoJYSiTZ0>

# Discussion

1. Describe the trend in the result in a sentence (ensure you mention both mean results in the sentence).

Dependent on results – most students will see better accuracy in preferred hand

2. Did the results match the hypothesis? Provide a reason as to why these results were obtained.

Dependent on result

3. Compare your result to two other class members. Explain why any similarities or differences exist.

Similarities could be explained as the preferred hand is more coordinated. Differences could be explained by chance events.

4. A fair test using the scientific method always has clear independent (experimental), dependent (observed) and controlled variables. Identify the variables in the experiment by completing the table below. The following clip may help you: <https://www.youtube.com/watch?v=iaewZmc4TYQ>

Variable	In handedness experiment
Independent	Using right and left hand
Dependent	Cm the paper landed from the cup
Controlled	Paper thrown at the same distance from the cup

- 5. Did any unexpected events occur during your experiment that would mean that the test was not a fair test? If you were to repeat the experiment what steps could you take to reduce the chance of these unexpected events occurring?**

Range of answers including bouncing of the rim of the cup, hitting the side of the cup, wind. Could be controlled by drawing target on the ground to prevent bouncing events.

- 6. Suggest a training method you could adopt if you wanted to improve the use of your non-preferred hand?**

Doing everyday activities (i.e. brushing teeth) with non-preferred hand.

## Conclusion

- 1. Write one clear paragraph that summarises your findings. The conclusion should relate directly to the question answered, your hypothesis and the results that you obtained (make sure you quote your results).**

Good sentence starters are “The question that was investigated...”, “It was predicted that...”, “The results were ...” and “The results indicated...”.

The question that was investigated was if one hand was more accurate than the other. It was predicted that someone’s preferred hand would be more accurate than the non-preferred hand. The results were... The results indicate the hypothesis was/wasn’t supported.