



Investigating Air Resistance **Bronze**

Results Table

Length of Parachute Side (_____)	Time Taken to Drop (_____)			
	Repeat 1	Repeat 2	Repeat 3	Mean
30				
25				
20				
15				

To calculate the mean (average) time taken, you need to add the times for the three repeats and divide by three.

Conclusion

As the length of the parachute side decreased, the time taken for the parachute to fall _____.

When the length of the parachute side was _____ cm the time taken to fall was _____s, and when the length of the side was _____ cm the time taken to fall was _____s. This shows a decrease of _____s.

This is because _____

Key words

surface area

air particles

air resistance

force

Evaluation

A **control variable** is one which may, in addition to the **independent variable**, affect the outcome of the investigation and therefore must be kept constant.

The control variables were: _____



How well were the variables controlled? How might this have affected your results?

A measurement is **repeatable** if the same experimenter repeats the investigation using the same method and equipment and gets the same result.

Were the range and number of readings you took sufficient to see whether you had repeatable results?

Can you explain any anomalous results? (any results that do not fit the general pattern)

An experiment gives **valid** results if it is a **fair test** and provides **repeatable** results. If a **variable** should be **controlled**, but isn't, then the experiment will not be a fair test.

Were the results of your investigation valid? How do you know?

How could you increase the validity of your results? (How could you overcome any weaknesses with your method?)



Investigating Air Resistance **Bronze Answers**

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Conclusion

As the **length of the parachute side** decreased, **the time taken for the parachute to fall decreased.**

How do you know this?

When the length of the parachute side was _____ the time taken to fall was _____, and when the length of the side was _____ the time taken to fall was _____. This shows a decrease of _____.

This is because, **as the surface area of the parachute increases, more air particles will collide with the parachute. This means the force of air resistance is higher which slows down the parachute as it falls. It therefore takes longer to hit the ground.**

Evaluation

Student responses to the evaluation will vary depending on their investigation.

Possible control variables: The height the parachute was dropped from. The material the parachute is made from. The object being dropped. Where the object/parachute was held as it was dropped. When the person started timing.

Possible discussion points: If results were spread out across all three measurements then they may discuss repeating the investigation more times.

Whether the person timing started by sight or had to listen out for a countdown as well. The impact of their reaction time on results. They could improve this by dropping from a higher height or using light gates to record the drop.

Whether or not the parachute opened fully or twisted during the drop. A way they could prevent this from happening. This could be how it's held or a change in material.