



# SCIENCE BEHIND THE MAGIC

KS5

# "ANY SUFFICIENTLY ADVANCED TECHNOLOGY IS INDISTINGUISHABLE FROM MAGIC" - ARTHUR C CLARK

- What does this quote mean?
- How would someone in the ancient Rome times have reacted to an aeroplane or rocket taking off and landing?
- Consider the following video:  
<https://www.youtube.com/watch?v=Ux7LSzwPUxE>
- Explain whether you think the theory is credible. How are the points put forward explained by other theories?
- A film detailing more of the theory is here:  
[https://www.youtube.com/watch?v=RaP7pq\\_ilGE](https://www.youtube.com/watch?v=RaP7pq_ilGE)

# THE MAGIC OF LEVITATION

- Watch the video on the following link on quantum levitation.
- <https://www.youtube.com/watch?v=Ws6AAhTw7RA>
- How is the object levitating and able to move around the track?

# CAN YOU EXPLAIN IT?

- Do some research into quantum levitation to help you answer the following questions:
  1. What is a superconductor and what is the Meissner Effect?
  2. What is meant by "Magnetic Flux Pinning"?
  3. What does the field around a bar magnet look like?
  4. What happens to the field strength as you get closer/further from the pole and how does a diagram show this?
    - \*Remember - flux lines are not physical objects! They are merely lines we draw to represent the field\*
  5. Why can a superconductor move around the track, but not away or towards it?
  6. Explain what would happen if you increased the strength of the magnetic track while the superconductor was levitating?
  7. What is meant by the Critical Temperature ( $T_c$ )?



# THE COMPETITION!

Prize available for 1st place!

Honourable mentions for 2nd and 3rd place



# THE COMPETITION

- Levitation has been a staple in magic for years, just look at the flying carpet!
- Using your research and explanation of quantum levitation use this science to come up with a magic trick to amaze people with your levitation skills.
- Within this needs an explanation as to the aim of your magic trick with a step by step guide to carry it out as well as an explanation on how it will work, the science behind the magic!

# COMPETITION ENTRIES

- Email: [Competitions@gordons.school](mailto:Competitions@gordons.school)
- When you email, please use the subject heading 'KS5Week 4 – The Science behind the magic'
- Closing date: 25th May 2019
- Winners will be announced via weekly Schoolcomms