

Mikhail
Science journal

1/25/26

Title: The floating train

Question: Can magnets
make a train move without
touching the tracks?

1/26/26

Hypothesis:

1. I think my train will float with magnets because the magnets will push away from each other when the same sides will face each other.

2. The lighter train will go farther than the heavier train because it weighs less.

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variables and trials

After testing whether a train will float with magnets I decided to use to make two trains. One train weighed 49 grams and the second train weighed 119 grams.

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Materials:

- cardboard
- magnetic tape
- wooden blocks
- plastic guide rails
- glue
- weighing scale
- marker
- scissors
- tape

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Procedure

1. First I brainstormed my project idea

2. Then I got the materials for my project.

3. Then I glued two of the smaller blocks to make my lighter train which weighed 49 grams.

4. Then I took the heavier block weighing 119 grams and colored it with markers.

5. I cut up some cardboard to make my tracks. And used tape to stick it together.

6. I used glue to stick the guide rails to the cardboard

7. Then I put the monopolar magnetic tape on the train and the tracks and pushed the train to see what happens.

8. I wrote down my observations in my log book.

9. I typed up everything and printed the text & photos.

10. I glued every thing to my tri-fold board and completed my project.

7. Risks & Safety

I let a grown up help me use super glue and scissors.

The project used small magnets and magnetic tape. Small magnets can be dangerous if swallowed, so an adult was always present to supervise.

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Data:

We conducted the experiment but failed the first time because magnets on the train and the tracks stuck together.

We discovered that the magnetic tape was multi-polar which caused it to stick together.

Then we bought a mono-polar magnetic tape that repelled each other because it had the same poles.

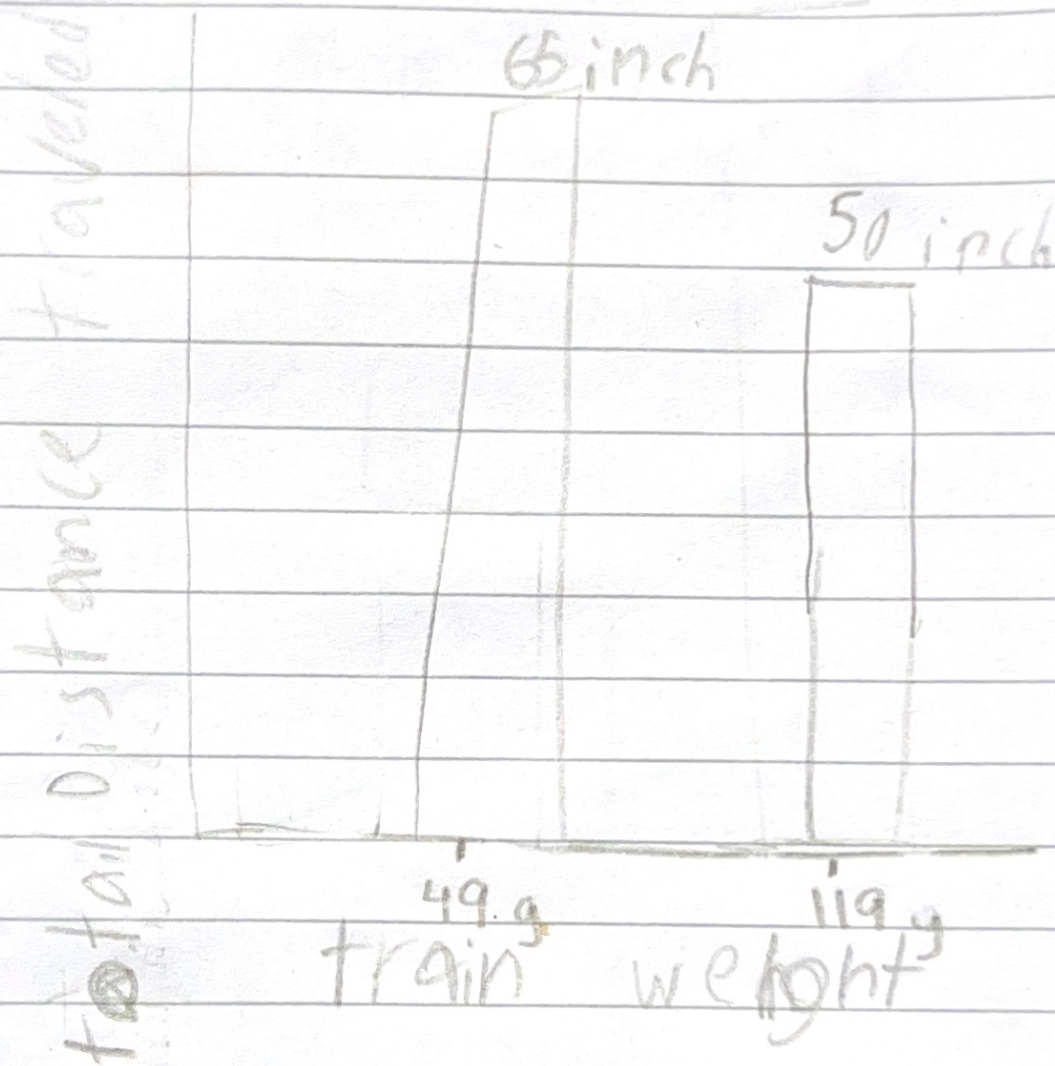
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Results, I think my train
will float with the magnets

I also think that the
lighter train will go
farther than the heavier
train.

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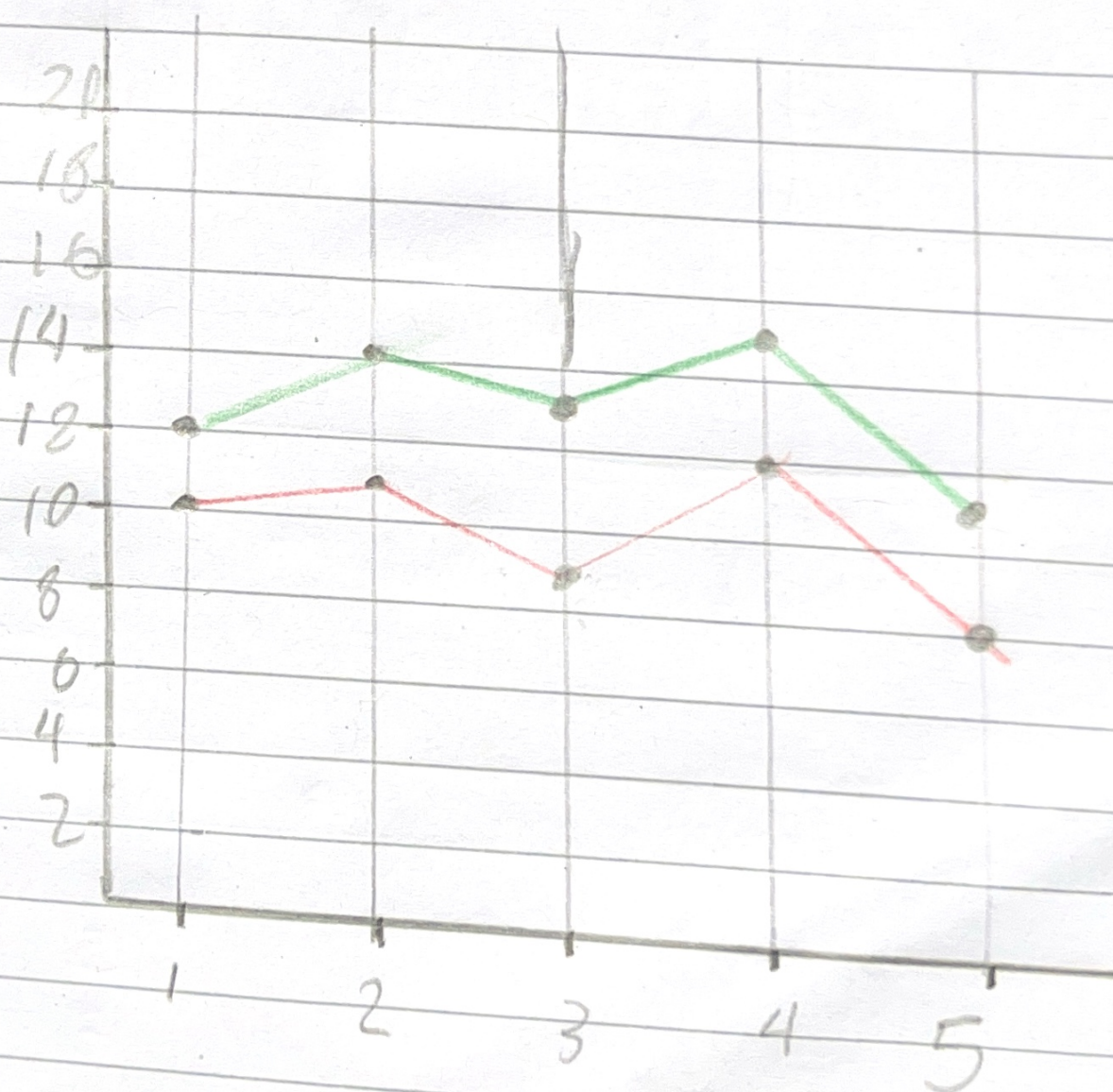
Graphs



Trial	49 g train (inches)	119 g train (inches)
1	12	10
2	14	11
3	13	9
4	15	12
5	11	8

Maglev Train experiment: Distance vs Train weight

49 g train
119 g train



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Conclusion

I thought both trains would float on the track, and the lighter train would go farther. The showed that my hypothesis was correct. Both trains floated because the magnets on the train and the tracks repelled each other and lifted the trains off the track. The lighter train went farther than the heavier train because it was easier for it to move and did not have as much weight to slow it down.

The reason why the lighter train went farther than the heavier train is because it had less weight to slow it down.

Real world applications

This experiment helps us understand how real maglev trains work. In the real world, maglev trains float on magnets too which helps them go really fast without touching the track. Lighter trains or lighter parts can move more easily, and faster or faster, just like in my experiment.

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What would I change

I would like to add more
training of different weights to
see which ones move faster

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Acknowledgements

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for helping me with this
experiment.