

Science DesCartes: Concepts and Processes – Nature of Science

Skills: Understand Constancy, Change, and Measurement

Students:	DesCartes Skills: (Highlight the skills related to your chosen standard/concept)
	RIT Above 240: <ul style="list-style-type: none"> • Gives examples of dynamic equilibrium in systems • Infers that things that have come to rest are in equilibrium
	RIT 231-240: <ul style="list-style-type: none"> • Explains that equilibrium can be produced when changes occur in opposition to each other and at the same time • Infers that a system is in balance due to forces equally opposing each other • Recognizes examples of dynamic equilibrium in systems • Infers that things that have come to rest are in equilibrium • Classifies disparate events as examples of equilibrium • Determines gradients of change to systems when given a table of relevant data • Gives examples of gradient change • Gives examples of evolutionary change • Uses symbolic equations to represent change • Classifies statements as qualitative observations
	RIT 221-230: <ul style="list-style-type: none"> • Explains that equilibrium can be produced when changes occur in opposition to each other and at the same time • Gives examples of maintenance of equilibrium (homeostasis) in the human body • Describes characteristics of a gradient • Gives examples of cyclic events • Determines evolutionary trends in Earth/space, physical, and biological systems • Classifies statements as quantitative observations
	RIT 211-220: <ul style="list-style-type: none"> • Gives examples of equilibrium in systems • Predicts how a particular change will affect the equilibrium of a system • Gives examples of systems which show balance • Analyzes changes occurring within systems • Gives examples of things in nature which do not change • Determines the rate or gradient of change in systems, when given length of time and a total measurement of change • Predicts patterns of change to systems • Extrapolates using rate of change to a system • Distinguishes cycles from non-cyclic events • Understands that events that occur regularly are called cyclic • Understands that rates describe the time it takes for a unit of a given event to occur • Analyzes changes in scale • Understands that correlations seen in data are most useful in making predictions when a cause-effect relationship is established • 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 • Chooses the appropriate tools to measure volume • Measures the temperature shown on a thermometer (negative numbers) • Classifies statements as quantitative

	<p>observations</p> <ul style="list-style-type: none"> • 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
	RIT 201-210: <ul style="list-style-type: none"> • Gives examples of equilibrium in systems • Classifies a given event as an example of equilibrium • Understands that counterbalancing changes may be needed for systems to be maintained as conditions change • Explains how systems remain in equilibrium • Predicts how a particular change will affect the equilibrium of a system • Gives examples of events that are likely to cause disequilibrium in a system (terms not used) • Explains that very fast and very slow changes can be difficult to see or measure • Represents change quantitatively • Explains that change in nature is common and widespread • Classifies events as change • Describes properties of matter that remain constant after changes to systems • Determines the rate or gradient of change in systems, when given length of time and a total measurement of change • Determines the location or time that a particular change is likely to occur when given the rate of change to a system • Predicts what comes next in a sequence of numbers showing a complex pattern (e.g., addition then subtraction, geometric progression) • Gives evidence that supports the conclusion that a system (man-made or natural) has changed or evolved over time • Understands that evolution refers to changes to an entire species, not changes to an individual • Describes characteristics of evolution • Makes inferences about the evolution of a system, given data about that system • Interprets data (diagrams) related to the evolution of a system • Understands that rates describe the time it takes for a unit of a given event to occur • Analyzes changes in scale • 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: <ul style="list-style-type: none"> • Gives examples of events that are likely to cause disequilibrium in a system (terms not used) • Describes a constant rate of change for a familiar system • Describes changes that have occurred in a system • Classifies events as change • Explains what caused a particular change in a common system to occur • Describes the importance of direct observation in determining the cause of change to systems • Gives real life examples of things that remain constant

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	<ul style="list-style-type: none"> • Infers what is missing in sequences of patterns or events • Extends patterns found in nature • Predicts what comes next in a sequence of numbers showing a complex pattern (e.g., addition then subtraction, geometric progression) • Gives examples of cycles • Understands that patterns that recur regularly are called cycles • Infers what step is missing from a cycle showing repetitive change • Understands that a cycle may have no beginning or end, but events within the cycle will proceed in a predictable fashion • Understands that recognizing an event is cyclic can help us prepare for the future • Gives examples of a cause and effect relationship • Explains how determining cause and effect relationships can be useful • Classifies a given scenario as an example of cause and effect • Infers the possible causes for a given scenario (presented as a diagram) • 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) • 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
	<p>RIT 171-180:</p> <ul style="list-style-type: none"> • Describes ways in which things can change • Describes variables that cause change • Identifies qualitative change in systems, given the conditions that occur before, during, and after an event • Predicts what comes next in sequences of objects or events • Describes the sequence of elements within a pattern • Determines causes for a given effect • Predicts effects of a particular action • 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:

