Science Curriculum Intent:
At QEGS, our Science Curriculum aims to provide engaging lessons and promotes teaching for understanding whilst covering the National Curriculum programmes of study. The Key Stage 3 content covers learning objectives in a logical order to lay strong foundations and to equip students for success at GCSE. To support all students toward fulfilling their potential, the KS3 courses balances the examined content with a mastery of ideas and skills. Students are then equipped to develop their knowledge, from understanding to application at GCSE.

Physics Year 9 Curriculum:
There are 3 main areas of Physics that will be covered in Year 9: **Forces:** –Types of force, representing forces with arrows, balanced and unbalanced forces, measuring and calculating speed, the idea of acceleration and deceleration, friction, air resistance and approach to terminal velocity, parachute investigation, moment of a force, centre of mass, pressure; **Astronomy**: –Recap year 7 work about seasons, planets and the phases of the Moon, gravity and the factors affecting its size, satellite orbits, the structure of the Universe; **Energy:** - Recap year 7 work about forms of energy, the principle of conservation of energy, efficiency, the advantages and disadvantages of various methods of generating electricity, recap the particle model of materials, transfer of heat by conduction, convection and radiation.

Autumn Term:

1. Discuss different types of force
2. Understand that forces may be balanced
3. Investigation of friction
4. Speed
5. Understand that forces may be unbalanced
6. The idea of terminal velocity
7. Parachute investigation
8. Moment of a force and centre of mass
9. Pressure
10. Recap year 7 astronomy ideas

Key Objectives Autumn Term - To be able to:

1. Decide which types of force are acting on an object
2. Recall that balanced forces cause no change to motion
3. Produce an Excel graph showing how the force of friction depends on the weight of a block
4. Carry out calculations involving speed
5. Decide whether an object is going to accelerate or decelerate
6. Explain why a falling object reaches a terminal velocity
7. Carry out and write up an experiment to investigate a factor affecting terminal velocity
8. Carry out calculations involving moment
9. Carry out calculations involving pressure
10. Explain why we have seasons, explain why the Moon has different shapes, recall the order of the planets

Spring Term:

1. Apparent brightness and shape of planets
2. Gravity as a universal force
3. Artificial satellites
4. The basic structure of the Universe
5. Recap year 7 work about forms of energy
6. Useful energy transfer and wasted energy
7. Efficiency

Key Objectives Spring Term - To be able to:

1. Recognise that the brightness and apparent shape of planets depends on their position relative to the Sun and Earth
2. Draw an arrow on diagrams to show the direction of gravity
3. Recall the uses of satellites in polar and geostationary orbits
4. Recall that the Sun is a star, that stars exist in galaxies, of which the Milky Way is just one of many
5. Say which types of energy are involved in various situations
6. Draw a labelled Sankey diagram to show useful energy transfer and wasted energy
7. Calculate efficiency

Summer Term:

1. Recap year 7 work about fossil fuels
2. Recap year 7 work about renewable resources
3. Explain the effect of greenhouse gases
4. Consider the various ways of generating electricity
5. Decide how energy should be provided for an island
6. Recap year 7 work on solids, liquids and gases
7. Heat transfer by conduction
8. GCSE required practical to investigate cooling curves
9. Heat transfer by convection and radiation

Key Objectives Summer Term - To be able to:

1. Recall the list of fossil fuels and their disadvantages
2. Explain what a renewable energy resource is
3. Explain how greenhouse gases contribute to global warming
4. Compare the advantages and disadvantages of generating electricity by various means
5. Justify decisions about the provision of energy for the island
6. Recall the arrangement and movement of atoms in solids, liquids and gases
7. Recall how the movement of atoms causes heat transfer by conduction
8. Carry out a series of experiments to investigate various types and thicknesses of insulation
9. Recall how the movement of atoms causes convection and the factors that affect the amount of infra red radiation emitted or absorbed by an object

Key Performance Standards

1. Say which types of force are acting on an object
2. Say whether an object will remain at constant speed, accelerate or decelerate
3. Be able to carry out calculations involving speed
4. Be able to explain why an object reaches terminal velocity
5. Be able to carry out calculations involving moment and pressure
6. Understand how the size and direction of gravity on an object changes as it moves
7. Be able to predict the positions of planets in their orbits
8. Say which types of energy are involved in various situations
9. Carry out calculations involving efficiency
10. Discuss the advantages and disadvantages of various methods of generating electricity
11. Explain the process of heat transfer by conduction in terms of atoms
12. Explain the process of heat transfer by convection in terms of atoms