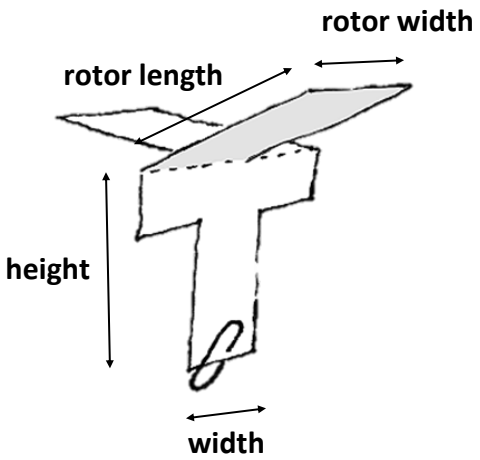
Falling Objects

Paper Helicopters Investigation

Preliminary Investigation:

1. Test different sizes of helicopter and decide which one you think flies the best.
2. Find out the maximum number of paperclips you can add to the bottom before it stops flying properly.



The helicopter which flew the best had the following dimensions:

width: .....cm

height: .....cm

rotor width: .....cm

rotor length: .....cm

I could tell this one worked the best because:

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The maximum number of paperclips I added before it stopped flying properly was:

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What happened when you added more than this amount?

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Investigation:

Using your preferred design from the preliminary investigation, drop your helicopter a number of times from the same height and time how long it takes to reach the ground. Repeat the experiment, attaching different numbers of paperclips, making sure the number of paperclips doesn't exceed the maximum number you determined in your preliminary investigation.

1. Record your results for the experiment in the table below

Number of paperclips	Time taken for helicopter to fall (s)			
	1	2	3	Average

Height dropped from: ..... m

2. Use the height dropped from (distance) and the average times you measured to calculate the speed of each helicopter.

Number of paperclips	Speed (m/s)
1	
2	
3	
4	
5	

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3. Which helicopter travelled the slowest

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4. Why do you think this was?

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Extension

Draw a graph of your results, with the number of paperclips on the x-axis and either the average time taken to fall or the speed on the y-axis. Use your graph to answer the questions below.

5. Describe any patterns or trends in your results.

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6. How could a scientist use your graph to decide how heavy a helicopter should be to land some cargo safely on another planet?

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