Science DesCartes: Concepts and Processes: Scientific Process: Scientific Investigation

Skills: Use Tools, Tech to Collect, Organize, Analyze Data

Students:	DesCartes Skills: (Highlight the skills related to your chosen standard/concept)
	RIT 231-240: • Classifies statements as qualitative observations
	RIT 221-230: • Describes qualities that make observations scientific • Understands that some tools are used to extend the senses • Classifies statements as quantitative observations
	RIT 211-220: • 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 • 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
	RIT 201-210: • 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 • 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
	RIT 191-200: • Understands that data collected in experiments must not be "fudged" or misrepresented • Identifies the data being collected in a given scenario • 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 • 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 • Describes lab safety practices

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	RIT 181-190: • Interprets simple bar graphs • Interprets trends in bar graphs • Interprets data represented as pictures or icons within a table or chart • Interprets diagrams • 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
	RIT Below 181: • Interprets simple bar graphs • Interprets data in simple line graphs • 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

Lesson Title:

Standard/Concept for All:

Introduction: (Get Attention; Connect to Prior Knowledge)

For Students Ready for a Challenge:

Lesson/Activity:

Resources:

Means of Assessment:

For Most Students:

Lesson/Activity:

Resources:

Means of Assessment:

For Students Needing Extra Support:

Lesson/Activity:

Resources:

Means of Assessment:

Closure/Summary for All: