### Foundations 30 Math Rubrics

# **F30.1a** Student demonstrates an understanding of financial decision making involving investing money, including analysis of compound interest and investment portfolios.

Beginning (1)	Approaching (2)	Meeting (3)	Exemplary (4)
I need more	I can determine the	I can answer questions based on	I can calculate the value of a
help with	value of a missing	compound interest questions (ie. find	complex investment
becoming	variable in a	interest earned, rate of return, rank	portfolio.
consistent with	simple/ compound	investments, compare investments,	I can compare investment
the criteria.	interest problem.	etc.)	portfolios and make
		I can use the Rule of 72	recommendations.
		I can graph an investment and analyze	I can demonstrate my
		the graph	understanding of what it
		I can calculate the value of a basic	means to be financially
		investment portfolio.	literate.

#### **F30.1b** Student demonstrates an understanding of financial decision making involving borrowing money

Beginning (1)	Approaching (2)	Meeting (3)	Exemplary (4)
I need more	I can determine the	I can solve questions based on	I can demonstrate my
help with	value of a missing	financial problems involving	understanding of financial
becoming	variable in a financial	renting, leasing, buying or credit	decisions to be made involving
consistent with	problem involving	(ie. find total interest paid, total	borrowing money.
the criteria.	renting, leasing,	cost of loan, time to pay off loan,	I can do cost and benefit
	buying or credit.	basic cost and benefit analysis,	analysis when a mortgage is
		etc.)	involved.

including analysis of renting, leasing, buying and credit.

#### **F30.2** Student demonstrates an understanding of inductive and deductive reasoning.

Beginning (1)	Approaching (2)	Meeting (	(3)	Exemplary (4)
I need more help	I can:	I can:		I can demonstrate my
with becoming	<ul> <li>Identify the hypothesis,</li> </ul>	<ul> <li>Write a conditional s</li> </ul>	statement	understanding of
consistent with	• Identify the conclusion	Write a bi-conditions	al statement	conditional
the criteria.	Write the converse	Determine and verify	y if a statement	statements.
	• Find a counterexample	-	,	
	Write the inverse	Determine if a condi-	tional statement	I can demonstrate my
	Write the	is bi-conditional		understanding of
	contrapositive	Solve a basic puzzle/	/game/problem	analysis of puzzles and
	P	,	<i>O</i> 71	games.
Beginning (1)	Approaching (2)	Meeting (3)	Exc	emplary (4)
I need more help	Given a Venn diagram, I	I can analyze the	I can do an analy	ysis of solutions for
with becoming	can answer questions	results of two data	errors.	
consistent with	pertaining to the empty	sets, including creating	I can analyze the	e results of three or
the criteria	set, disjoint sets,	Venn diagrams as	more data sets i	ncluding creating Venn
	subsets, universal sets,	necessary.	diagrams as nec	essary.
	union, and intersection.	I can determine the	I can demonstra	te my understanding of
		complement of a set.	set theory.	_

### **F30.3** Demonstrate understanding of set theory and its applications.

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I need more help	I can express odds as a	I can solve contextual	I can demonstrate my
with becoming	probability and vice versa.	problems that involve	understanding of odds and
consistent with the		odds and probability.	probability.
criteria			

**F30.4** Student extends understanding of odds and probability.

## **F30.5** Student extends understanding of the probability of two events, including events that are: mutually exclusive, non-mutually exclusive, and dependent.

Beginning (1)	Approaching (2)	Meeting (3)	Exemplary (4)
I need more	I can determine if two events	I can represent mutually	I can create problems that
help with	are mutually exclusive or non-	exclusive events and	involve the probability of
becoming	mutually exclusive.	non-mutually exclusive	mutually exclusive events or non-
consistent with	I can determine if two events	events.	mutually exclusive events.
the criteria.	are independent or dependent.	I can solve problems that	I can demonstrate my
	I can solve basic problems that	involve the probability of	understanding of the probability
	involve the probability of	two events (exception	of two events.
	mutually exclusive events.	probability of an event	I can solve problems that find the
	I can solve basic problems that	given occurrence of a	probability of an event given the
	involve the probability of	previous event).	occurrence of a previous event.
	independent events.		

# **F30.6** Student demonstrates an understanding of combinatorics including, fundamental counting principle, permutations and combinations.

Beginning (1)	Approaching (2)	Meeting (3)	Exemplary (4)
I need more	I can evaluate	I can list all of the options to a	I can demonstrate my understanding
help with	factorials.	counting problem (I may use a	of counting problems.
becoming	I can solve basic	graphic organizer)	I can simplify factorial expressions
consistent with	permutation and	I can solve permutations with	and solve factorial equations.
the criteria.	combination	conditions, repetition, where	I can explain how factorials are
	problems when I	objects are not distinguishable	related to permutations and
	am told which type	I can solve combinations from	combinations.
	it is.	more than one set; with	I can solve situational questions
	I can solve basic	conditions;	involving probability and
	fundamental	I can solve situational questions	permutations.
	counting principle	involving the fundamental	I can compare and contrast
	problems.	counting principle.	permutations and combinations.

#### **F30.7a** Student represents data, using polynomial functions (of degree $\leq$ 3), to solve problems.

Beginning (1)	Approaching (2)	Meeting (3)	Exemplary (4)
I need more	I can match equations	I can determine the	I can demonstrate my understanding
help with	of polynomial functions	characteristics of polynomial	of polynomial functions. This may be
becoming	to their corresponding	functions from their graphs or	done through interpreting graphs of
consistent with	graphs.	equations.	polynomial functions to describe the
the criteria.	I can graph and	I can identify the degree and	situations that each function models
	determine (with	sign of the leading coefficient	and explain the reasoning or solve
	technology) the	for a polynomial function.	situational questions that involve
	polynomial function	I can interpolate and	data that is best represented by
	that best approximates	extrapolate data from	graphs of polynomial functions and
	the data.	polynomial situations.	explain the reasoning.

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### **F30.7b** Student represents data, using exponential and logarithmic functions, to solve problems.

Beginning (1)	Approaching (2)	Meeting (3)	Exemplary (4)
I need more	I can match equations of	I can determine the	I can demonstrate my understanding of
help with	exponential and	characteristics of	exponential and logarithmic functions.
becoming	logarithmic functions to	exponential and	This may be done through interpreting
consistent	their corresponding	logarithmic functions	graphs of exponential and logarithmic
with the	graphs.	from their equations or	functions to describe the situations that
criteria.	I can graph and determine	graphs.	each function models and explain the
	(with technology) the	I can interpolate and	reasoning or solve situational questions
	exponential or logarithmic	extrapolate data from	that involve data that is best
	function that best	exponential and	represented by graphs of exponential
	approximates the data.	logarithmic situations.	and logarithmic functions and explain
			the reasoning.

### **F30.7c** Student represents data, using sinusoidal functions, to solve problems.

Beginning (1)	Approaching (2)	Meeting (3)	Exemplary (4)
I need more	I can match equations of	I can determine	I can demonstrate my understanding of
help with	sinusoidal functions to	the	sinusoidal functions. This may be done
becoming	their corresponding	characteristics of	through interpreting graphs of sinusoidal
consistent with	graphs.	sinusoidal	functions to describe the situations that each
the criteria.	I can graph and determine	functions from	function models and explain the reasoning or
	(with technology) the	their equations	solve situational questions that involve data
	sinusoidal function that	or graphs.	that is best represented by graphs of
	best approximates the		sinusoidal functions and explain the
	data.		reasoning.

# **F30.8** Student researches and gives a presentation on a current event or an area of interest that requires data collection and analysis.

Beginning (1)	Approaching (2)	Meeting (3)	Exemplary (4)
I need more help	I am able to show	I am able to explain the	I am able to explain the importance of
with becoming	how math was	connection to math in my	the math involved in my event/area. I
consistent with	involved in my	event/area. If there were	am able to interpret my data as to how
the criteria.	event/area. I	any bias or points of view	it impacts society. I can identify any
	collected data that	then I could identify these. I	controversial issues and present
	was relevant to	was able to identify my data	multiple sides of the issues with
	my topic.	collection method.	supporting data, if applicable.