**Teaching and Learning Program for the Elements**

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| **T:\Office\Graham Moore\jpeg sentral logo.jpg** | **Teaching and Learning Program** |
| **Title/Type of Unit: Motion****Program Risk Level:**  | **Duration:****By:** |
| **Syllabus Outcomes****Stage**  | *A student:*SC5-10PW: applies models, theories and laws to explain situations involving energy, force and motion |
| **Connectedness****Why does this learning matter?** | **Students learn to:*** relate between force, mass and acceleration
* relate between distance, speed and time
* relate acceleration qualitatively to a change in speed and/or direction as a result of a net force
* analyses qualitatively everyday situations involving motion in terms of Newton's laws
 | **Students learn about:*** The relationship between force, mass and acceleration.
* The relationship between speed, distance and time.
* The difference between speed and acceleration.
* Newton’s Laws of Motion.
* The difference between mass and weight.
* Recognise the equation F = ma.
* Recognise the equation speed = distance/time.
* Explain acceleration as a change in speed and/or direction.
* Identify that a force is required to cause acceleration.
* Describe common situations involving Newton’s Laws.
* The relationship between mass, weight and gravity
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| **Background and Key Ideas** |  |
| **Literacy Continuum** | Reading Texts | Comprehension | Vocabulary Knowledge | Aspects of Writing | Aspects of Speaking | Phonics | Phonemic Awareness | Concepts About Print |
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| **Numeracy Continuum** | Counting Sequences | Counting as Problem Solving | Pattern and Number Structure | Place Value | Multiplication and Division | Fraction Units | Length, Area and Volume |
| Elements: (individual or range)Activities linked to program to increase learning: |
| **Quality Teaching** |
| **Intellectual Quality** | **Quality Learning Environment** | **Significance** |
| * IQ1 Deep Knowledge
* IQ2 Deep Understanding
* IQ3 Problematic Knowledge
* IQ4 Higher-order Thinking
* IQ5 Metalanguage
* IQ6 Substantive Communication
 | * QLE1 Explicit Quality Criteria
* QE2 Engagement
* QE3 High Expectations
* QE4 Social Support
* QE5 Students’ Self-regulation
* QE6 Student Direction
 | * S1 Background Knowledge
* S2 Cultural Knowledge
* S3 Knowledge Integration
* S4 Inclusively
* S5 Connectedness
* S6 Narrative
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| **Teaching and Learning Lesson Overview** |
| **The Elements of Learning & Achievement** | 8_community[1]F:\Mock ups\Square elements\Numeracy.jpgE:\Final V1\Final sq NO border\Sq Technology no bdr.jpg7_deconstruct.jpg4_symbol.jpg1. Brainstorm what is Motion

[Newton’s Laws of motion song](https://www.youtube.com/watch?v=PkAO8F-Tm-w) – students to roll play the song or create new one using Newton’s Laws in the Lyrics.Discus forces [Science Focus 4 p153](file:///C%3A%5CUsers%5Cgallouche%5CDesktop%5CNewtons%20First%20Law%20p153.pdf), [154](file:///C%3A%5CUsers%5Cgallouche%5CDesktop%5CNewtons%20First%20Law%20p154.pdf) &[155](file:///C%3A%5CUsers%5Cgallouche%5CDesktop%5CNewtons%20First%20Law%20p155.pdf)1. Explain Newton’s First Law- and relate to everyday life.

[YouTube video](https://www.youtube.com/watch?v=08BFCZJDn9w).Discuss inertia and the effect it can have in car collisions.YouTube video- egg activity - [YouTube video](https://www.youtube.com/watch?v=7Ix-eywqUOg) 1. Describing motion- the difference between the distance, speed and time [SC4 p136 & 137](file:///C%3A%5CUsers%5Cgallouche%5CDesktop%5CDescribing%20motion.pdf).

Practical experiment [“driving reaction time” SC4 p145](file:///C%3A%5CUsers%5Cgallouche%5CDesktop%5CReaction%20time%20Prac.pdf).1. Explain [Newton’s Second Law- p159](file:///C%3A%5CUsers%5Cgallouche%5CDesktop%5CNewtons%20Second%20Law.pdf)

Explain the [concept of acceleration p147](file:///C%3A%5CUsers%5Cgallouche%5CDesktop%5CAcceleration%20p147.pdf)-[148](file:///C%3A%5CUsers%5Cgallouche%5CDesktop%5CAcceleration%20p148.pdf).1. Use F = ma to explain why a force is needed to accelerate a mass.
2. [Newton’s Third Law- p164](file:///C%3A%5CUsers%5Cgallouche%5CDesktop%5CNewtons%20Thrid%20Law.pdf)-[165](file:///C%3A%5CUsers%5Cgallouche%5CDesktop%5CNewtons%20Third%20Law%20p2.pdf) and answer questions 1-4 on.

Use balloon or water rockets to demonstrate Newton’s Third Law [p168](file:///C%3A%5CUsers%5Cgallouche%5CDesktop%5CRocket%20experiment.pdf).1. Video: [The Physics of Car Crashes.](https://www.youtube.com/watch?v=yUpiV2I_IRI)
2. Explain the role of gravity in determining weight [p169](file:///C%3A%5CUsers%5Cgallouche%5CDesktop%5CGravity.pdf)
3. Extra activity- Use a pendulum to determine acceleration due to gravity.
 | **Aboriginal 8 Ways of Learning***The following ways of learning are incorporated throughout the program through pedagogical practices* |

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| **Special Needs Adjustments** | **School to Work** |
| * More practical tasks
* Group discussions
 | Understanding of basic science facts and concepts |
| **Assessments** |
| Ongoing throughout program |
| Roles and Responsibilities |
| Teacher | SLSO | Student |
| Prepare tasksWork with student/sDifferentiate tasks based on individuals | Work with designated student/sEnsure equipment & worksheets are preparedWork with designated student/s | Engage in activitiesComplete all tasks |
| **Risk Assessment – Dorchester ETU only** |
| **Resources** | **Safety Strategies** | **Identified Hazards** | **Control Strategies** |
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| **Teacher Evaluation****Comments / Variations** |
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| **Date Commenced**:  | **Date Finished**:  |
| **Teachers Signature**: | **Assistant Principals Signature**: |