Year 8 KS3 Curriculum Overview: STEM

	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Unit of Work	STEM on a desert Island *How could we use STEM to survive in a survival situation?*	Engineering Entertainment 1 *How is light and sound used?*	Engineering Entertainment 2 *How is light and sound used?*	Mission to Mars 1 *What engineering, scientific, and mathematical skills would we need to move to another planet?*	Mission to Mars 2 *What engineering, scientific, and mathematical skills would we need to move to another planet?*	Deployable Structures *How can we make the effects we see in the movies?*
Ethos Links	STEM – investigation skills Character – leadership and teamwork Sustainability – making use of materials in an unusual way	STEM – understanding how light and sound are generated Sustainability – using light in vertical farming	STEM – understanding how light and sound are generated Sustainability – using light in vertical farming	Character – listening respectfully and critically STEM – applying STEM ideas to unusual scenarios	Character – listening respectfully and critically STEM – applying STEM ideas to unusual scenarios	STEM – investigation skills Sustainability – making use of materials in new ways Character – thinking about rights and wrongs
Knowledge	By the end of this unit, students will know and understand: ➢ How to make rope from waste materials ➢ How filtering can be used to create "clean" water ➢ How to create and use a sundial ➢ How wastepaper can be used to make new paper ➢ How using the motion of water, electricity can be made ➢ The use of chemicals to make inks	By the end of this unit, students will know and understand: ➢ How waves interact and travel ➢ That sound and light are both carried by waves ➢ What the primary colours for light are ➢ How mixing colours will create new colours ➢ How the pitch of a sound can be altered ➢ How an LDR can be used to affect the resistance in a circuit	By the end of this unit, students will know and understand: ➢ How waves interact and travel ➢ That sound and light are both carried by waves ➢ What the primary colours for light are ➢ How mixing colours will create new colours ➢ How the pitch of a sound can be altered ➢ How an LDR can be used to affect the resistance in a circuit	By the end of this unit, students will know and understand: ➢ Forces involved in the launch of a rocket ➢ How to use mathematics to model the flightpath of a voyage ➢ How resources may limit the availability of food supply ➢ The nutrients needed in a human diet ➢ How STEM can generate new resources from available materials ➢ The limits of various types of communication	By the end of this unit, students will know and understand: ➢ Forces involved in the launch of a rocket ➢ How to use mathematics to model the flightpath of a voyage ➢ How resources may limit the availability of food supply ➢ The nutrients needed in a human diet ➢ How STEM can generate new resources from available materials ➢ The limits of various types of communication	By the end of this unit, students will know and understand: ➢ How opening mechanisms work ➢ How to evaluate the success of a structure ➢ How to adapt an object to new requirements ➢ How to relate circumference to diameter and use this to model deployable bridges ➢ How to construct a variety of objects with care

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Skills	By the end of this unit, students will be able to develop their ability to: • Use practical equipment correctly and being mindful of safety • Evaluate our use of materials • Be creative in designing a product	By the end of this unit, students will be able to develop their ability to: • Model waves • Construct simple circuits • Vary the resistance in a circuit using pencil marks and LDRs • Work well in groups	By the end of this unit, students will be able to develop their ability to: • Model waves • Construct simple circuits • Vary the resistance in a circuit using pencil marks and LDRs • Work well in groups	By the end of this unit, students will be able to develop their ability to: • Use a mathematical model • Plan a diet • Carry out practical safely • Come up with creative solutions	By the end of this unit, students will be able to develop their ability to: • Use a mathematical model • Plan a diet • Carry out practical safely • Come up with creative solutions	By the end of this unit, students will be able to develop their ability to: • Use mathematical models • Construct scale models • Carry out practical safely • Work well in groups
Key Vocabulary	Waste Reduce, reuse, recycle, reclaim Sustainability Filter Carbon	Resistance Light Sound Waves Wavelength Frequency Amplitude Primary colour LDR Circuit	Resistance Light Sound Waves Wavelength Frequency Amplitude Primary colour LDR Circuit	Forces Thrust Gravity Weight Weightlessness Diet Nutrition Radio Waves Microwaves Projectiles Trajectory	Forces Thrust Gravity Weight Weightlessness Diet Nutrition Radio Waves Microwaves Projectiles Trajectory	Accessibility Sport Materials Performance Diet Nutrition Ethics Prosthetic
Assessment	• Staff assessment • Self-Review • End of theme feedback	• Staff assessment • Self-Review • Mid-theme feedback	• Staff assessment • Self-Review • End of theme feedback	• Staff assessment • Self-Review • Mid-theme feedback	• Staff assessment • Self-Review • End of theme feedback	• Staff assessment • Self-Review • End of theme feedback