Exploring Aeronautics			
2000 Science, Math, and Technology			
Framework of Standards			
Vermont Science, Math, and Technology			
Grades 5-8			
Activity/Lesson	**State**	**Standards**	
Fundamentals of Aeronautics (145-176)	VT	SMT.5-8.7.1.cc	Create hypotheses to problems, design their own experiments to test their hypothesis, collect data through observation and instrumentation, and analyze data to draw conclusions; use conclusions to clarify understanding and generate new questions to be explored;
Fundamentals of Aeronautics (145-176)	VT	SMT.5-8.7.12.7.12.dd4	Observe and demonstrate a qualitative understanding of the relationship between mass, the magnitude of an applied net force, and the resulting change in speed and direction;
Fundamentals of Aeronautics (145-176)	VT	SMT.5-8.	Build on specifications, with an understanding of the constraints (e.g., cost, weight, environment), and tolerances that affect performance;
Wings(177-208)	VT	SMT.5-8.7.3.7.3.aa1	Explain theories based upon observations, concepts, principles, and historical perspective;
Wings(177-208)	VT	SMT.5-8.7.5.7.5.aa1	Analyze the roles and responsibilities of scientists, mathematicians, and technologists in relation to ongoing research and discoveries that impact society (e.g., the dangers and benefits of nuclear energy).
Wings(177-208)	VT	SMT.5-8.	Build on specifications, with an understanding of the constraints (e.g., cost, weight, environment), and tolerances that affect performance;
Wings(177-208)	VT	SMT.5-8.	Include steps and sequences for efficiently building a prototype that conforms to the specifications;
Wings(177-208)	VT	SMT.5-8.	Include mathematical and/or mechanical models of their design;
Airplane Control(209-256)	VT	SMT.5-8.7.2.cc	Completely design a physical structure or technological system (e.g., spring scales, bicycle gear shifts, timing of traffic lights);
Airplane Control(209-256)	VT	SMT.5-8.7.12.7.12.dd4	Observe and demonstrate a qualitative understanding of the relationship between mass, the magnitude of an applied net force, and the resulting change in speed and direction;
Airplane Control(209-256)	VT	SMT.5-8.7.17.7.17.dd3	Evaluate technological outputs, and demonstrate the changes necessary to improve the system.
Airplane Control(209-256)	VT	SMT.5-8.	Build on specifications, with an understanding of the constraints (e.g., cost, weight, environment), and tolerances that affect performance;

Airplane Control(209-256)	VT	SMT.5-8.	Include steps and sequences for efficiently building a prototype that conforms to the specifications;
How an Airplane Flies	VT	SMT.5-8.7.12.7.12.dd4	Observe and demonstrate a qualitative understanding of the relationship between mass, the magnitude of an applied net force, and the resulting change in speed and direction;
The Tools of Aeronautics	VT	SMT.5-8.7.11.7.11.cc3	Use physical and mathematical models to express how systems behave given a set of inputs or outputs.
The Tools of Aeronautics	VT	SMT.5-8.7.18.7.18.bb2	Demonstrate how people create and use tools to observe, measure, create, and control; and
The Tools of Aeronautics	VT	SMT.5-8.	Build on specifications, with an understanding of the constraints (e.g., cost, weight, environment), and tolerances that affect performance;
The Tools of Aeronautics	VT	SMT.5-8.	Include steps and sequences for efficiently building a prototype that conforms to the specifications;
The Activity Center	VT	SMT.5-8.7.1.aa	Frame questions in a way that distinguishes causes and effects; identify variables that influence the situation and can be controlled;
The Activity Center	VT	SMT.5-8.7.2.aa	Design and conduct a controlled experiment;
The Activity Center	VT	SMT.5-8.7.2.cc	Completely design a physical structure or technological system (e.g., spring scales, bicycle gear shifts, timing of traffic lights);
The Activity Center	VT	SMT.5-8.7.12.7.12.dd4	Observe and demonstrate a qualitative understanding of the relationship between mass, the magnitude of an applied net force, and the resulting change in speed and direction;
The Activity Center	VT	SMT.5-8.7.17.7.17.dd3	Evaluate technological outputs, and demonstrate the changes necessary to improve the system.
The Resource Center	VT	SMT.5-8.7.6.7.6.cc3	Show a sense of the magnitudes and relative magnitudes of numbers, and the helpful role of scientific notation;
The Resource Center	VT	SMT.5-8.7.6.7.6.hh6	Interpret percent as part of 100, as a way of comparing quantities of different sizes, and as rate of change; order real numbers with the greater than and less than relationships, and by location on a number line.
Science of Flight	VT	SMT.5-8.7.1.1	Generate alternative explanations - hypotheses - based on observations and prior knowledge
Science of Flight	VT	SMT.5-8.7.1.dd	Describe, explain, and model, using evidence that includes scientific principles and observations;
Science of Flight	VT	SMT.5-8.7.1.ii	Work individually and in teams to collect, share, and present information and ideas.
Science of Flight	VT	SMT.5-8.7.2.3	Data that are collected and recorded in ways that others can verify;

Science of Flight	VT	SMT.5-8.7.2.4	Data and results that are represented in ways that address the question at hand;
Science of Flight	VT	SMT.5-8.7.2.5	Recommendations, decisions, and conclusions that are based on evidence, and that acknowledge references and contributions of others;
Science of Flight	VT	SMT.5-8.7.2.aa	Design and conduct a controlled experiment;
Science of Flight	VT	SMT.5-8.7.2.cc	Completely design a physical structure or technological system (e.g., spring scales, bicycle gear shifts, timing of traffic lights);
Integrating with Aeronautics	VT	SMT.5-8.7.12.7.12.dd4	Observe and demonstrate a qualitative understanding of the relationship between mass, the magnitude of an applied net force, and the resulting change in speed and direction;
Integrating with Aeronautics	VT	SMT.5-8.7.18.7.18.bb2	Demonstrate how people create and use tools to observe, measure, create, and control; and
Integrating with Aeronautics	VT	SMT.5-8.	Build on specifications, with an understanding of the constraints (e.g., cost, weight, environment), and tolerances that affect performance;
Intro to Aeronautics (109-123)	VT	SMT.5-8.7.1.3	Deduce the expected results;
Intro to Aeronautics (109-123)	VT	SMT.5-8.7.1.4	Gather and analyze data to compare the actual results to the expected outcomes; and
Intro to Aeronautics (109-123)	VT	SMT.5-8.7.1.bb	Seek, record, and use information from reliable sources, including scientific knowledge, observation, and experimentation;
Scientific Method(124-144)	VT	SMT.5-8.7.1.4	Gather and analyze data to compare the actual results to the expected outcomes; and
Scientific Method(124-144)	VT	SMT.5-8.7.1.aa	Frame questions in a way that distinguishes causes and effects; identify variables that influence the situation and can be controlled;
Scientific Method(124-144)	VT	SMT.5-8.7.1.bb	Seek, record, and use information from reliable sources, including scientific knowledge, observation, and experimentation;
Scientific Method(124-144)	VT	SMT.5-8.7.1.cc	Create hypotheses to problems, design their own experiments to test their hypothesis, collect data through observation and instrumentation, and analyze data to draw conclusions; use conclusions to clarify understanding and generate new questions to be explored;