Year 9 Curriculum Overview:

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	Topics/ content outline:	Powerful Knowledge (key concepts, skills)	What will you be assessed on?	How can you help at home?
Autumn Term	Motion 4.5.6.1 Describing Motion Along a Line: Waves 4.6.1.1 Transverse & Longitudinal - Energy transfer/ medium/ amplitude/ frequency/ wavelength	**Calculations using distance = speed × time** **Average speed cf instanteous speed** **Distance-time graphs including gradients** **Acceleration & using acceleration = change in speed / time** **Velocity-time graphs including gradients** **& the area under lines (including curved lines)#** **Transverse & Longitudinal waves – their nature & examples of them.** **Amplitude, frequency, wavelength, medium**	**The Y9 topic "Motion" and some of the "Waves" topic.** **The most up-to-date listings re. what's on the tests will be on Showbie "Physics ALL Y9"**	**- Question students to test their recall of the Knowledge Organisers ("KOs" or Checklists** **- Encourage students to turn KOs into fact cards** **- Encourage students to use fact cards properly** **- Encourage students to use the practice topic questions, or work on them together** **- Encourage students to follow the links to Bitesize or Free GCSE Science lessons & show them how to use them effectively eg turning content into a visual representation, pausing & rewinding where necessary.** **Links, topic questions etc are available in the Showbie class "Physics ALL Y9".**
Spring Term	Waves 4.6.1.1 & 4.6.1.2 Measuring the speed of sound. Period & $T = {}^{1}/_{f}$. Using $v = f\lambda$. Making measurements of waves on a ripple tank Electromagnetic Waves 4.6.2.1 – 4.6.2.4 Types, properties, uses and applications of electromagnetic waves. Refraction.	**Using the equation: wave speed = frequency × wavelength** **The nature of electromagnetic waves** **Applications of electromagnetic waves** **Reasons for the use of certain electromagnetic waves for particular purposes** **Refraction of electromagnetic waves at media interfaces explained in terms of wavelength & speed change** **Representing refraction using ray diagrams**	**The Y9 topics "Motion" & "Waves"** **The most up-to-date listings re. what's on the tests will be on Showbie "Physics ALL Y9"**	**- Question students to test their recall of the Knowledge Organisers ("KOs" or Checklists** **- Encourage students to turn KOs into fact cards** **- Encourage students to use fact cards properly** **- Encourage students to use the practice topic questions, or work on them together** **- Encourage students to follow the links to Bitesize or Free GCSE Science lessons & show them how to use them effectively eg turning content into a visual representation, pausing & rewinding where necessary.** **Links, topic questions etc are available in the Showbie class "Physics ALL Y9".**
Summer Term	Electricity (Parts of section 6) Current/PD/resistance. Circuits & symbols. W=QV. V=IR. I-V for a fixed resistor. Series & parallel circuits. Resistors in series and parallel. Atomic Structure 4.4 Atomic Structure: Atoms & isotopes. Structure of atom. Development of the atomic model. Mass no. & atomic no.	**.Electrical current as a flow of charge.** **The interdependence of current, resistance and potential difference** **Connecting ammeters and voltmeters** **Investigating how the length of a wire affects its resistance** **Current-PD graph for a fixed resistance** **A selection of the standard circuit symbols (see checklist)** **The equations:** **PD = current × resistance** **energy transferred = charge flow × PD** **The nuclear model & evidence for the nuclear model** **Atomic structure, isotopes & isotope notation**	**The Y9 topics "Motion", "Waves" & "Electromagnetic Waves"** **The most up-to-date listings re. what's on the tests will be on Showbie "Physics ALL Y9"**	**- Question students to test their recall of the Knowledge Organisers ("KOs" or Checklists** **- Encourage students to turn KOs into fact cards** **- Encourage students to use fact cards properly** **- Encourage students to use the practice topic questions, or work on them together** **- Encourage students to follow the links to Bitesize or Free GCSE Science lessons & show them how to use them effectively eg turning content into a visual representation, pausing & rewinding where necessary.** **Links, topic questions etc are available in the Showbie class "Physics ALL Y9".**

Year 10 Curriculum Overview: Physics (Combined Science – Trilogy)

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	Topics/ content outline:	Powerful Knowledge (key concepts, skills)	What will you be assessed on?	How can you help at home?
Autumn Term	Forces & Motion Newton's Laws of Motion, Inertia, F = ma, Acceleration due to gravity, Confirming F = ma by experiment, Forces & Braking, Momentum 2) Nuclear Radiation Some nuclei are unstable. Nuclear emissions α, β, γ & neutrons	**The nature of forces & named examples of forces** **Newton's 1st, 2nd & 3rd laws of motion** **Resultant force. Using F = ma** **Weight, mass & grav. Field strength including W = mg** **Explaining "terminal velocity"** **Explaining how thinking & braking distance are affected** **The nature of alpha, beta & gamma radiations, their relative ionising power, penetrating power and range in air** **Activity cf count rate & the unit "becquerel" (Bq)**	**The Y9 topic "Motion" and the Y10 topic "Forces & Motion"** **The most up-to-date listings re. what's on the tests will be on Showbie "Physics ALL Y10 Trilogy …"**	**- Question students to test their recall of the Knowledge Organisers ("KOs" or Checklists** **- Encourage students to turn KOs into fact cards** **- Encourage students to use fact cards properly** **- Encourage students to use the practice topic questions, or work on them together** **- Encourage students to follow the links to Bitesize or Free GCSE Science lessons & show them how to use them effectively eg turning content into a visual representation, pausing & rewinding where necessary.** **Links, topic questions etc are available in the Showbie class "Physics ALL Y10 Trilogy …".**
Spring Term	Nuclear Radiation Y10 Electricity	**Half-life & the random nature of decay** **Calculations using half-life (limited to integer no.s of half-lives)** **Contamination & irradiation** **Revision of Y9 Electricity (see Y9 page)** **Thermistors & LDRs** **The nature of filament lamps & diodes / LEDs** **Experiments investigating filament lamps & diodes**	**The Y9 topics "Motion" & "Waves" and the Y10 topic "Forces & Motion"** **The most up-to-date listings re. what's on the tests will be on Showbie "Physics ALL Y10 Trilogy …"**	**- Question students to test their recall of the Knowledge Organisers ("KOs" or Checklists** **- Encourage students to turn KOs into fact cards** **- Encourage students to use fact cards properly** **- Encourage students to use the practice topic questions, or work on them together** **- Encourage students to follow the links to Bitesize or Free GCSE Science lessons & show them how to use them effectively eg turning content into a visual representation, pausing & rewinding where necessary.** **Links, topic questions etc are available in the Showbie class "Physics ALL Y10 Trilogy …".**
Summer Term	Y10 Electricity Energy	**The application of LDRs, diodes and thermistors for responding to environmental change.** **Types of energy stores. Explaining processes/events in terms of energy moving between stores.** **Conservation of energy** **Using some energy equations**	**The Y9 topics "Motion", "Waves" & "Y9 Electricity" and the Y10 topics "Forces & Motion" & "Y10 Electricity"** **The most up-to-date listings re. what's on the tests will be on Showbie "Physics ALL Y10 Trilogy …"**	**- Question students to test their recall of the Knowledge Organisers ("KOs" or Checklists** **- Encourage students to turn KOs into fact cards** **- Encourage students to use fact cards properly** **- Encourage students to use the practice topic questions, or work on them together** **- Encourage students to follow the links to Bitesize or Free GCSE Science lessons & show them how to use them effectively eg turning content into a visual representation, pausing & rewinding where necessary.** **Links, topic questions etc are available in the Showbie class "Physics ALL Y10 Trilogy …".**

Year 10 Curriculum Overview: Physics (Separate Science)

NB some sets' studies will differ from this program due to their particular teaching arrangements

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	Topics/ content outline:	Powerful Knowledge (key concepts, skills)	What will you be assessed on?	How can you help at home?
Autumn Term	Forces & Motion Newton's Laws of Motion, Inertia, F = ma, Acceleration due to gravity, Confirming F = ma by experiment, Forces & Braking, Momentum 2) Nuclear Radiation Some nuclei are unstable. Nuclear emissions α, β, γ & neutrons 3) Moments< Levers & Gears	**The nature of forces & named examples of forces Newton's 1st, 2nd & 3rd laws of motion Resultant force. Using F = ma Weight, mass & grav. Field strength including W = mg Explaining "terminal velocity" Explaining how thinking & braking distance are affected The nature of alpha, beta & gamma radiations, their relative ionising power, penetrating power and range in air Activity cf count rate & the unit "becquerel" (Bq) Moments applied to levers & gears.**	**The Y9 topic "Motion" and the Y10 topic "Forces & Motion" The most up-to-date listings re. what's on the tests will be on Showbie "Physics ALL Y10 Trilogy …"**	**- Question students to test their recall of the Knowledge Organisers ("KOs" or Checklists - Encourage students to turn KOs into fact cards - Encourage students to use fact cards properly - Encourage students to use the practice topic questions, or work on them together - Encourage students to follow the links to Bitesize or Free GCSE Science lessons & show them how to use them effectively eg turning content into a visual representation, pausing & rewinding where necessary. Links, topic questions etc are available in the Showbie class "Physics ALL Y10".**
Spring Term	Nuclear Radiation Y10 Electricity IGS topic "Using Waves"	**Half-life & the random nature of decay Calculations using half-life (limited to integer no.s of half-lives) Contamination & irradiation Fission Reactors. Background radiation. Medical uses. Revision of Y9 Electricity (see Y9 page) Thermistors & LDRs The nature of filament lamps & diodes / LEDs Experiments investigating filament lamps & diodes Lenses & ray diagrams. Seismic Waves & the Earth's structure. Colour & the Eye. Range finding. Reflection. Black-body radiation.**	**The Y9 topics "Motion" & "Waves" and the Y10 topics "Forces & Motion", "Using Waves" & "Moments Levers & Gears" The most up-to-date listings re. what's on the tests will be on Showbie "Physics ALL Y10 Trilogy …"**	**- Question students to test their recall of the Knowledge Organisers ("KOs" or Checklists - Encourage students to turn KOs into fact cards - Encourage students to use fact cards properly - Encourage students to use the practice topic questions, or work on them together - Encourage students to follow the links to Bitesize or Free GCSE Science lessons & show them how to use them effectively eg turning content into a visual representation, pausing & rewinding where necessary. Links, topic questions etc are available in the Showbie class "Physics ALL Y10".**
Summer Term	Y10 Electricity Energy Space Physics .	**The application of LDRs, diodes and thermistors for responding to environmental change. Types of energy stores. Explaining processes/events in terms of energy moving between stores. Conservation of energy Using some energy equations Orbits. Red shift & the expansion of the universe as evidence for the Big Bang. Dark Matter & Dark Energy. The "life cycle" of stars.**	**The Y9 topics "Motion", "Waves" & "Y9 Electricity" and the Y10 topics "Forces & Motion", "Y10 Electricity", "Moments, Levers & Gears" and "Using Waves" The most up-to-date listings re. what's on the tests will be on Showbie "Physics ALL Y10 Trilogy …"**	**- Question students to test their recall of the Knowledge Organisers ("KOs" or Checklists - Encourage students to turn KOs into fact cards - Encourage students to use fact cards properly - Encourage students to use the practice topic questions, or work on them together - Encourage students to follow the links to Bitesize or Free GCSE Science lessons & show them how to use them effectively eg turning content into a visual representation, pausing & rewinding where necessary. Links, topic questions etc are available in the Showbie class "Physics ALL Y10".**

Year 11 Curriculum Overview: Physics (Combined Science – Trilogy)

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	Topics/ content outline:	Powerful Knowledge (key concepts, skills)	What will you be assessed on?	How can you help at home?
Autumn Term	Energy (continued from Y10) Forces & Elasticity (aka Forces, Bending & Stretching) Y11 Electricity (Mains electricity)	**Energy stores, the transfer of energy between stores and the conservation of energy.** **Work done & power.** **Efficiency.** **Energy resources – pros/cons of different resources** **Elastic & inelastic behaviour. The spring constant. Hooke's law** **Alternating/direct current/PD.** **Mains PD, frequency & max current.** **Safety features – earthing & fuses** **Transformers used to maximise transmission efficiency**	**Y9 topics "Motion", "Waves", "Electromagnetic Waves", & "Y9 Electricity"** **Y10 topics "Forces & Motion", "Atomic Structure & Radioactivity", "Energy", "Forces & Elasticity" & "Y11 Electricity"** **The most up-to-date listings re. what's on the tests will be on Showbie "Physics ALL Y11"**	**- Question students to test their recall of the Knowledge Organisers ("KOs" or Checklists** **- Encourage students to turn KOs into fact cards** **- Encourage students to use fact cards properly** **- Encourage students to use the practice topic questions, or work on them together** **- Encourage students to follow the links to Bitesize or Free GCSE Science lessons & show them how to use them effectively eg turning content into a visual representation, pausing & rewinding where necessary.** **Links, topic questions etc are available in the Showbie class "Physics ALL Y10".**
Spring Term	Electromagnetism Particle model of matter	**Induced & permanent magnets** **Magnetic fields around bar magnets, conducting wires and solenoids** **The motor effect & F = BiL** **Density. Measuring density.** **The nature of solids, liquids and gases – a particle model.** **Specific heat capacity & specific latent heat.** **Internal energy.**	**Y10 topics "Forces & Motion", "Energy"** **Y11 topics "Forces & Elasticity" & "Electromagnetism"** **The most up-to-date listings re. what's on the tests will be on Showbie "Physics ALL Y11"**	**- Question students to test their recall of the Knowledge Organisers ("KOs" or Checklists** **- Encourage students to turn KOs into fact cards** **- Encourage students to use fact cards properly** **- Encourage students to use the practice topic questions, or work on them together** **- Encourage students to follow the links to Bitesize or Free GCSE Science lessons & show them how to use them effectively eg turning content into a visual representation, pausing & rewinding where necessary.** **Links, topic questions etc are available in the Showbie class "Physics ALL Y10".**
Summer Term	Revision including past paper practice.	**Everything!**	**Assessment could cover any topic & will depend on strengths/weaknesses identified in revision work.**	**- Question students to test their recall of the Knowledge Organisers ("KOs" or Checklists** **- Encourage students to turn KOs into fact cards** **- Encourage students to use fact cards properly** **- Encourage students to use the practice topic questions, or work on them together** **- Encourage students to follow the links to Bitesize or Free GCSE Science lessons & show them how to use them effectively eg turning content into a visual representation, pausing & rewinding where necessary.** **Links, topic questions etc are available in the Showbie class "Physics ALL Y10".**

Year 11 Curriculum Overview: Physics (Separate Science)

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	Topics/ content outline:	Powerful Knowledge (key concepts, skills)	What will you be assessed on?	How can you help at home?
Autumn Term	Energy (continued from Y10) Forces & Elasticity (aka Forces, Bending & Stretching) Y11 Electricity (Mains electricity) Forces & Pressure Static Electricity	**Energy stores, the transfer of energy between stores and the conservation of energy.** **Work done & power.** **Efficiency.** **Energy resources – pros/cons of different resources** **Elastic & inelastic behaviour. The spring constant. Hooke's law** **Alternating/direct current/PD.** **Mains PD, frequency & max current.** **Safety features – earthing & fuses** **Transformers used to maximise transmission efficiency** **Pressure at depth in a fluid. Atmospheric pressure. Upthrust.** **Electric fields & charges.**	**Y9 topics "Motion", "Waves", "Electromagnetic Waves", & "Y9 Electricity"** **Y10 topics "Forces & Motion", "Atomic Structure & Radioactivity", "Energy", "Forces & Elasticity" & "Y11 Electricity", "Forces & Pressure" & "Static Electricity"** **The most up-to-date listings re. what's on the tests will be on Showbie "Physics ALL Y11"**	**- Question students to test their recall of the Knowledge Organisers ("KOs" or Checklists** **- Encourage students to turn KOs into fact cards** **- Encourage students to use fact cards properly** **- Encourage students to use the practice topic questions, or work on them together** **- Encourage students to follow the links to Bitesize or Free GCSE Science lessons & show them how to use them effectively eg turning content into a visual representation, pausing & rewinding where necessary.** **Links, topic questions etc are available in the Showbie class "Physics ALL Y11".**
Spring Term	Electromagnetism Particle model of matter Generators & Transformers Particles & Pressure	**Induced & permanent magnets** **Magnetic fields around bar magnets, conducting wires and solenoids** **The motor effect & F = BiL** **Density. Measuring density.** **The nature of solids, liquids and gases – a particle model.** **Specific heat capacity & specific latent heat.** **Internal energy** **Electromagnetic induction: microphones, transformers and generators** **Pressure in gasses. pV=constant**	**Y10 topics "Forces & Motion", "Energy"** **Y11 topics "Forces & Elasticity", "Electromagnetism", "Generators & Transformers" & "Particles & Pressure".** **The most up-to-date listings re. what's on the tests will be on Showbie "Physics ALL Y11"**	**- Question students to test their recall of the Knowledge Organisers ("KOs" or Checklists** **- Encourage students to turn KOs into fact cards** **- Encourage students to use fact cards properly** **- Encourage students to use the practice topic questions, or work on them together** **- Encourage students to follow the links to Bitesize or Free GCSE Science lessons & show them how to use them effectively eg turning content into a visual representation, pausing & rewinding where necessary.** **Links, topic questions etc are available in the Showbie class "Physics ALL Y11".**
Summer Term	Revision including past paper practice.	**Everything**	**Assessment could cover any topic & will depend on strengths/weaknesses identified in revision work.**	**- Question students to test their recall of the Knowledge Organisers ("KOs" or Checklists** **- Encourage students to turn KOs into fact cards** **- Encourage students to use fact cards properly** **- Encourage students to use the practice topic questions, or work on them together** **- Encourage students to follow the links to Bitesize or Free GCSE Science lessons & show them how to use them effectively eg turning content into a visual representation, pausing & rewinding where necessary.** **Links, topic questions etc are available in the Showbie class "Physics ALL Y11".**