DesCartes
(Combined)

Subject: Concepts and Processes
Goal: Science Inquiry

Subject: Concepts and Processes
Goal Strand: Science Inquiry
RIT Score Range: Below 181

Skills and Concepts to Develop Below 181	Skills and Concepts to Introduce 181 - 190
Ask Questions	**Ask Questions**
• Asks questions that define the problem to be investigated, and which will allow relevant data or information to be collected	• Asks questions that define the problem to be investigated, and which will allow relevant data or information to be collected
Build Hypotheses	**Build Hypotheses**
• Forms hypotheses that are based on real-life experience	
Design Investigations; Use Equipment Safely	**Design Investigations; Use Equipment Safely**
• Understands that tools (such as scales) can measure only physical properties of an object* • Describes the purpose of a ruler* • Understands the importance of counting (e.g., quantifying) in determining the properties of an item*	• Describes characteristics of objects* • Understands that observations are useful in studying changes in an object over time* • Measures using non-standard units* • Understands that magnifying glasses, telescopes and microscopes are used to extend the sense of sight • Chooses the appropriate tools to measure length, height, or distance* • Chooses the appropriate tool to measure how hot an object is* • Understands that measuring tools can be used to improve the accuracy of an estimate*
Organize and Process Data	**Organize and Process Data**
• Interprets simple bar graphs • Interprets data in simple line graphs*	• Interprets simple bar graphs • Interprets trends in bar graphs • Interprets data represented as pictures or icons within a table or chart* • Interprets diagrams
Make Inferences, Support, Evaluate Conclusions	**Make Inferences, Support, Evaluate Conclusions**
• Draws conclusions from simple diagrams* • Sorts objects by a given characteristic* • Sorts living and non-living things using different characteristics*	• Makes inferences about common events and phenomena • Sorts objects according to common characteristics • Sorts objects by a given characteristic*
Communicate Results	**Communicate Results**
	• Describes observations clearly, objectively, and accurately
New Vocabulary: change, count, explain, find out, gather, information, rank, scale (tool), weigh	*New Vocabulary:* (data) log, accurate, average, belong, color, conclude, data, experiment, feet (measurement),

	group, have in common, identify, magnifying glass, metric ruler, notes, observation, population, probable reason, result, ruler, scientist, sense, sight, smell, taste, telescope, tool, touch
New Signs and Symbols: ¢ cent sign	*New Signs and Symbols:* C Celsius, ° degrees, E east, N north, S south, W west

Subject: Concepts and Processes
Goal Strand: Science Inquiry
RIT Score Range: 181 - 190

Skills and Concepts to Enhance Below 181	Skills and Concepts to Develop 181 - 190	Skills and Concepts to Introduce 191 - 200
Ask Questions	**Ask Questions**	**Ask Questions**
• Asks questions that define the problem to be investigated, and which will allow relevant data or information to be collected	• Asks questions that define the problem to be investigated, and which will allow relevant data or information to be collected	• Asks questions that define the problem to be investigated, and which will allow relevant data or information to be collected • Selects the appropriate research source to answer a specific question (e.g., personal interview, reference book, direct observation, experimental observation)* • Differentiates among testable and non-testable questions (terms not used)
Build Hypotheses	**Build Hypotheses**	**Build Hypotheses**
• Forms hypotheses that are based on real-life experience		• Forms hypotheses that are based on observations and data
Design Investigations; Use Equipment Safely	**Design Investigations; Use Equipment Safely**	**Design Investigations; Use Equipment Safely**
• Understands that tools (such as scales) can measure only physical properties of an object* • Describes the purpose of a ruler* • Understands the importance of counting (e.g., quantifying) in determining the properties of an item*	• Describes characteristics of objects* • Understands that observations are useful in studying changes in an object over time* • Measures using non-standard units* • Understands that magnifying glasses, telescopes and microscopes are used to extend the sense of sight • Chooses the appropriate tools to measure length, height, or distance* • Chooses the appropriate tool to measure how hot an object is* • Understands that measuring tools can be used to improve the accuracy of an estimate*	• Determines which procedure will answer a specific question* • Understands that the type of investigation a scientist does depends on the question he or she is answering* • Determines which variables in a particular experiment must stay the same for results to be considered valid • Understands that data collected in experiments must not be "fudged" or misrepresented* • Identifies the data being collected in a given scenario* • Describes characteristics of objects* • Distinguishes between visual observations and observations of mass, temperature, texture, etc.* • Determines which observations are relevant to an investigation* • Understands that observations describe physical characteristics of an object • Understands that personal bias can affect perception of things and events* • Understands that some things (e.g., color) are difficult to measure* • Measures using non-standard units* • Measures the temperature shown on a thermometer (positive numbers)

		• Gives examples of tools that extend the senses* • Measures length using a ruler* • Chooses the appropriate tools to observe objects • Reads the weight shown on a spring scale* • Chooses the appropriate unit to measure length* • Gives examples of things that can be quantified* • Orders the stages that are likely to occur in a scientific study* • Describes lab safety practices*
Organize and Process Data	**Organize and Process Data**	**Organize and Process Data**
• Interprets simple bar graphs • Interprets data in simple line graphs*	• Interprets simple bar graphs • Interprets trends in bar graphs • Interprets data represented as pictures or icons within a table or chart* • Interprets diagrams	• Interprets data presented in simple tables (e.g., T-charts)* • Interprets data presented in tables and charts that show data in more than two columns or categories • Describes trends in data shown in tables that show change in one (responding/dependent) variable* • Explains why data may not be consistent from trial to trial* • Explains that different people may interpret the same data or observations differently*
Make Inferences, Support, Evaluate Conclusions	**Make Inferences, Support, Evaluate Conclusions**	**Make Inferences, Support, Evaluate Conclusions**
• Draws conclusions from simple diagrams* • Sorts objects by a given characteristic* • Sorts living and non-living things using different characteristics*	• Makes inferences about common events and phenomena • Sorts objects according to common characteristics • Sorts objects by a given characteristic*	• Draws conclusions from experimental observations • Extrapolates from data presented in tables • Extrapolates from data presented in graphs (linear relationships)* • Sorts objects according to common characteristics • Describes characteristics that have been used to sort objects or living things • Places objects into simple classification systems • Understands that classification is the process used to sort objects or living things by attributes held in common*
Communicate Results	**Communicate Results**	**Communicate Results**
	• Describes observations clearly, objectively, and accurately	• Describes observations clearly, objectively, and accurately • Evaluates written observations for accuracy and clarity*
New Vocabulary: change, count, explain, find out, gather, information, rank, scale (tool), weigh	*New Vocabulary:* (data) log, accurate, average, belong, color, conclude, data, experiment, feet (measurement), group, have in common, identify, magnifying glass, metric ruler, notes, observation, population, probable reason, result, ruler, scientist, sense, sight, smell, taste, telescope, tool, touch	*New Vocabulary:* affect, control variables, direct observation, enlarge, extend, hand lens, image, instrument, investigation, magnifying lens, pH meter, prediction, quantify, senses, stethoscope, study, test, valid
New Signs and Symbols: ¢ cent sign	*New Signs and Symbols:* C Celsius, ° degrees, E east, N	*New Signs and Symbols:* cm centimeter/centimetre, cubic

* Both data from test items and review by NWEA curriculum specialists are used to place learning continuum statements into appropriate RIT ranges.
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	north, S south, W west	centimeter/centimetre, . decimal point, pH

Subject: Concepts and Processes
Goal Strand: Science Inquiry
RIT Score Range: 191 - 200

Skills and Concepts to Enhance 181 - 190	Skills and Concepts to Develop 191 - 200	Skills and Concepts to Introduce 201 - 210
Ask Questions	**Ask Questions**	**Ask Questions**
• Asks questions that define the problem to be investigated, and which will allow relevant data or information to be collected	• Asks questions that define the problem to be investigated, and which will allow relevant data or information to be collected • Selects the appropriate research source to answer a specific question (e.g., personal interview, reference book, direct observation, experimental observation)* • Differentiates among testable and non-testable questions (terms not used)	• Asks questions that define the problem to be investigated, and which will allow relevant data or information to be collected
Build Hypotheses	**Build Hypotheses**	**Build Hypotheses**
	• Forms hypotheses that are based on observations and data	• Describes characteristics of a good hypothesis* • Determines the hypothesis being tested, given a particular experimental setup or problem/question • Formulates hypotheses for a given experimental set-up* • Classifies statements as predictions* • Distinguishes between testable and non-testable hypotheses (outside of an experimental context)* • Distinguishes among examples of hypotheses and observations*
Design Investigations; Use Equipment Safely	**Design Investigations; Use Equipment Safely**	**Design Investigations; Use Equipment Safely**
• Describes characteristics of objects* • Understands that observations are useful in studying changes in an object over time* • Measures using non-standard units* • Understands that magnifying glasses, telescopes and microscopes are used to extend the sense of sight • Chooses the appropriate tools to measure length, height, or distance* • Chooses the appropriate tool to measure how hot an object is* • Understands that measuring tools can be used to improve the accuracy of an estimate*	• Determines which procedure will answer a specific question* • Understands that the type of investigation a scientist does depends on the question he or she is answering* • Determines which variables in a particular experiment must stay the same for results to be considered valid • Understands that data collected in experiments must not be "fudged" or misrepresented* • Identifies the data being collected in a given scenario* • Describes characteristics of objects* • Distinguishes between visual observations and observations of mass, temperature, texture, etc.* • Determines which observations are relevant to an investigation* • Understands that observations describe physical	• Evaluates to determine which procedure will best answer a specific question or solve a specific problem • Infers the problem being investigated in an experiment, given the setup and/or results of the experiment • Evaluates and improves the quality of an experimental design* • Determines which variable (independent or manipulated) will be changed in the course of an investigation • Determines which variable should be controlled in an experimental design, when given the problem or question being studied* • Determines which variables in a particular experiment must stay the same for results to be considered valid • Determines whether experiments are fair or valid,

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	characteristics of an object • Understands that personal bias can affect perception of things and events* • Understands that some things (e.g., color) are difficult to measure* • Measures using non-standard units* • Measures the temperature shown on a thermometer (positive numbers) • Gives examples of tools that extend the senses* • Measures length using a ruler* • Chooses the appropriate tools to observe objects • Reads the weight shown on a spring scale* • Chooses the appropriate unit to measure length* • Gives examples of things that can be quantified* • Orders the stages that are likely to occur in a scientific study* • Describes lab safety practices*	based on their design* • Determines which observations are relevant to an investigation* • Predicts how objects will appear when viewed from different angles* • Distinguishes among examples of direct observations and predictions* • Understands that things that change over time can be measured* • Measures the temperature shown on a thermometer, using interpolation • Chooses the appropriate tools to measure the speed of an object* • Understands that quantitative observations are often more precise than qualitative observations • Orders the stages that are likely to occur in a scientific study* • Describes alternative data-gathering strategies that may be used in place of the traditional scientific method* • Classifies example representing specific stages of a specific scientific investigation
Organize and Process Data	**Organize and Process Data**	**Organize and Process Data**
• Interprets simple bar graphs • Interprets trends in bar graphs • Interprets data represented as pictures or icons within a table or chart* • Interprets diagrams	• Interprets data presented in simple tables (e.g., T-charts)* • Interprets data presented in tables and charts that show data in more than two columns or categories • Describes trends in data shown in tables that show change in one (responding/dependent) variable* • Explains why data may not be consistent from trial to trial* • Explains that different people may interpret the same data or observations differently*	• Interprets graphs (e.g., reads data) in which units are not given, or only partial data is given • Determines the type of data which will appear in a graph, based on its axes* • Analyzes data in line graphs* • Interprets data in complex graphs (exponential, logistic, multiple lines)* • Interprets data presented in tables and charts that show data in more than two columns or categories • Analyzes data presented in tables and charts • Examines data to pinpoint possible errors in data collection* • Analyzes data shown in diagrams
Make Inferences, Support, Evaluate Conclusions	**Make Inferences, Support, Evaluate Conclusions**	**Make Inferences, Support, Evaluate Conclusions**
• Makes inferences about common events and phenomena • Sorts objects according to common characteristics • Sorts objects by a given characteristic*	• Draws conclusions from experimental observations • Extrapolates from data presented in tables • Extrapolates from data presented in graphs (linear relationships)* • Sorts objects according to common characteristics • Describes characteristics that have been used to sort objects or living things • Places objects into simple classification systems	• Draws conclusions from data presented in tables containing two manipulated (independent) variables* • Draws conclusions from experimental observations • Makes inferences that limit themselves to the data which has been presented and avoids speculation • Understands that to be scientific, explanations must be supported with evidence • Draws conclusions from complex tables, charts or

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	• Understands that classification is the process used to sort objects or living things by attributes held in common*	graphs* • Draws conclusions from complex diagrams • Extrapolates from data presented in diagrams • Interpolates from data presented in graphs* • Interpolates from data presented in diagrams* • Explains that results are significant if they most likely did not occur by chance • Draws conclusions from data described as "significant"* • Groups living things by similarities in the structure and function of external characteristics* • Explains how objects and living things are classified • Compares and contrasts characteristics in a given set of objects*
Communicate Results	**Communicate Results**	**Communicate Results**
• Describes observations clearly, objectively, and accurately	• Describes observations clearly, objectively, and accurately • Evaluates written observations for accuracy and clarity*	• Selects graphs as the most appropriate way to present trends in data* • Represents observations using symbols and diagrams* • Communicates results clearly and accurately
New Vocabulary: (data) log, accurate, average, belong, color, conclude, data, experiment, feet (measurement), group, have in common, identify, magnifying glass, metric ruler, notes, observation, population, probable reason, result, ruler, scientist, sense, sight, smell, taste, telescope, tool, touch	*New Vocabulary:* affect, control variables, direct observation, enlarge, extend, hand lens, image, instrument, investigation, magnifying lens, pH meter, prediction, quantify, senses, stethoscope, study, test, valid	*New Vocabulary:* chance, common, control, decrease, design experiment, diameter, formulate model, generalization, graduated cylinder, hold constant, increase, independent variable, interpret data, interval, investigate, justify, material, meter stick, pendulum, precision, quality, quantity, random group, reliable, scale (measurement), significant, statistics, texture, trial-and-error procedure
New Signs and Symbols: C Celsius, ° degrees, E east, N north, S south, W west	*New Signs and Symbols:* cm centimeter/centimetre, cubic centimeter/centimetre, . decimal point, pH	*New Signs and Symbols:* g gram, mL milliliter/millilitre, – negative, sec second

Subject: Concepts and Processes
Goal Strand: Science Inquiry
RIT Score Range: 201 - 210

Skills and Concepts to Enhance 191 - 200	Skills and Concepts to Develop 201 - 210	Skills and Concepts to Introduce 211 - 220
Ask Questions	**Ask Questions**	**Ask Questions**
• Asks questions that define the problem to be investigated, and which will allow relevant data or information to be collected • Selects the appropriate research source to answer a specific question (e.g., personal interview, reference book, direct observation, experimental observation)* • Differentiates among testable and non-testable questions (terms not used)	• Asks questions that define the problem to be investigated, and which will allow relevant data or information to be collected	• Differentiates among testable and non-testable questions • Recognizes that testable questions are most useful in scientific investigations, as they can be answered by investigating*
Build Hypotheses	**Build Hypotheses**	**Build Hypotheses**
• Forms hypotheses that are based on observations and data	• Describes characteristics of a good hypothesis* • Determines the hypothesis being tested, given a particular experimental setup or problem/question • Formulates hypotheses for a given experimental set-up* • Classifies statements as predictions* • Distinguishes between testable and non-testable hypotheses (outside of an experimental context)* • Distinguishes among examples of hypotheses and observations*	• Determines the hypothesis being tested, given a particular experimental setup or problem/question • Formulates testable hypotheses based on data presented in a table* • Evaluates whether or not hypotheses are supported by data* • Understands that predictions are more accurate when based on trends seen in data* • Makes predictions within the context of a scientific investigation • Classifies statements as hypotheses
Design Investigations; Use Equipment Safely	**Design Investigations; Use Equipment Safely**	**Design Investigations; Use Equipment Safely**
• Determines which procedure will answer a specific question* • Understands that the type of investigation a scientist does depends on the question he or she is answering* • Determines which variables in a particular experiment must stay the same for results to be considered valid • Understands that data collected in experiments must not be "fudged" or misrepresented* • Identifies the data being collected in a given scenario* • Describes characteristics of objects* • Distinguishes between visual observations and observations of mass, temperature, texture, etc.* • Determines which observations are relevant to an investigation*	• Evaluates to determine which procedure will best answer a specific question or solve a specific problem • Infers the problem being investigated in an experiment, given the setup and/or results of the experiment • Evaluates and improves the quality of an experimental design* • Determines which variable (independent or manipulated) will be changed in the course of an investigation • Determines which variable should be controlled in an experimental design, when given the problem or question being studied* • Determines which variables in a particular experiment must stay the same for results to be considered valid	• Determines which information should be collected in an experiment to answer a specific question • Evaluates to determine which procedure will best answer a specific question or solve a specific problem • Evaluates which procedure will best test a given hypothesis* • Evaluates and improves the quality of an experimental design* • Classifies the objects or persons undergoing a specific portion of an experiment as the control group* • Explains the importance of controlling variables in an experiment* • Determines which variable should be controlled in an experimental design, when given the problem or

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• Understands that observations describe physical characteristics of an object • Understands that personal bias can affect perception of things and events* • Understands that some things (e.g., color) are difficult to measure* • Measures using non-standard units* • Measures the temperature shown on a thermometer (positive numbers) • Gives examples of tools that extend the senses* • Measures length using a ruler* • Chooses the appropriate tools to observe objects • Reads the weight shown on a spring scale* • Chooses the appropriate unit to measure length* • Gives examples of things that can be quantified* • Orders the stages that are likely to occur in a scientific study* • Describes lab safety practices*	• Determines whether experiments are fair or valid, based on their design* • Determines which observations are relevant to an investigation* • Predicts how objects will appear when viewed from different angles* • Distinguishes among examples of direct observations and predictions* • Understands that things that change over time can be measured* • Measures the temperature shown on a thermometer, using interpolation • Chooses the appropriate tools to measure the speed of an object* • Understands that quantitative observations are often more precise than qualitative observations • Orders the stages that are likely to occur in a scientific study* • Describes alternative data-gathering strategies that may be used in place of the traditional scientific method* • Classifies example representing specific stages of a specific scientific investigation	question being studied* • Determines which variables are being controlled in a given experimental set-up* • Limits observations to the descriptions of properties and processes that those that are observed using the senses and or tools that extend the senses, not what may have happened previously, or what might happen next* • Distinguishes among examples of observations and inferences* • Measures the temperature shown on a thermometer, using interpolation • Estimates length when given a ruler smaller than the object being measured* • Chooses the appropriate tools to measure mass* • Understands that measurement of weight on a scale is not dependent on the arrangement of that object on the scale, as long as the entire object is touching only the scale* • Chooses the appropriate tools to measure volume* • Measures the temperature shown on a thermometer (negative numbers)* • Classifies statements as quantitative observations* • Understands that quantitative observations are often more precise than qualitative observations • Understands that precise measurements are an accurate, specific description of quantity, not estimations of quantity • Explains that the more accurate a tool is, the smaller the changes it is able to measure* • Classifies example representing specific stages of a specific scientific investigation
Organize and Process Data	**Organize and Process Data**	**Organize and Process Data**
• Interprets data presented in simple tables (e.g., T-charts)* • Interprets data presented in tables and charts that show data in more than two columns or categories • Describes trends in data shown in tables that show change in one (responding/dependent) variable* • Explains why data may not be consistent from trial to trial* • Explains that different people may interpret the same data or observations differently*	• Interprets graphs (e.g., reads data) in which units are not given, or only partial data is given • Determines the type of data which will appear in a graph, based on its axes* • Analyzes data in line graphs* • Interprets data in complex graphs (exponential, logistic, multiple lines)* • Interprets data presented in tables and charts that show data in more than two columns or categories • Analyzes data presented in tables and charts • Examines data to pinpoint possible errors in data	• Describes trends in line graphs where units are not given • Determines the type of data which will appear in a graph, based on its axes*

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	• collection* • Analyzes data shown in diagrams	
Make Inferences, Support, Evaluate Conclusions	**Make Inferences, Support, Evaluate Conclusions**	**Make Inferences, Support, Evaluate Conclusions**
• Draws conclusions from experimental observations • Extrapolates from data presented in tables • Extrapolates from data presented in graphs (linear relationships)* • Sorts objects according to common characteristics • Describes characteristics that have been used to sort objects or living things • Places objects into simple classification systems • Understands that classification is the process used to sort objects or living things by attributes held in common*	• Draws conclusions from data presented in tables containing two manipulated (independent) variables* • Draws conclusions from experimental observations • Makes inferences that limit themselves to the data which has been presented and avoids speculation • Understands that to be scientific, explanations must be supported with evidence • Draws conclusions from complex tables, charts or graphs* • Draws conclusions from complex diagrams • Extrapolates from data presented in diagrams • Interpolates from data presented in graphs* • Interpolates from data presented in diagrams* • Explains that results are significant if they most likely did not occur by chance • Draws conclusions from data described as "significant"* • Groups living things by similarities in the structure and function of external characteristics* • Explains how objects and living things are classified • Compares and contrasts characteristics in a given set of objects*	• Draws conclusions from data presented in tables containing two manipulated (independent) variables* • Makes inferences that limit themselves to the data which has been presented and avoids speculation • Makes inferences using deductive reasoning • Determines which evidence will best support a particular inference • Draws conclusions from data presented in simple (T) tables or charts • Classifies statements as inferences* • Extrapolates from data presented in diagrams • Extrapolates from data given in a table, by estimating the trend shown* • Interpolates from data presented in tables* • Interpolates from data presented in graphs*
Communicate Results	**Communicate Results**	**Communicate Results**
• Describes observations clearly, objectively, and accurately • Evaluates written observations for accuracy and clarity*	• Selects graphs as the most appropriate way to present trends in data* • Represents observations using symbols and diagrams* • Communicates results clearly and accurately	• Selects the appropriate graph to represent data shown in a table*
New Vocabulary: affect, control variables, direct observation, enlarge, extend, hand lens, image, instrument, investigation, magnifying lens, pH meter, prediction, quantify, senses, stethoscope, study, test, valid	*New Vocabulary:* chance, common, control, decrease, design experiment, diameter, formulate model, generalization, graduated cylinder, hold constant, increase, independent variable, interpret data, interval, investigate, justify, material, meter stick, pendulum, precision, quality, quantity, random group, reliable, scale (measurement), significant, statistics, texture, trial-and-error procedure	*New Vocabulary:* beaker, controlled experiment, dependent, orderly pattern, probable, quantitative, scientific evidence, testable, theorize
New Signs and Symbols: cm centimeter/centimetre, cubic centimeter/centimetre, . decimal point, pH	*New Signs and Symbols:* g gram, mL milliliter/millilitre, – negative, sec second	*New Signs and Symbols:* a.m., ' foot, " inch, p.m.

Subject: Concepts and Processes
Goal Strand: Science Inquiry
RIT Score Range: 211 - 220

Skills and Concepts to Enhance 201 - 210	Skills and Concepts to Develop 211 - 220	Skills and Concepts to Introduce 221 - 230
Ask Questions	**Ask Questions**	**Ask Questions**
• Asks questions that define the problem to be investigated, and which will allow relevant data or information to be collected	• Differentiates among testable and non-testable questions • Recognizes that testable questions are most useful in scientific investigations, as they can be answered by investigating*	
Build Hypotheses	**Build Hypotheses**	**Build Hypotheses**
• Describes characteristics of a good hypothesis* • Determines the hypothesis being tested, given a particular experimental setup or problem/question • Formulates hypotheses for a given experimental set-up* • Classifies statements as predictions* • Distinguishes between testable and non-testable hypotheses (outside of an experimental context)* • Distinguishes among examples of hypotheses and observations*	• Determines the hypothesis being tested, given a particular experimental setup or problem/question • Formulates testable hypotheses based on data presented in a table* • Evaluates whether or not hypotheses are supported by data* • Understands that predictions are more accurate when based on trends seen in data* • Makes predictions within the context of a scientific investigation • Classifies statements as hypotheses	• Distinguishes between testable and non-testable hypotheses for a given experimental setup* • Describes results that would necessitate the revision of the hypothesis being tested*
Design Investigations; Use Equipment Safely	**Design Investigations; Use Equipment Safely**	**Design Investigations; Use Equipment Safely**
• Evaluates to determine which procedure will best answer a specific question or solve a specific problem • Infers the problem being investigated in an experiment, given the setup and/or results of the experiment • Evaluates and improves the quality of an experimental design* • Determines which variable (independent or manipulated) will be changed in the course of an investigation • Determines which variable should be controlled in an experimental design, when given the problem or question being studied* • Determines which variables in a particular experiment must stay the same for results to be considered valid • Determines whether experiments are fair or valid, based on their design* • Determines which observations are relevant to an	• Determines which information should be collected in an experiment to answer a specific question • Evaluates to determine which procedure will best answer a specific question or solve a specific problem • Evaluates which procedure will best test a given hypothesis* • Evaluates and improves the quality of an experimental design* • Classifies the objects or persons undergoing a specific portion of an experiment as the control group* • Explains the importance of controlling variables in an experiment* • Determines which variable should be controlled in an experimental design, when given the problem or question being studied* • Determines which variables are being controlled in a given experimental set-up*	• Understands that the more precise a procedure is, the more likely it is that it will be replicable* • Determines which variable (independent or manipulated) is being tested in control setup, when this variable has been purposefully omitted from the setup* • Determines which variable (independent or manipulated) is being tested in a given experimental setup • Determines the independent variable by examining data presented as a line graph* • Determines the control group in a given experimental set-up* • Controls variables so that only the variable being tested changes over time • Describes qualities that make observations scientific* • Understands that some tools are used to extend the

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investigation* • Predicts how objects will appear when viewed from different angles* • Distinguishes among examples of direct observations and predictions* • Understands that things that change over time can be measured* • Measures the temperature shown on a thermometer, using interpolation • Chooses the appropriate tools to measure the speed of an object* • Understands that quantitative observations are often more precise than qualitative observations • Orders the stages that are likely to occur in a scientific study* • Describes alternative data-gathering strategies that may be used in place of the traditional scientific method* • Classifies example representing specific stages of a specific scientific investigation	• Limits observations to the descriptions of properties and processes that those that are observed using the senses and or tools that extend the senses, not what may have happened previously, or what might happen next* • Distinguishes among examples of observations and inferences* • Measures the temperature shown on a thermometer, using interpolation • Estimates length when given a ruler smaller than the object being measured* • Chooses the appropriate tools to measure mass* • Understands that measurement of weight on a scale is not dependent on the arrangement of that object on the scale, as long as the entire object is touching only the scale* • Chooses the appropriate tools to measure volume* • Measures the temperature shown on a thermometer (negative numbers)* • Classifies statements as quantitative observations* • Understands that quantitative observations are often more precise than qualitative observations • Understands that precise measurements are an accurate, specific description of quantity, not estimations of quantity • Explains that the more accurate a tool is, the smaller the changes it is able to measure* • Classifies example representing specific stages of a specific scientific investigation	senses* • Classifies statements as quantitative observations*
Organize and Process Data	**Organize and Process Data**	**Organize and Process Data**
• Interprets graphs (e.g., reads data) in which units are not given, or only partial data is given • Determines the type of data which will appear in a graph, based on its axes* • Analyzes data in line graphs* • Interprets data in complex graphs (exponential, logistic, multiple lines)* • Interprets data presented in tables and charts that show data in more than two columns or categories • Analyzes data presented in tables and charts • Examines data to pinpoint possible errors in data collection* • Analyzes data shown in diagrams	• Describes trends in line graphs where units are not given • Determines the type of data which will appear in a graph, based on its axes*	

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Make Inferences, Support, Evaluate Conclusions	Make Inferences, Support, Evaluate Conclusions	Make Inferences, Support, Evaluate Conclusions
• Draws conclusions from data presented in tables containing two manipulated (independent) variables* • Draws conclusions from experimental observations • Makes inferences that limit themselves to the data which has been presented and avoids speculation • Understands that to be scientific, explanations must be supported with evidence • Draws conclusions from complex tables, charts or graphs* • Draws conclusions from complex diagrams • Extrapolates from data presented in diagrams • Interpolates from data presented in graphs* • Interpolates from data presented in diagrams* • Explains that results are significant if they most likely did not occur by chance • Draws conclusions from data described as "significant"* • Groups living things by similarities in the structure and function of external characteristics* • Explains how objects and living things are classified • Compares and contrasts characteristics in a given set of objects*	• Draws conclusions from data presented in tables containing two manipulated (independent) variables* • Makes inferences that limit themselves to the data which has been presented and avoids speculation • Makes inferences using deductive reasoning • Determines which evidence will best support a particular inference • Draws conclusions from data presented in simple (T) tables or charts • Classifies statements as inferences* • Extrapolates from data presented in diagrams • Extrapolates from data given in a table, by estimating the trend shown* • Interpolates from data presented in tables* • Interpolates from data presented in graphs*	• Evaluates inferences within the context of a scientific investigation* • Classifies statements as inferences* • Extrapolates from data presented in graphs where units are not shown on one or more axes* • Evaluates the significance of results*
Communicate Results	**Communicate Results**	**Communicate Results**
• Selects graphs as the most appropriate way to present trends in data* • Represents observations using symbols and diagrams* • Communicates results clearly and accurately	• Selects the appropriate graph to represent data shown in a table*	
New Vocabulary: chance, common, control, decrease, design experiment, diameter, formulate model, generalization, graduated cylinder, hold constant, increase, independent variable, interpret data, interval, investigate, justify, material, meter stick, pendulum, precision, quality, quantity, random group, reliable, scale (measurement), significant, statistics, texture, trial-and-error procedure	*New Vocabulary:* beaker, controlled experiment, dependent, orderly pattern, probable, quantitative, scientific evidence, testable, theorize	*New Vocabulary:* scientific, sense extender
New Signs and Symbols: g gram, mL milliliter/millilitre, – negative, sec second	*New Signs and Symbols:* a.m., ′ foot, ″ inch, p.m.	*New Signs and Symbols:* %

Subject: Concepts and Processes
Goal Strand: Science Inquiry
RIT Score Range: 221 - 230

Skills and Concepts to Enhance 211 - 220	Skills and Concepts to Develop 221 - 230	Skills and Concepts to Introduce 231 - 240
Ask Questions	**Ask Questions**	**Ask Questions**
• Differentiates among testable and non-testable questions • Recognizes that testable questions are most useful in scientific investigations, as they can be answered by investigating*		
Build Hypotheses	**Build Hypotheses**	**Build Hypotheses**
• Determines the hypothesis being tested, given a particular experimental setup or problem/question • Formulates testable hypotheses based on data presented in a table* • Evaluates whether or not hypotheses are supported by data* • Understands that predictions are more accurate when based on trends seen in data* • Makes predictions within the context of a scientific investigation • Classifies statements as hypotheses	• Distinguishes between testable and non-testable hypotheses for a given experimental setup* • Describes results that would necessitate the revision of the hypothesis being tested*	• Formulates hypotheses within the context of a scientific investigation*
Design Investigations; Use Equipment Safely	**Design Investigations; Use Equipment Safely**	**Design Investigations; Use Equipment Safely**
• Determines which information should be collected in an experiment to answer a specific question • Evaluates to determine which procedure will best answer a specific question or solve a specific problem • Evaluates which procedure will best test a given hypothesis* • Evaluates and improves the quality of an experimental design* • Classifies the objects or persons undergoing a specific portion of an experiment as the control group* • Explains the importance of controlling variables in an experiment* • Determines which variable should be controlled in an experimental design, when given the problem or question being studied* • Determines which variables are being controlled in a given experimental set-up*	• Understands that the more precise a procedure is, the more likely it is that it will be replicable* • Determines which variable (independent or manipulated) is being tested in control setup, when this variable has been purposefully omitted from the setup* • Determines which variable (independent or manipulated) is being tested in a given experimental setup • Determines the independent variable by examining data presented as a line graph* • Determines the control group in a given experimental set-up* • Controls variables so that only the variable being tested changes over time • Describes qualities that make observations scientific* • Understands that some tools are used to extend the	• Identifies the dependent variable in a given experimental setup* • Classifies statements as qualitative observations*

WI 1.1.1
* Both data from test items and review by NWEA curriculum specialists are used to place learning continuum statements into appropriate RIT ranges.
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• Limits observations to the descriptions of properties and processes that those that are observed using the senses and or tools that extend the senses, not what may have happened previously, or what might happen next* • Distinguishes among examples of observations and inferences* • Measures the temperature shown on a thermometer, using interpolation • Estimates length when given a ruler smaller than the object being measured* • Chooses the appropriate tools to measure mass* • Understands that measurement of weight on a scale is not dependent on the arrangement of that object on the scale, as long as the entire object is touching only the scale* • Chooses the appropriate tools to measure volume* • Measures the temperature shown on a thermometer (negative numbers)* • Classifies statements as quantitative observations* • Understands that quantitative observations are often more precise than qualitative observations • Understands that precise measurements are an accurate, specific description of quantity, not estimations of quantity • Explains that the more accurate a tool is, the smaller the changes it is able to measure* • Classifies example representing specific stages of a specific scientific investigation	senses* • Classifies statements as quantitative observations*	
Organize and Process Data	**Organize and Process Data**	**Organize and Process Data**
• Describes trends in line graphs where units are not given • Determines the type of data which will appear in a graph, based on its axes*		
Make Inferences, Support, Evaluate Conclusions	**Make Inferences, Support, Evaluate Conclusions**	**Make Inferences, Support, Evaluate Conclusions**
• Draws conclusions from data presented in tables containing two manipulated (independent) variables* • Makes inferences that limit themselves to the data which has been presented and avoids speculation • Makes inferences using deductive reasoning • Determines which evidence will best support a particular inference • Draws conclusions from data presented in simple (T) tables or charts	• Evaluates inferences within the context of a scientific investigation* • Classifies statements as inferences* • Extrapolates from data presented in graphs where units are not shown on one or more axes* • Evaluates the significance of results*	• Extrapolates from data presented in graphs (exponential/logistic relationships)*

* Both data from test items and review by NWEA curriculum specialists are used to place learning continuum statements into appropriate RIT ranges.
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• Classifies statements as inferences* • Extrapolates from data presented in diagrams • Extrapolates from data given in a table, by estimating the trend shown* • Interpolates from data presented in tables* • Interpolates from data presented in graphs*		
Communicate Results	**Communicate Results**	**Communicate Results**
• Selects the appropriate graph to represent data shown in a table*		• Evaluates written results for accuracy and clarity*
New Vocabulary: beaker, controlled experiment, dependent, orderly pattern, probable, quantitative, scientific evidence, testable, theorize	*New Vocabulary:* scientific, sense extender	*New Vocabulary:* qualitative
New Signs and Symbols: a.m., ′ foot, ″ inch, p.m.	*New Signs and Symbols:* %	*New Signs and Symbols:* kg kilogram

* Both data from test items and review by NWEA curriculum specialists are used to place learning continuum statements into appropriate RIT ranges.
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Subject: Concepts and Processes
Goal Strand: Science Inquiry
RIT Score Range: 231 - 240

Skills and Concepts to Enhance 221 - 230	Skills and Concepts to Develop 231 - 240	Skills and Concepts to Introduce Above 240
Ask Questions	Ask Questions	Ask Questions
Build Hypotheses	Build Hypotheses	Build Hypotheses
• Distinguishes between testable and non-testable hypotheses for a given experimental setup* • Describes results that would necessitate the revision of the hypothesis being tested*	• Formulates hypotheses within the context of a scientific investigation*	
Design Investigations; Use Equipment Safely	Design Investigations; Use Equipment Safely	Design Investigations; Use Equipment Safely
• Understands that the more precise a procedure is, the more likely it is that it will be replicable* • Determines which variable (independent or manipulated) is being tested in control setup, when this variable has been purposefully omitted from the setup* • Determines which variable (independent or manipulated) is being tested in a given experimental setup • Determines the independent variable by examining data presented as a line graph* • Determines the control group in a given experimental set-up* • Controls variables so that only the variable being tested changes over time • Describes qualities that make observations scientific* • Understands that some tools are used to extend the senses* • Classifies statements as quantitative observations*	• Identifies the dependent variable in a given experimental setup* • Classifies statements as qualitative observations*	
Organize and Process Data	Organize and Process Data	Organize and Process Data
Make Inferences, Support, Evaluate Conclusions	Make Inferences, Support, Evaluate Conclusions	Make Inferences, Support, Evaluate Conclusions
• Evaluates inferences within the context of a scientific investigation* • Classifies statements as inferences* • Extrapolates from data presented in graphs where units are not shown on one or more axes* • Evaluates the significance of results*	• Extrapolates from data presented in graphs (exponential/logistic relationships)*	• Extrapolates from data presented in tables using calculations*

* Both data from test items and review by NWEA curriculum specialists are used to place learning continuum statements into appropriate RIT ranges.
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Communicate Results	Communicate Results	Communicate Results
	• Evaluates written results for accuracy and clarity*	
New Vocabulary: scientific, sense extender	*New Vocabulary:* qualitative	*New Vocabulary:* none
New Signs and Symbols: %	*New Signs and Symbols:* kg kilogram	*New Signs and Symbols:* none

WI 1.1.1

Subject: Concepts and Processes
Goal Strand: Science Inquiry
RIT Score Range: Above 240

Skills and Concepts to Enhance 231 - 240	Skills and Concepts to Develop Above 240
Ask Questions	**Ask Questions**
Build Hypotheses	**Build Hypotheses**
• Formulates hypotheses within the context of a scientific investigation*	
Design Investigations; Use Equipment Safely	**Design Investigations; Use Equipment Safely**
• Identifies the dependent variable in a given experimental setup* • Classifies statements as qualitative observations*	
Organize and Process Data	**Organize and Process Data**
Make Inferences, Support, Evaluate Conclusions	**Make Inferences, Support, Evaluate Conclusions**
• Extrapolates from data presented in graphs (exponential/logistic relationships)*	• Extrapolates from data presented in tables using calculations*
Communicate Results	**Communicate Results**
• Evaluates written results for accuracy and clarity*	
New Vocabulary: qualitative	*New Vocabulary:* none
New Signs and Symbols: kg kilogram	*New Signs and Symbols:* none

WI 1.1.1
* Both data from test items and review by NWEA curriculum specialists are used to place learning continuum statements into appropriate RIT ranges.
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