

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

**F30.1b** Student demonstrates an understanding of financial decision making involving borrowing money including analysis of renting, leasing, buying and credit.

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

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

Beginning (1)	Approaching (2)	Proficiency (3)	Mastery (4)
I need more help with becoming consistent with the criteria.	I can: *Identify the hypothesis, *Identify the conclusion *Write the converse *Find a counterexample *Write the inverse *Write the contrapositive	I can: *Write a conditional statement *Write a biconditional statement *Determine and verify if a statement is true *Determine if a conditional statement is biconditional * Solve a basic puzzle/game/problem	I can demonstrate my understanding of conditional statements.  I can demonstrate my understanding of analysis of puzzles and games.

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

Beginning (1)	Approaching (2)	Proficiency (3)	Mastery (4)
I need more help with becoming consistent with the criteria	<u>Given</u> a Venn diagram, I can answer questions pertaining to the empty set, disjoint sets, subsets, universal sets, union, and intersection.	I can <u>create</u> a Venn diagram for <u>two data sets</u> and analyze the results. I can determine the complement of a set.	I can do an analysis of solutions for errors. I can <u>create</u> a Venn diagram for <u>three data sets</u> and analyze the results. I can demonstrate my understanding of set theory.

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

Beginning (1)	Approaching (2)	Proficiency (3)	Mastery (4)
I need more help with becoming consistent with the criteria	I can express odds as a probability and vice versa.	I can solve contextual problems that involve odds and probability.	I can demonstrate my understanding of odds and probability.

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

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

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

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

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

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

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

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

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

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

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

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