

Any standard **highlighted in yellow** has been determined by our WCSD teachers, district and state experts as essential for students to master.

Strand: I can understand the concept of a function and use function notation. (9.F.IF.1-3)			
Strand: I can interpret functions that arise in applications in terms of a context. (9.F.IF.4-6)			
Strand: I can analyze functions using different representations. (9.F.IF.7,9)			
Standard 9.F.IF.1: I can understand if f is a function and x is an element of its domain, then $f(x)$ denotes the output of f corresponding to the input x.			
<p style="text-align: center;">Learning Targets</p> <ul style="list-style-type: none"> • I can understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. • I can explain the graph of f is the graph of the equation $y=f(x)$. • I understand the definition of a function. • I can identify functions, including functions represented in equations, tables, graphs, or context. • I can distinguish between domain and range. • I can write a relation in function notation. 	<p style="text-align: center;">Academic Vocabulary & Notation</p> <ul style="list-style-type: none"> • domain, range, function, input, output, corresponding, set, element 	<p style="text-align: center;">Question Stems</p> <ul style="list-style-type: none"> • Explain why your answer is reasonable. • What does the math remind you of? • My strategy was successful because..... 	<p style="text-align: center;">Possible Assessments</p> <ul style="list-style-type: none"> • <u>District CFAs</u>

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Standard 9.F.IF.2: I can use function notation, evaluate, and interpret functions.			
<p>Learning Targets</p> <ul style="list-style-type: none"> I can write equations using function notation. I can use function notation to evaluate functions for given inputs in the domain, including combinations, and compositions of functions. I can use function notation to express relationships between contextual variables. 	<p>Academic Vocabulary & Notation</p> <ul style="list-style-type: none"> function notation, evaluate, input, domain, output, range 	<p>Question Stems</p> <ul style="list-style-type: none"> The steps I followed were..... What did you notice when.....? How can you describe functions? 	<p>Possible Assessments</p> <ul style="list-style-type: none"> <u>District CFAs</u>
Standard 9.F.IF.3: I can recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers.			
<p>Learning Targets</p> <ul style="list-style-type: none"> I can recognize that sequences are functions. I can define and express a recursive sequence as a function. I can recognize that a sequence has a domain which is a subset of integers. I can generate a sequence given a recursive function. 	<p>Academic Vocabulary & Notation</p> <ul style="list-style-type: none"> recursive, sequence, functions, domain, subset, Fibonacci 	<p>Question Stems</p> <ul style="list-style-type: none"> How can you prove that your answer is correct? How does this relate to....? What strategy did you use? 	<p>Possible Assessments</p> <ul style="list-style-type: none"> <u>District CFAs</u>

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Standard 9.F.IF.4: I can sketch and interpret key features of graphs and tables in terms of the quantities for a function hat models a relationship between two quantities.			
<p>Learning Targets</p> <ul style="list-style-type: none"> I can identify key features on a graph such as x- and y-intercepts; intervals where the function is increasing, decreasing, positive, or negative. I can identify key features, given a table of values, such as x- and y-intercepts; intervals where the function is increasing, decreasing, positive, or negative. I can find key features of a function and use them to graph the function. I can use interval notation and symbols of inequality to communicate key features of graphs. 	<p>Academic Vocabulary & Notation</p> <ul style="list-style-type: none"> increasing, decreasing, positive, negative, intervals, intercepts, interval notation 	<p>Question Stems</p> <ul style="list-style-type: none"> Create a story that would generate a linear or exponential function. Describe the meaning of key features of the graph as they relate to the story. How did you get the answer? 	<p>Possible Assessments</p> <ul style="list-style-type: none"> <u>District CFAs</u>
Standard 9.F.IF.5: I can relate the domain of a function to its graph and to the quantitative relationship it describes, where applicable.			
<p>Learning Targets</p> <ul style="list-style-type: none"> I can identify domains of functions given a graph. I can graph a function, given a restricted domain. I can identify reasonability of a domain in a particular context. 	<p>Academic Vocabulary & Notation</p> <ul style="list-style-type: none"> domain, function, integers, independent variable, dependent variable 	<p>Question Stems</p> <ul style="list-style-type: none"> What would happen if.....? Is there any other way you could.....? What questions arose as you worked? 	<p>Possible Assessments</p> <ul style="list-style-type: none"> <u>District CFAs</u>

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Standard 9.F.IF.6: I can calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval.			
<p>Learning Targets</p> <ul style="list-style-type: none"> I can estimate the rate of change from a graph. I can calculate rate of change given a linear function, from the equation or a table. I can calculate rate of change over a given interval in an exponential function from an equation or a table where the domain is a subset of the integers. I can use a graph to estimate the rate of change over an interval in a linear or exponential function. 	<p>Academic Vocabulary & Notation</p> <ul style="list-style-type: none"> increasing, decreasing, rate of change, average, function, interval 	<p>Question Stems</p> <ul style="list-style-type: none"> What questions arose as you worked? If I do this, what will happen? What strategy did you use? 	<p>Possible Assessments</p> <ul style="list-style-type: none"> <u>District CFAs</u>

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Standard 9.F.IF.7: I can graph functions expressed symbolically and show key features of the graph by hand and using technology.			
<p>Learning Targets</p> <ul style="list-style-type: none"> I can graph linear functions and show intercepts. I can graph exponential functions showing intercepts and end behavior. I can graph lines expressed in slope-intercept form or standard form by hand. I can graph exponential functions by hand. I can use technology to model complex exponential functions. I can identify intercepts in graphs of linear and exponential functions. 	<p>Academic Vocabulary & Notation</p> <ul style="list-style-type: none"> linear, exponential, intercept, end behavior 	<p>Question Stems</p> <ul style="list-style-type: none"> Explain the graph and how it relates to the function. The steps I followed were.... The hardest part of this unit on..... is..... 	<p>Possible Assessments</p> <ul style="list-style-type: none"> <u>District CFAs</u>

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Standard 9.F.IF.9: I can compare properties of two functions each represented in a different way.			
<p style="text-align: center;">Learning Targets</p> <ul style="list-style-type: none"> • I can compare slopes and intercepts of two linear functions where one is represented algebraically, graphically, numerically, in tables, or in a description and the other is modeled using a different form. • I can compare growth rate and intercepts of two exponential functions where one is represented algebraically, graphically, numerically, in tables, or in a description and the other is modeled using a different form of representation. 	<p style="text-align: center;">Academic Vocabulary & Notation</p> <ul style="list-style-type: none"> • function, slope, rate of change, intercept, interval, growth rate 	<p style="text-align: center;">Question Stems</p> <ul style="list-style-type: none"> • Explain the different parts of my graph and what the parts represent. • I solved the problem by..... 	<p style="text-align: center;">Possible Assessments</p> <ul style="list-style-type: none"> • <u>District CFAs</u>