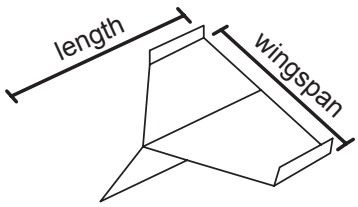
Section B: Open-ended Questions

For the following questions, write your answers in the spaces provided. The marks awarded are shown in the brackets at the end of each question or part question.

1. Kamal wanted to find out if the mass of the paper used for a paper aeroplane would affect the distance that it would travel. He folded 6 paper aeroplanes according to the design below, using different types of paper.



He then tabulated his results in the following table.

Plane	Mass of Paper (g)	Wingspan (cm)	Length (cm)	Distance travelled (m)
A	9	12	20	10.2
B	7	15	15	6.7
C	8	12	20	8.5
D	6	12	20	5.0
E	7	12	15	7.4
F	7	17	15	5.6

(a) In order to carry out a fair test, which plane(s) should he use? (1m)

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(b) In another experiment, Kamal used planes B, E and F. What is the aim of his second experiment? (1m)

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(c) What conclusion can Kamal make from his second experiment? (1m)

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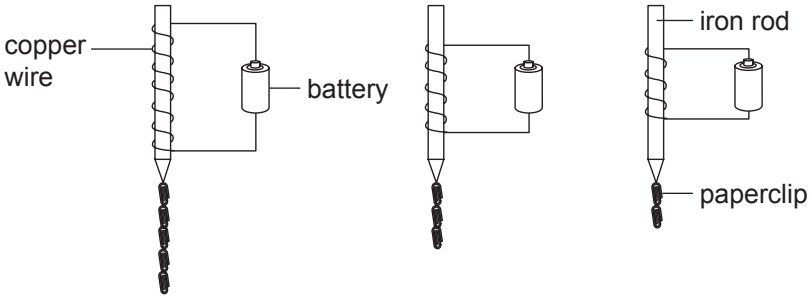
2. Ismail carried out an investigation using the same battery, iron rods and paperclips. The results of his test are shown below.



Set-up A Set-up B Set-up C

(a) Explain why the number of paperclips attracted by the iron rod in each set-up was different. (1m)

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Later, Ismail's friend, Adam, removed the paperclips from Set-up B and tried to find out if Set-up B can attract more paperclips. The results of his tests are as follow.

	Number of paperclips attracted by iron rod
First test using Set-up B	1
Second test using Set-up B	1

(b) Give one possible reason why Adam's result is different from Ismail's. (1m)

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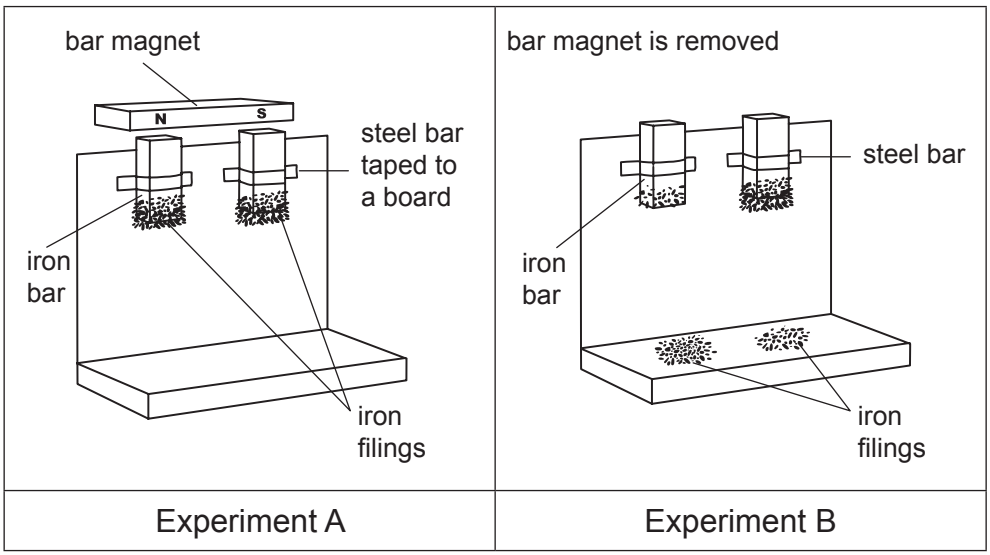
3. William had a toy car which had a spring coil inside it. He wanted to find out how he could make his toy car move further after it had been wound up and released.

For each of the variables given below, tick (✓) the correct boxes that will make the test a fair one. (2m)

Variables	Change	Keep the same
Type of car		
Number of turns of the spring		
Surface on which the car move		
Starting position of the car		

4. Arivan carried out the following experiments, A and B, on magnets and observed the interactions that had taken place.



Experiment A | Experiment B

(a) Write down one observation made by Arivan when the bar magnet was removed. (1m)

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(b) What was Arivan trying to find out in his experiments? (1m)

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5. Dione placed the same school bag on different types of floors. She moved the bag in the same way across each floor and measured the amount of force needed to move it. The table below shows the results.

Type of floor	Force needed (N)
Polished wood	14
Unpolished wood	22
Carpeted	28
Tiled	19

(a) What was the force that opposed the movement of the bag on the floors? (1m)

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(b) Why was a greater force needed to move the bag on the floor of unpolished wood than on the floor of polished wood? (1m)

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(c) What could she do to move the bag more easily across all the different types of flooring? (1m)

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