

**STUDENT UNIT PLANNER**

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| **Year Level:** | 8 | Student checklist: 🗹 when you know… |
| **Subject:**  | Science | [ ] Assessment due dates[ ] The learning goals and success criteria for this term [ ] Changes to routines e.g. excursions[ ] When assessment practice lessons will occur (exemplars)[ ] When revision lessons will occur |
| **Term/Year:** | 2 / 2023 |
| **Unit Title:**  | Energy |
| **Assessment:** | Student Experiment - Rollercoasters |
| **Key Resource:**  |   |
| **WK** | **Wk. Beg** | **Holidays or variations this week** | **Lesson 1** | **Lesson 2**  | **Lesson 3**  |
|  | 17 Apr. 23 |  | **LG1: SC1 & 2****Introduction to the concept of energy** * Recall types of energy and how it is used in daily life
* **Identify** different forms of energy and their use in everyday life

**Term organisation** * Unit planner, LGs and SC and assessment overview
 | **LG 1 & 2: SC 3, 4 & 5****Potential vs kinetic energy – Investigation** * **Define** Potential energy as stored energy
* **Define** Kinetic energy as moving energy
* **Identify** Potential and Kinetic energy
 | **LG 2: SC 4 & 5****Potential vs kinetic energy – Identification** * Practical activity - energy stations. Identifying different forms of energy
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| 2 | 24 Apr. 23 | TUESAnzac Day | **LG 2: SC5; LG 4: SC16 & 17****Elastic Potential Energy*** Introduction to elastic potential energy
* Practical activity – Target shooting challenge
* **Identify** variables that can be modified to make it shoot further
 | **LG 2: SC5; LG 4: SC16, 21 & 22****Chemical Potential Energy*** Introduction Chemical potential energy
* Practical activity – Burning food
* **Explain** the transfer of stored chemical in food into kinetic energy i.e. heat
 | **Catch up and consolidate*** Complete and consolidate content from lessons 1 and 2.

Suggested Stile LessonsEnergy 1.2 Forms of energy2.2 Kinetic energy2.4 Potential energy |
| 3 | 1 May. 23 | MONLabour Day | **LG 2: SC 5, 6 & 9****Heat Energy*** Introduction to heat energy
* **Identify** examples: combustion engines, light bulbs, fire
* Practical activity – Students use traditional materials to start a fire
* **Compare** traditional versus modern fire-starting methods - comparisons of energy sources
* Research task: When were matches invented?
 | **LG 3: SC 10, 11, 12 & 13****Transfer of Heat Energy**• **Construct** representations of energy flow through systems• **Identify** and evaluateheat as wasted energy in different systems | **Catch up and consolidate lesson** * Complete and consolidate content from lessons 1 and 2.

Suggested Stile LessonsEnergy 3.1 Energy transfer and transformations |
| 4 | 8 May. 23 |  | **LG 2: SC 4, 5, 7 & 8****Gravitational Potential Energy**• **Define** gravitational potential energy and applications• **Describe** the relationship between mass, height and gravitational potential energy | **LG 3: SC 10, 11, 12 & 13; LG 4: SC 19 & 20.****Gravitational Potential Energy**• **Investigate** gravitational potential energy via practical activityKey Skill: **Use** tables and graphs to present data, using digital technology (excel) if appropriate.Key Skill: **Analyse** tables and graphs for trends and patterns | **Catch up and consolidate lesson** * Complete and consolidate content from lessons 1 and 2.

Suggested Stile LessonsEnergy 3.4 Energy efficiency |
| 5 | 15 May. 23 |  | **LG 2: SC6 & 7: LG 3: SC 10, 11 & 12****Kinetic energy - Flow diagrams** * **Describe** energy transfers and transformations
* **Construct** energy flow diagrams
* **Observe** transfer and transformation of energy – Practical activity demonstration

Key Skill: **Construct** tables and graphs to present data, using digital technology (excel) if appropriate. | **LG 3: SC 10, 11, 12; LG 4: SC 19 & 20****Colliding ball bearings -Practical activity** * **Investigate** Energy transfers and transformations during
* Practical activity – Ball Bearing collision

Key Skill: **Construct** tables and graphs to present data, using digital technology (excel) if appropriate.Key Skill: **Analyse** tables and graphs for trends and patterns. | **LG 3: SC 10, 11 & 12****Law of energy conservation** * **Investigate** PHET simulations: skate park
* **Investigate** PHET: Pendulum lab
* **Describe** and **construct** diagrams to show energy transfers and transformations

Formative review questions of the last four weeks |
| 6 | 22 May. 23 |  | **Rollercoasters introduction****LG 4: SC14 & 16**Introduce students to equipment for assessment – Students play around with the materials that they will be given for their roller coaster design.  | **Rollercoasters Introduction****LG 4: SC15 & 17**Teacher demonstrates the effect of changing independent variables such as mass and starting height of the ball and how this changes the speed the ball moves through the roller coaster.  | **Rollercoasters Introduction****LG 4: SC14, 15, 16, 17, 18, 19**Students finalise their rollercoaster design and do a preliminary trial. |
| 7 | 29 May. 23 |  | **Roller coaster assessment****Hand out assessment**.**LG4: SC 14 & 15**Students:* **Identify** research question
* **Predict** outcomes (hypothesis)
* Write Introduction
 | **Roller coaster assessment****LG4: SC 16, 17 & 18**Students:* **Identify** variables
* **Consider** risks
* **Develop** materials list
* **Develop** method
 | **Roller coaster assessment****L4: SC 18 &19**Students:* **Construct** data collection table
* **Draw** diagram of roller coaster design
* **Select** equipment and set up experiment
* Conduct trials
* Collect data
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| 8 | 5 Jun. 23 | FRI**Athletics Carnival** 9TH June | **Roller coaster assessment****L4: SC 18, 19 & 20**Students:* **Select** equipment and set up experiment
* Conduct trials
* Collect data
* **Calculate** average results from trials
 | **Roller coaster assessment****L4: SC 19 & 20*** Use data to generate a graph
* **Analyse** trends and patterns in data and graph.
 | **Roller coaster assessment****L4: SC 20, 21 &22*** **Evaluate** results
* **Identify** relationship between variables
* **Explain** trends
* **Identify** limitations
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| 9 | 12 Jun. 23 | FRI**Show****Holiday**16TH June | **Roller coaster assessment****L4: SC 22****Compare** conclusions with earlier predictions | **Roller coaster assessment****L4: SC 23****Present** and **explain** results in an experimental report. | **Roller coaster assessment****Assessment due** |
| 10 | 19 Jun. 23 |  | Catch up  | End of Term Activities | Last day of term |