

Grade 5: It Does Matter (Understanding Matter and Energy)

Science and Technology Curriculum Connections	Mathematics Curriculum Connections
<p>Lesson 1: <i>Matter Properties Matter?</i></p> <p>1.1 evaluate the environmental impacts of processes that change one product into another product through physical or chemical changes</p> <p>2.1 follow established safety procedures for working with heating appliances and hot materials (e.g., switch hot plates off immediately after use)</p> <p>2.2 measure temperature and mass, using appropriate instruments (e.g., a thermometer, a single-pan balance)</p> <p>2.3 use scientific inquiry/experimentation skills to investigate changes of state and changes in matter</p> <p>2.5 use appropriate science and technology vocabulary, including <i>mass</i>, <i>volume</i>, <i>properties</i>, <i>matter</i>, <i>physical/reversible changes</i>, and <i>chemical/irreversible changes</i>, in oral and written communication</p> <p>3.1 identify matter as everything that has mass and occupies space</p> <p>3.2 identify properties of solids, liquids, and gases (e.g., solids have definite volume and hold their shape; liquids have definite volume but take the shape of their container or spread when they are not contained; gases have no definite volume and take the volume and shape of their container or spread when they are not contained), and state examples of each</p>	

Grade 5: It Does Matter (Understanding Matter and Energy)

Science and Technology Curriculum Connections	Mathematics Curriculum Connections
<p>Lesson 2: What's the Matter with Change?</p> <p>2.2 measure temperature and mass, using appropriate instruments (e.g., a thermometer, a single-pan balance)</p> <p>2.5 use appropriate science and technology vocabulary, including <i>mass</i>, <i>volume</i>, <i>properties</i>, <i>matter</i>, <i>physical/reversible changes</i>, and <i>chemical/irreversible changes</i>, in oral and written communication</p> <p>2.6 use a variety of forms (e.g., oral, written, graphic, multimedia) to communicate with different audiences and for a variety of purposes (e.g., create labelled charts or graphs to show the time required of an ice cube to melt)</p> <p>3.3 explain changes of state in matter (e.g., evaporation, condensation, solidification or freezing, fusion or melting, sublimation), and give examples of each</p> <p>3.4 describe physical changes in matter as changes that are reversible (e.g., a melted ice cube can be refrozen; a bottle of frozen water can be thawed to a liquid state again; water vapour that has condensed on a cold window can evaporate into a vaporous state again; water from a puddle that has evaporated will fall to the ground as rain)</p> <p>3.6 explain how changes of state involve the release of heat (e.g., when water freezes it releases heat) or the absorption of heat (e.g., when an ice cube melts, it absorbs heat)</p>	

Grade 5: It Does Matter (Understanding Matter and Energy)

Science and Technology Curriculum Connections	Mathematics Curriculum Connections
<p>Lesson 3: About the Cost of Production</p> <p>1.1 evaluate the environmental impacts of processes that change one product into another product through physical or chemical changes</p> <p>1.2 assess the social and environmental impact of using processes that rely on chemical changes to produce consumer products, taking different perspectives into account (e.g., the perspectives of food manufacturers, consumers, landfill operators, people concerned about the environment), and make a case for maintaining the current level of use of the product or for reducing it</p> <p>2.3 use scientific inquiry/experimentation skills to investigate changes of state and changes in matter</p> <p>2.5 use appropriate science and technology vocabulary, <i>including mass, volume, properties, matter, physical/reversible changes, and chemical/irreversible changes</i>, in oral and written communication</p> <p>2.6 use a variety of forms (e.g., oral, written, graphic, multimedia) to communicate with different audiences and for a variety of purposes (e.g., create labelled charts or graphs to show the time required of an ice cube to melt)</p> <p>3.7 identify indicators of a chemical change (e.g., production of a gas, change in colour, formation of precipitate)</p> <p>3.8 distinguish between a physical change and a chemical change (e.g., a physical change can be reversed [ice to water to ice], whereas a chemical change creates new substance[s] [wood to smoke and ash])</p>	

Grade 5: It Does Matter (Understanding Matter and Energy)

Science and Technology Curriculum Connections	Mathematics Curriculum Connections
<p>Lesson 4: 3-D Printing – Matter of the Future</p> <p>1.2 assess the social and environmental impact of using processes that rely on chemical changes to produce consumer products, taking different perspectives into account, and making a case for maintaining the current level of use of the product or for reducing it</p> <p>2.5 use appropriate science and technology vocabulary, including <i>mass</i>, <i>volume</i>, <i>properties</i>, <i>matter</i>, <i>physical/reversible changes</i>, and <i>chemical/irreversible changes</i>, in oral and written communication</p>	<p>Lesson 4: 3-D Printing – Matter of the Future</p> <p>Number Sense and Numeration</p> <ul style="list-style-type: none">- solve problems involving the addition, subtraction, and multiplication of whole numbers, using a variety of mental strategies (e.g., use the cumulative property: $5 \times 18 \times 2 = 5 \times 2 \times 18$, which gives $10 \times 18 = 180$) <p>Measurement</p> <ul style="list-style-type: none">- select and justify the most appropriate standard unit (i.e., millimetre, centimetre, decimetre, metre, kilometre) to measure length, height, width, and distance, and to measure the perimeter of various polygons- determine, through investigation using stacked congruent rectangular layers of concrete materials, the relationship between the height, the area of the base, and the volume of a rectangular prism, and generalize to develop the formula (i.e., $\text{Volume} = \text{area of base} \times \text{height}$)

Grade 5: It Does Matter (Understanding Matter and Energy)

Science and Technology Curriculum Connections	Mathematics Curriculum Connections
<p>Lesson 5: Math, Matter, and Mini-Ice Rinks</p> <p>2.5 use appropriate science and technology vocabulary, including mass, volume, properties, matter, physical/reversible changes, and chemical/irreversible changes, in oral and written communication</p> <p>3.3 explain changes of state in matter, and give examples of each</p> <p>3.4 describe physical changes in matter as changes that are reversible</p>	<p>Lesson 5: Math, Matter, and Mini-Ice Rinks</p> <p>Measurement</p> <ul style="list-style-type: none"> - estimate, measure (i.e., using an analogue clock), and represent time intervals to the nearest second - estimate and determine elapsed time, with and without using a time line, given the durations of events expressed in minutes, hours, days, weeks, months, or years - determine, through investigation using stacked congruent rectangular layers of concrete materials, the relationship between the height, the area of the base, and the volume of a rectangular prism, and generalize to develop the formula (i.e., Volume = area of base \times height) <p>Data Management and Probability</p> <ul style="list-style-type: none"> - collect data by conducting a survey or an experiment (e.g., gather and record air temperature over a two-week period) to do with themselves, their environment, issues in their school or community, or content from another subject, and record observations or measurements

Grade 5: It Does Matter (Understanding Matter and Energy)

Science and Technology Curriculum Connections	Mathematics Curriculum Connections
<p>Lesson 6: The Amount of Waste</p> <p>1.2 assess the social and environmental impact of using processes that rely on chemical changes to produce consumer products, taking different perspectives into account (e.g., the perspectives of food manufacturers, consumers, landfill operators, people concerned about the environment), and make a case for maintaining the current level of use of the product or for reducing it</p> <p>2.2 measure temperature and mass, using appropriate instruments (e.g., a thermometer, a single-pan balance)</p> <p>2.6 use a variety of forms (e.g., oral, written, graphic, multimedia) to communicate with different audiences and for a variety of purposes (e.g., create labelled charts or graphs to show the time required of an ice cube to melt)</p> <p>3.1 identify matter as everything that has mass and occupies space</p>	<p>Lesson 6: The Amount of Waste</p> <p>Measurement</p> <ul style="list-style-type: none"> - determine, through investigation using stacked congruent rectangular layers of concrete materials, the relationship between the height, the area of the base, and the volume of a rectangular prism, and generalize to develop the formula (i.e., $\text{Volume} = \text{area of base} \times \text{height}$) - select and justify the most appropriate standard unit (i.e., millimetre, centimetre, decimetre, metre, kilometre) to measure length, height, width, and distance, and to measure the perimeter of various polygons

Science and Technology Curriculum Connections	Mathematics Curriculum Connections
<p>Lesson 7: Trash Compactor Challenge</p> <p>1.1 evaluate the environmental impacts of processes that change one product into another product through physical or chemical changes</p> <p>2.5 use appropriate science and technology vocabulary, including <i>mass</i>, <i>volume</i>, <i>properties</i>, <i>matter</i>, <i>physical/reversible changes</i>, and <i>chemical/irreversible changes</i>, in oral and written communication</p> <p>3.4 describe physical changes in matter as changes that are reversible (e.g., a melted ice cube can be refrozen; a bottle of frozen water can be thawed to a liquid state again; water vapour that has condensed on a cold window can evaporate into a vaporous state again; water from a puddle that has evaporated will fall to the ground as rain)</p>	

Grade 5: It Does Matter (Understanding Matter and Energy)

Science and Technology Curriculum Connections	Mathematics Curriculum Connections
<p>Lesson 8: The Wise Store Owner</p> <p>1.1 evaluate the environmental impacts of processes that change one product into another product through physical or chemical changes</p> <p>1.2 assess the social and environmental impact of using processes that rely on chemical changes to produce consumer products, taking different perspectives into account (e.g., the perspectives of food manufacturers, consumers, landfill operators, people concerned about the environment), and make a case for maintaining the current level of use of the product or for reducing it</p> <p>2.5 use appropriate science and technology vocabulary, including <i>mass</i>, <i>volume</i>, <i>properties</i>, <i>matter</i>, <i>physical/reversible changes</i>, and <i>chemical/irreversible changes</i>, in oral and written communication</p> <p>3.3 explain changes in matter, and give examples of each</p> <p>3.8 distinguish between a physical change and a chemical change (e.g., a physical change can be reversed [ice to water to ice], whereas a chemical change creates new substance[s] [wood to smoke and ash])</p>	<p>Lesson 8: The Wise Store Owner</p> <p>Number Sense and Numeration</p> <ul style="list-style-type: none">- read and write money amounts to \$1000- solve problems that arise from real-life situations and that relate to the magnitude of whole numbers up to 100 000