CAROUSEL LEARNING

## Lesson phase codes

E Explanation

C Check for understanding

P Practice task

# Welcome to A-Level Physics

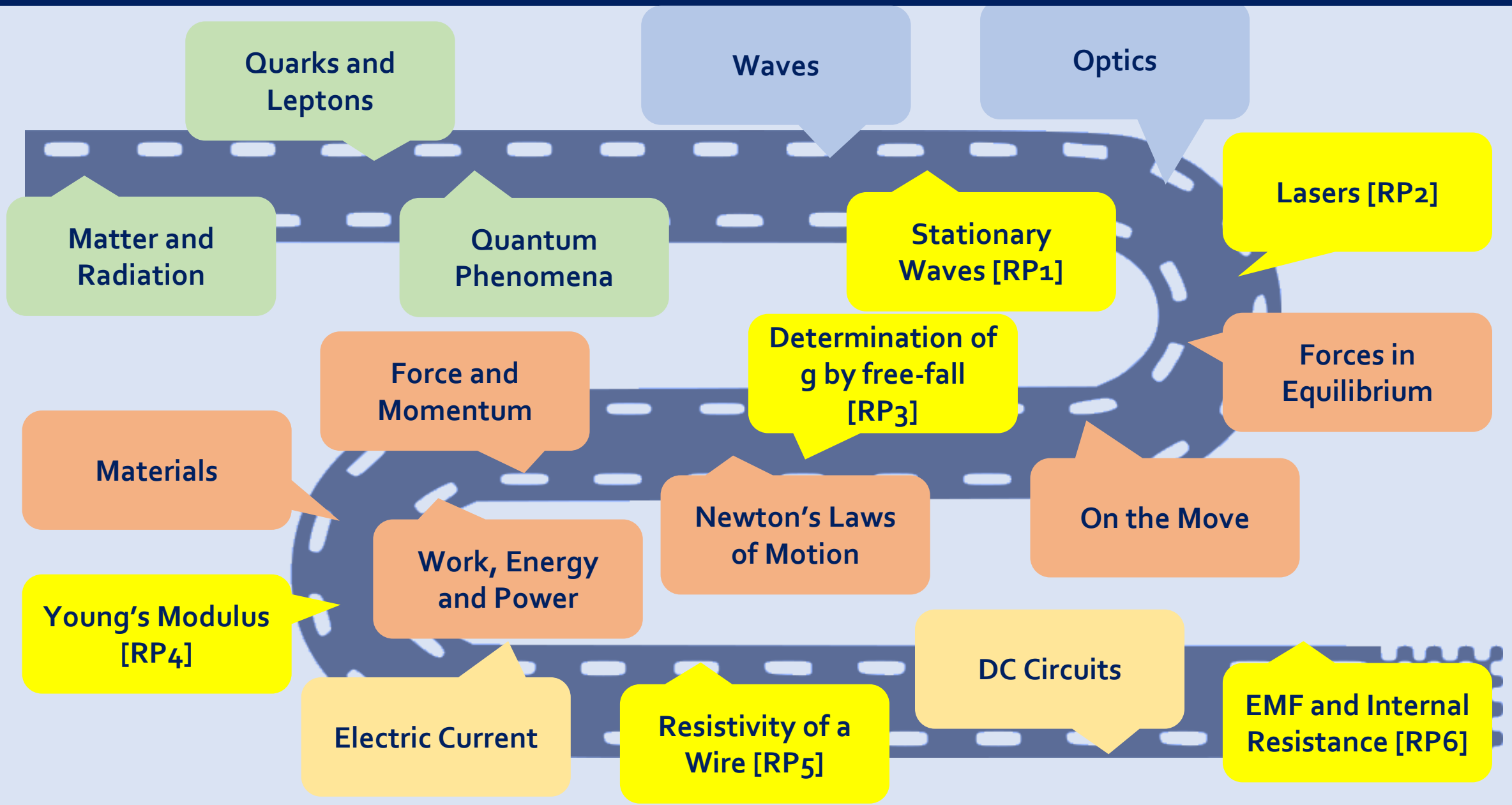
## Date:Wednesday, 17 July 2024

**Last lesson we**...Finished our GCSEs.

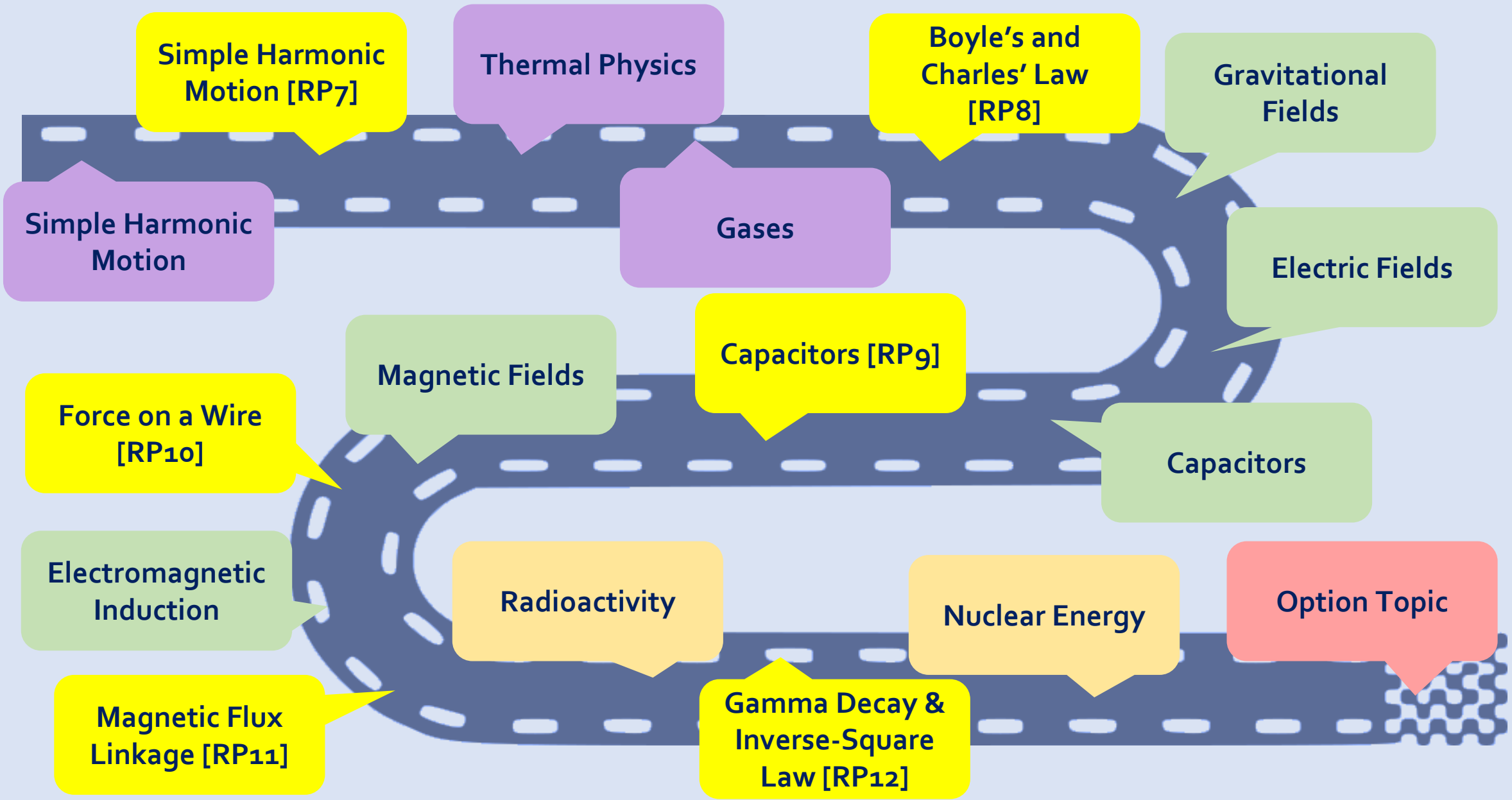
**Next lesson we will**...Have another introduction in Sept.

- To give an overview of the A-Level Physics course.
- To evaluate the benefits of taking A-Level Physics.
- To introduce ourselves to some quantum phenomena.

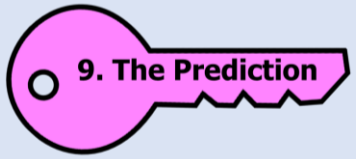
# Year 12 (AS Physics)



# Year 13 (A-Level Physics)



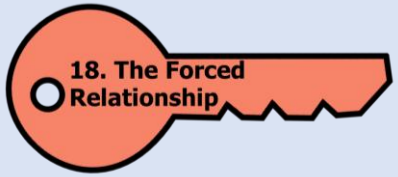
# You've Made a Great Choice!




- Earnings increase by 27.4% by taking 2 STEM subjects at A-Level, rather than just GCSE (London Economics, 2015).
- For physics in particular, sectors include:
  - Actuary
  - Applications developer
  - Clinical technologist
  - Data analyst
  - Nuclear engineer
  - Operational researcher
  - Software engineer
  - Banking/finance
  - Aerospace/piloting

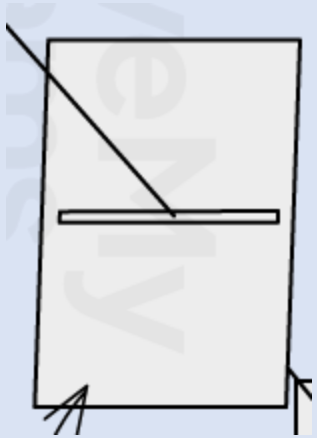
  The list goes on….

# Think Intuitively…


**Think, Pair, Share:**

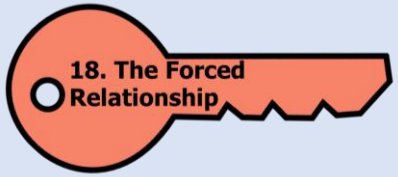
If I pour a bucket of sand over a board with one slit, how will the sand pile up underneath?

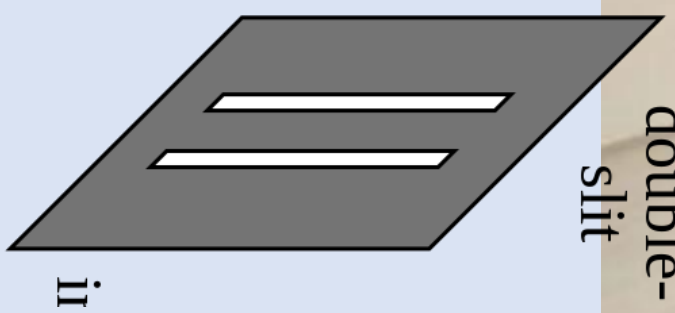


# Think Intuitively…

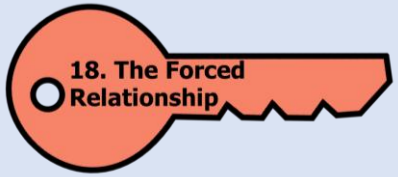

**Think, Pair, Share:**

If I pour a bucket of sand over a board with two slits, how will the sand pile up underneath?



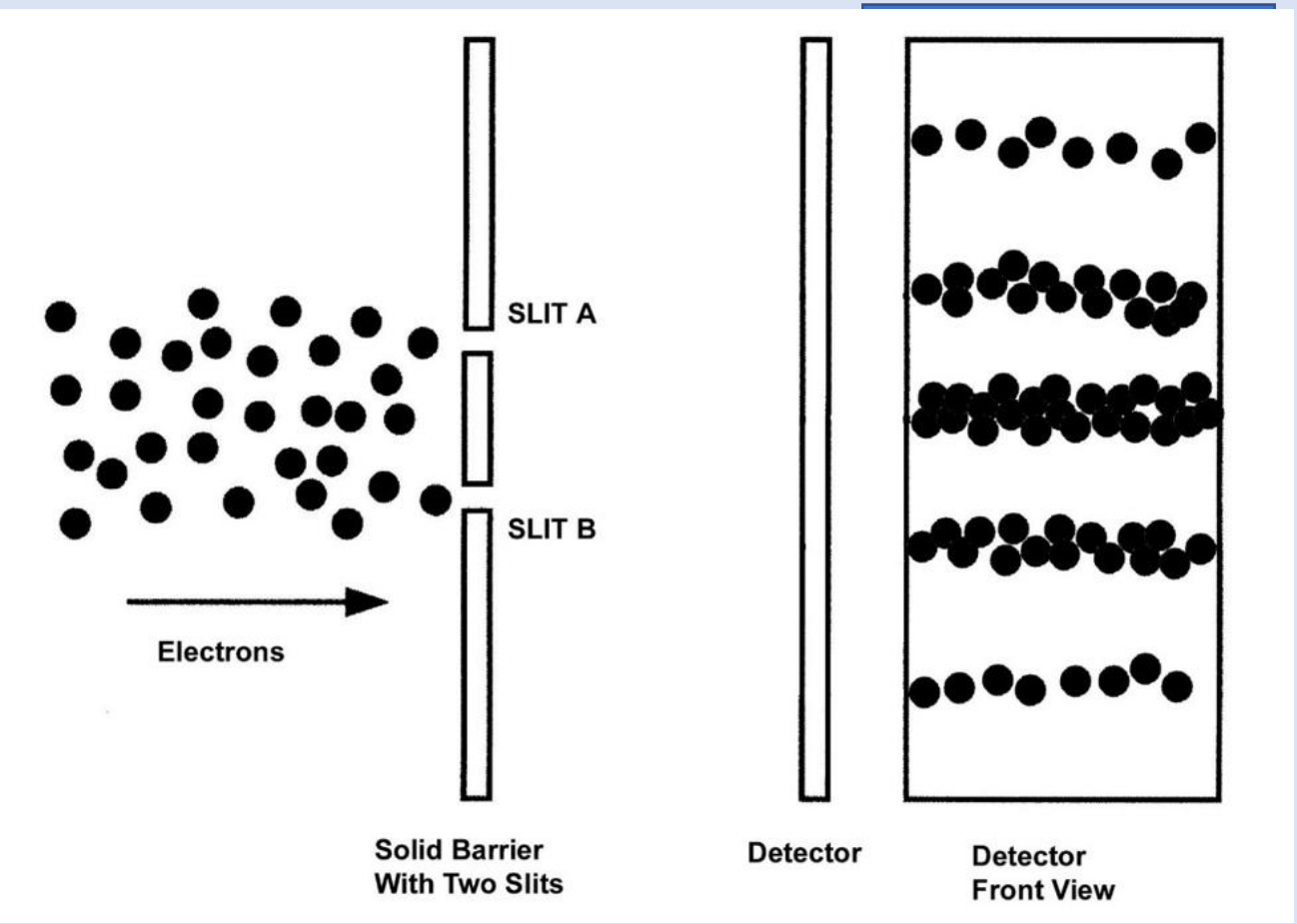




# The same, but with electrons.


## Think, Pair, Share:

If I shoot electrons at a screen with two slits, where would you expect them to land?



# Wave-Particle Duality

**Electrons are just as much waves as they are particles!**

***Even molecules can show wave-like behaviour.***


***de Broglie Wavelength:***

$$\lambda = \frac{h}{mv}$$

# Plank's Constant

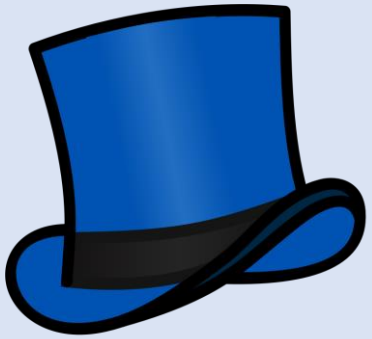

$$6.626070015 \times 10^{-34}\ m^2\ kg\ /\ s$$

$$h = \frac{2\pi m_P l_P^2}{t_P}$$

$$h = \frac{32\pi\rho K_e^{11} A_l^7 c O_e}{9\lambda_l^3} g_\lambda$$

$$h = \frac{\mu_0 q_P^2 c}{2}$$

# A Question….




**A question to research over the summer:**

What would happen to the universe if Planck's constant was bigger?

$$6.626070015 \times 10^{-34}\ m^2\ kg\ /\ s$$