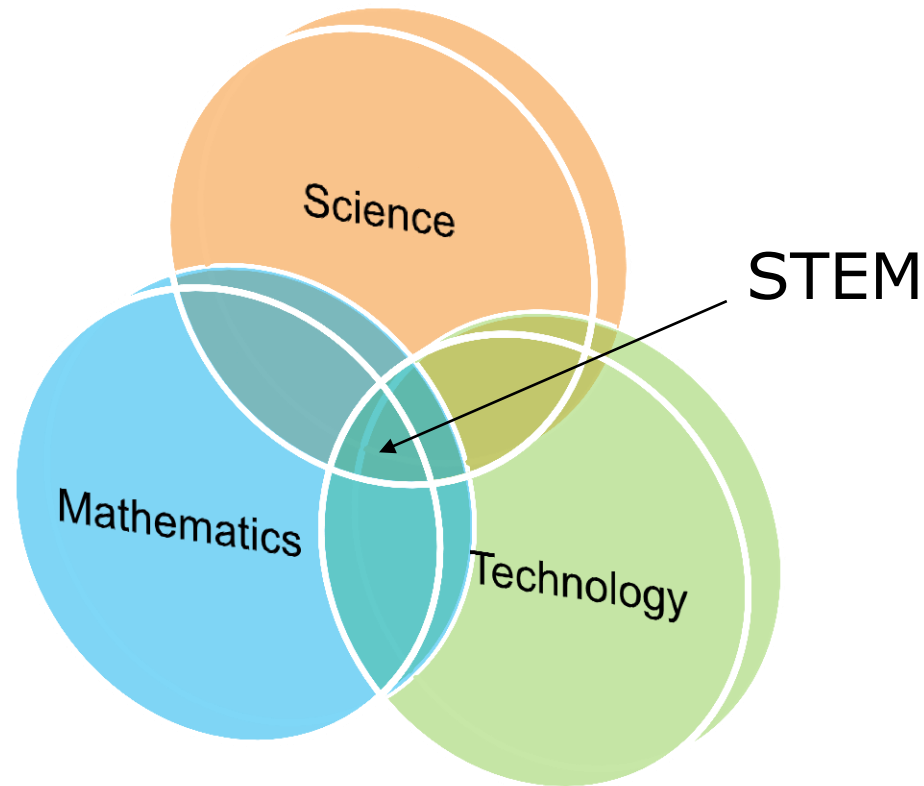


Implementing STEM

General design and planning
considerations for secondary
schools

What is STEM?



Mathematics Year 8 sequence – before STEM

- Index Laws
- Properties of circles
- Directed numbers
- Ratios
- Percentages
- Profit and loss
- Area
- Probability
- Algebra 1
- Algebra 2
- Linear equations 1
- Linear equations 2
- Congruence
- Angles
- Data
- Prisms

Mathematics Year 8 sequence – before STEM

- Index laws
- **Properties of circles**
- Directed numbers
- Ratios
- **Percentages**
- Profit and loss
- **Area**
- Probability
- Algebra 1
- Algebra 2
- **Linear equations 1**
- **Linear equations 2**
- **Congruence**
- **Angles**
- **Data**
- Prisms

Mathematics Year 8 sequence – after STEM

- Index laws
- Directed numbers
- Ratios
- Profit and loss
- Algebra 1
- Algebra 2
- Prisms
- Probability
- **Properties of circles**
- **Congruence**
- **Area**
- **Angles**
- **Percentages**
- **Linear relationships 1**
- **Linear relationships 2**
- **Data**

Lesson sequence before STEM

Week	Maths 1	Maths 2	Maths 3	Maths 4	Science 1	Science 2
Week 1						
Week 2						
Week 3						
Week 4						
Week 5						

Lesson sequence after STEM

Week	Maths 1	Maths 2	Maths 3	Maths 4	Science 1	Science 2
Week 1						
Week 2						
Week 3						
Week 4						
Week 5						

Sample lesson sequence

Week	Maths 1	Maths 2	Maths 3	Maths 4	Science 1	Science 2
Week 1	Introduction of the reaction between acids and carbonates (brief). Use to fire film canister rockets. Begin experimenting with different quantities of vinegar and bicarb.	Introduce fin shapes. Explicit teaching of calculation of parallelograms, rhombuses, kites, trapeziums	Mathletics : Area of parallelograms, rhombuses, kites, trapeziums	Team-Based Learning: iRA and tRA on parallelograms, rhombuses, kites, trapeziums	Introduce structure for systematic experiment to determine optimum amount of bicarb and vinegar	Explicit teaching – particle model Elements, compounds, mixtures
Week 2	Designs of fins	Design of fins	Mathletics : parallelograms, rhombuses, kites, trapeziums	Team-Based Learning: Application Exercise - parallelograms, rhombuses, kites, trapeziums	Chemical change vs physical change. Lab session – 4 experiments	Representing chemical change (addition, decomposition, single replacement, double replacement)
Week 3	Properties of various materials available for construction of fins Instruction for use of cutting materials Instruction for method of attaching to rocket body, including placement	Construct fins	Mathletics: Angles	Team-Based Learning: iRA and tRA on Angles	Construct fins. Attach to rockets	Design of experiment
Week 4	Explicit teaching: angles (quadrilaterals and relationship to congruent triangles)	Recording angles of fins in design booklet	Mathletics: Angles	Team-Based Learning: Application Exercise for Angles	Conduct experiment	Conduct experiment
Week 5	Conduct experiment	Conduct experiment	Writing an experimental report	Report discussion - errors	Write report	Write report