

Math DesCartes: Patterns, Functions, and Algebra

Skills: Patterns and Functional Relationships

Students:	DesCartes Skills: (Highlight the skills related to your chosen standard/concept)		<ul style="list-style-type: none"> • Solves problems involving simple functions • Solves problems involving complex functions
	RIT Above 270: <ul style="list-style-type: none"> • Solves problems involving successive discounts 		RIT 221-230: <ul style="list-style-type: none"> • Looks for a growing pattern to solve a problem • Produces a valid conjecture using inductive reasoning by generalizing from a pattern of observations • Extends a growing pattern of triangular numbers, defined by objects or diagrams • Represents geometric sequences using written descriptions in recursive terms (present term, next term) • Uses mapping diagrams to represent functions • Completes a function table according to a rule • Investigates and describes functional relationships of geometric figures (e.g., area is a function of the radius) • Solves problems involving simple functions
	RIT 261-270: <ul style="list-style-type: none"> • Uses the compound interest equation to solve problems • Determines the minimum and maximum of a quadratic function 		
	RIT 251-260: <ul style="list-style-type: none"> • Represents a real-world function using a complex equation (e.g., variables on both sides, distributive, rational) • Models real life functions using function notation • Distinguishes between linear and nonlinear functions (analysis) • Uses graphs to represent functions and interpret slope • Identifies the equation of a parabola • Determines the vertex of a parabola • Investigates, describes, and predicts the effects of parameter changes on the graphs of exponential functions • Determines the effects of parameter changes on functions • Determines the domain and range of a function 		RIT 211-220: <ul style="list-style-type: none"> • Looks for a growing pattern to solve a problem • Produces a valid conjecture using inductive reasoning by generalizing from a pattern of observations • Extends a repeating pattern of geometric shapes in a grid • Extends a growing geometric pattern - using numbers • Extends a pattern formed by two arithmetic growing patterns - odd and even terms (such as 1,5,4,8,7,...) • Extends, or completes, growing patterns defined by equations or number facts • Extends a growing pattern of numbers – explicit quadratic rule - recursive rule is to add x more each time (such as 1,2,4,7,...) • Identifies rules and applies them to new patterns • Determines the rule and completes a simple function machine output • Uses mapping diagrams to represent functions • Solves problems involving simple functions
	RIT 241-250: <ul style="list-style-type: none"> • Represents growing arithmetic patterns using algebraic expressions or equations • Uses an algebraic expression to represent a triangular number pattern • Uses tables to determine function equations • Completes a function table according to a rule (rational numbers) • Represents a real-world function using a complex equation (e.g., variables on both sides, distributive, rational) • Models real life functions using function notation • Uses ordered pairs to graph a parabola • Determines the x- and/or y-intercept of an equation of a function • Performs operations on functions • Solves problems involving complex functions • Determines the domain and range of a function 		RIT 201-210: <ul style="list-style-type: none"> • Looks for a linear pattern to solve a problem • Looks for a repeating pattern to solve a problem • Use patterns and their generalizations to make and justify inferences and predictions • Produces a valid conjecture using inductive reasoning by generalizing from a pattern of observations • Extends a growing arithmetic pattern, defined by objects or diagrams • Extends a pattern formed by two arithmetic growing patterns - odd and even terms (such as 1,5,4,8,7,...) • Extends a growing pattern of numbers – explicit quadratic rule - recursive rule is to
	RIT 231-240: <ul style="list-style-type: none"> • Recognizes and extends arithmetic sequences (predicts nth term) • Recognizes and extends the Fibonacci sequence • Represents real-world functions using an equation • Uses tables to determine function equations • Completes a function table according to a rule • Models real life functions using function notation • Identifies the graph type, given equations of linear and nonlinear functions 		

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	<p>add x more each time (such as 1,2,4,7,...)</p> <ul style="list-style-type: none"> • Extends a pattern formed by rotating a geometric figure • Uses mapping diagrams to represent functions
	<p>RIT 191-200:</p> <ul style="list-style-type: none"> • Looks for a simple linear pattern in a table to solve a problem • Extends a growing arithmetic pattern, defined by objects or diagrams • Completes a growing arithmetic pattern using models by identifying the missing members • Extends a decreasing arithmetic patterns • Extends patterns formed by letters
	<p>RIT 181-190:</p> <ul style="list-style-type: none"> • Extends a growing arithmetic pattern, defined by numbers • Completes a growing arithmetic pattern using models by identifying the missing members • Completes arithmetic growth patterns in number tables by identifying the missing elements • Extends a decreasing arithmetic patterns • Applies the rule to determine which set of letters is not like the other sets - other patterns
	<p>RIT 171-180:</p> <ul style="list-style-type: none"> • Extends repeating patterns - geometric shapes • Extends a growing arithmetic pattern, defined by numbers • Completes a growing arithmetic pattern by naming missing members
	<p>RIT 161-170:</p> <ul style="list-style-type: none"> • Extends repeating patterns - geometric shapes • Completes a growing arithmetic pattern by naming missing members • Applies the rule to determine which number does not belong - growing pattern: arithmetic
	<p>Below RT 161:</p> <ul style="list-style-type: none"> • Applies the rule to determine which number does not belong - growing pattern: arithmetic

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:

