



Knowledge Summary

Year 8 Term 4 2023/24

Science

Physics Module

Energy



Essential Questions/Knowledge

- How is work is calculated?
- How can machines change the size of forces or distances?
- How are energy and temperature measured?
- How is energy transferred through solids, liquids, and in air?
- What is meant by the term 'equilibrium'?
- What happens in conduction and convection?
- What are the sources of infrared radiation?
- What are the properties of infrared radiation?

How students will be assessed on their knowledge

- Daily retrieval
- In-class tasks
- Extended writing questions
- End of unit assessments

Questions/Knowledge to deepen understanding

- Compare the work done in different scenarios and by different machines.
- Explain how conservation of energy applies in one example.
- Evaluate results and suggest how the experiment can be improved.
- Compare the work done in different scenarios and by different machines.
- Explain how conservation of energy applies in one example.
- Evaluate results and suggest how the experiment can be improved.
- Give an example to show that energy and temperature are different.
- Explain, in terms of particles, how energy is transferred.
- Give examples of equilibrium.
- Describe sources of error as systemic or random.
- Explain the processes involved during heat transfers.
- Explain why certain materials are good thermal insulators.
- Explain the pattern in conduction shown by experimental results.
- Explain how thermal equilibrium can be established.
- Compare the different ways that energy is transferred.
- Explain in detail how to reduce risks.

Key Concepts

- Work, energy and machines
- Energy and Temperature
- Energy Transfer: Particles
- Energy Transfer: Radiation and Insulation

Tier 2 and 3 vocabulary linked to the unit

- Lever
- Force
- Distance
- Machines
- Work
- Effort
- Load
- Pivot
- Equilibrium
- Conduction
- Convection
- Energy Transfer
- Radiation
- Infrared
- Joule