Aiming for grade 7+ in Science:

advice for clever people



Grade	Score
99	71%
88	63%
77	54%
66	44%

1. No need for perfection; we've got low grade boundaries

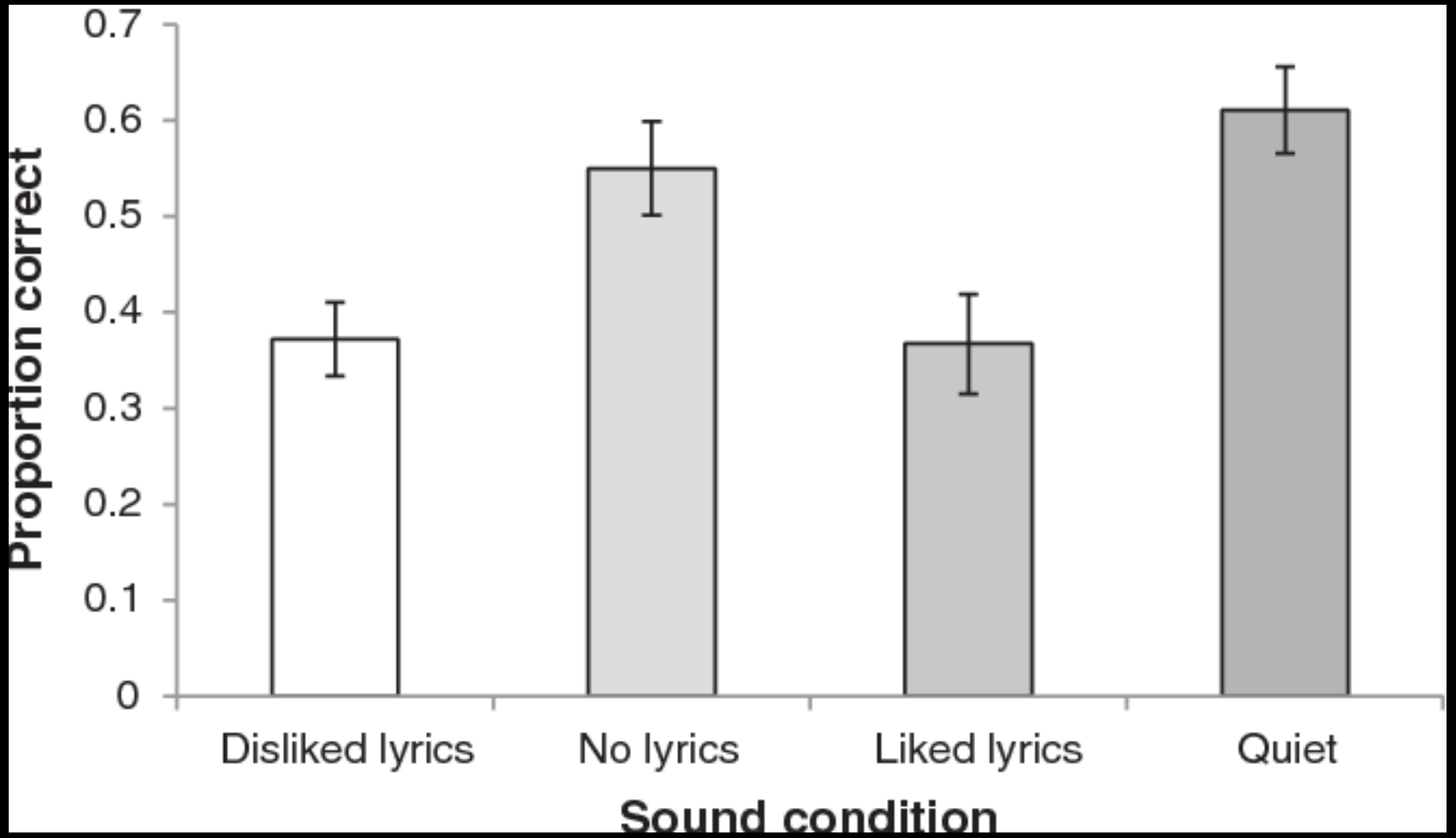


- Research has shown 55% of pupils believe reading and highlighting notes is effective revision.

- Pupils who had just read their revision did 33% worse in tests than the group that did retrieval practice.

2016(Smith et al)

2. Don't just read and highlight



47% of students believe music helps them concentrate

2014 study(Perham and Currie)

3. If you must listen to music, make it without words.

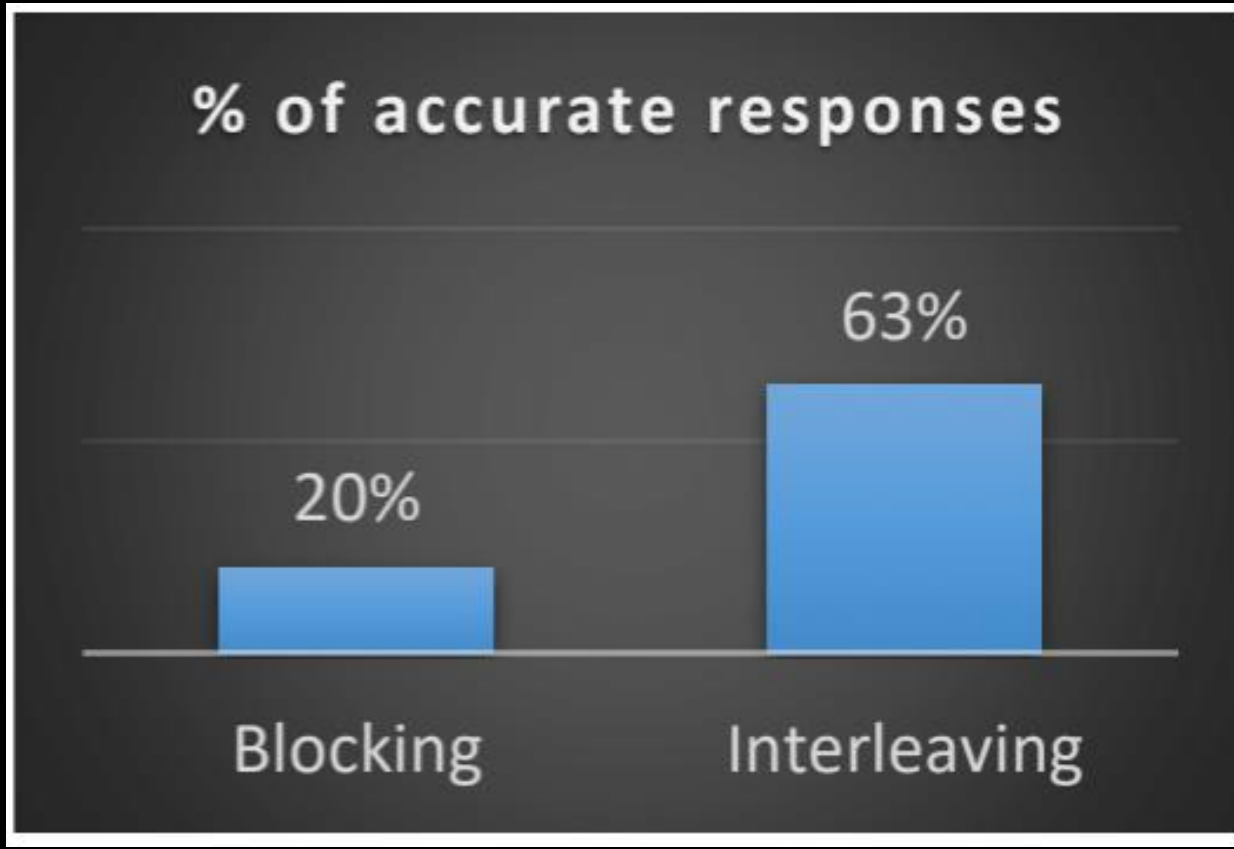
Chemistry 1	Separate Chemistry	
Red	Amber	Green

1. Atomic Structure	State that everything is made of atoms and recall what they are	
	Describe what elements, compounds and mixtures are	
	Use symbols to represent elements and compounds.	
	Write word equations and balanced symbol equations for chemical reactions, including using appropriate state symbols	
	State that mass is conserved and explain why.	
	Name and describe how to separate mixtures using filtration, crystallization, distillation and chromatography.	
	Describe how the atomic model has changed over time due to new experimental evidence, inc discovery of the atom and scattering experiments (inc the work of James Chadwick)	
	Describe the difference between the plum pudding model of the atom and the nuclear model of the atom	
	State the relative charge of protons, neutrons and electrons and describe the overall charge of an atom	
	State the relative masses of protons, neutrons and electrons and describe the distribution of mass in an atom	
	Calculate the number of protons, neutrons and electrons in an atom when given its atomic number and mass number	
	Describe isotopes as atoms of the same element with different numbers of neutrons	
	Define the term relative atomic mass and why it takes into account the abundance of isotopes of the element	
	Calculate the relative atomic mass of an element given the percentage abundance of its isotopes	
	Describe how electrons fill energy levels in atoms, and represent the electron structure of elements using diagrams and numbers	

- An hour of Physics each day for 5 days is much more effective than 5 hours in one day.

- Interleaving

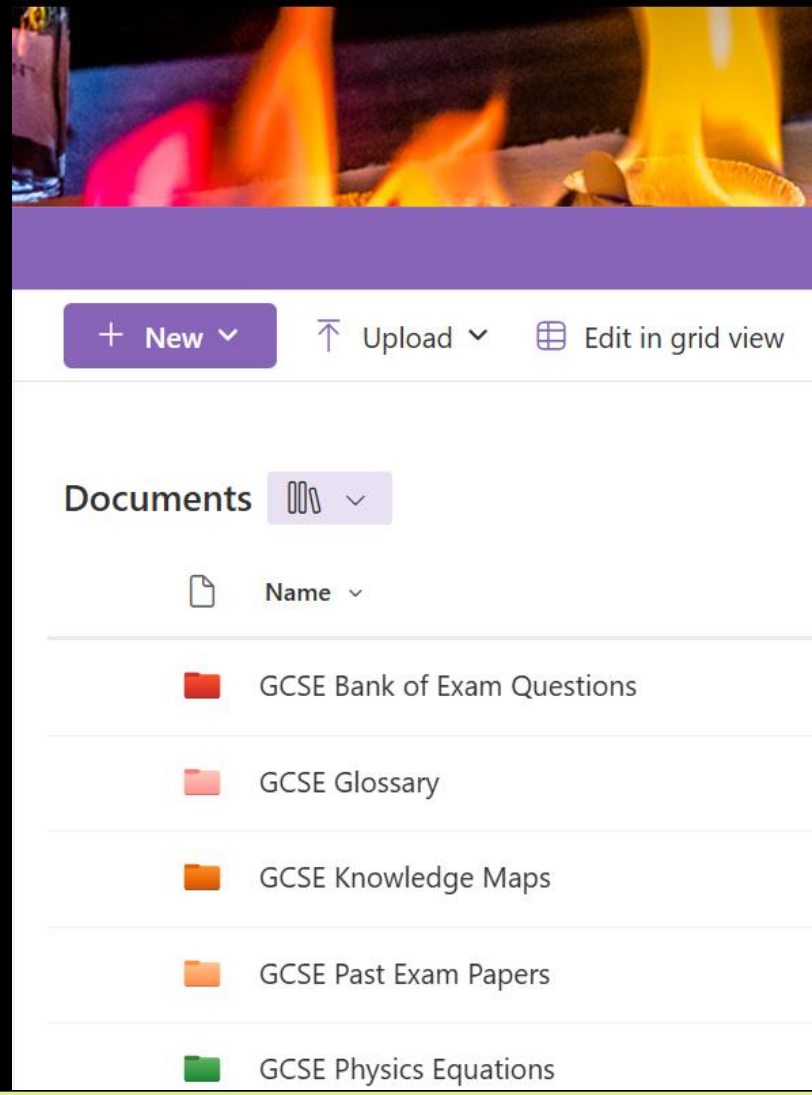
(mix up the subjects)
30 minutes of Shakespeare,
30 minutes of algebra,
30 minutes of Poetry,
30 minutes of Ratio
- rather than an hour of English & an hour of Maths



5. Have a plan: start early, space it out and mix it up.

2007 (Rohrer and Taylor)

- The mark schemes are essential.
- Work out why you got questions wrong: a mistake? A lack of understanding? You forgot?
- Ask us for help. The highest achieving pupils ask us the most questions!



6. Past exam papers: once you've revised the knowledge.

- Key words are essential! Show off how many you know.

e.g. if you mention energy, use the words respiration, mitochondria, contract (muscles)

7. Biology: get your words right

- Chemistry papers are the most predictable of the three sciences.
- You must be able to do the maths skills e.g. Calculate Mr, moles, concentrations
- Explain properties; why can graphite conduct? Why is diamond hard? Why do group 1 get more reactive?

8. Chemistry: top tips

The car is released from rest at position **A** and accelerates due to gravity down the track to position **B**.

mass of toy car = 0.040 kg

vertical height between position **A** and position **B** = 90 cm

gravitational field strength = 9.8 N/kg

Calculate the maximum possible speed of the toy car when it reaches position **B**. **(5)**

1. GPE = mgh
2. Velocity = √energy/0.5 x mass

- In 5 or 6 mark questions, you'll have to use 2 formulas.
- What units have you got → first formula
- What units do you need → second formula

9. Physics: top tips

- For all 21 practicals, you must know:
  - The method
  - The variables
  - The hazards
  - The possible errors (systematic or random)
  - How to interpret results

10. Required practicals: top tips