

ESSENTIAL ELEMENT, LINKAGE LEVELS, AND MINI-MAP

MATH: GRADE 4

M.EE.4.NF.1-2

Grade-Level Standard	DLM Essential Element	Linkage Levels
M.4.NF.1 Explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions; M.4.NF.2 Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as $1/2$. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols $>$, $=$, or $<$	M.EE.4.NF.1-2 Identify models of one half ($1/2$) and one fourth ($1/4$)	Initial Precursor: <ul style="list-style-type: none"> Recognize separateness Recognize wholeness Distal Precursor: <ul style="list-style-type: none"> Partition shapes Proximal Precursor: <ul style="list-style-type: none"> Partition any shapes into equal parts Target: <ul style="list-style-type: none"> Recognize one half on an area model Recognize one fourth on an area model Successor: <ul style="list-style-type: none"> Recognize halves on an area model Recognize fourths on an area model

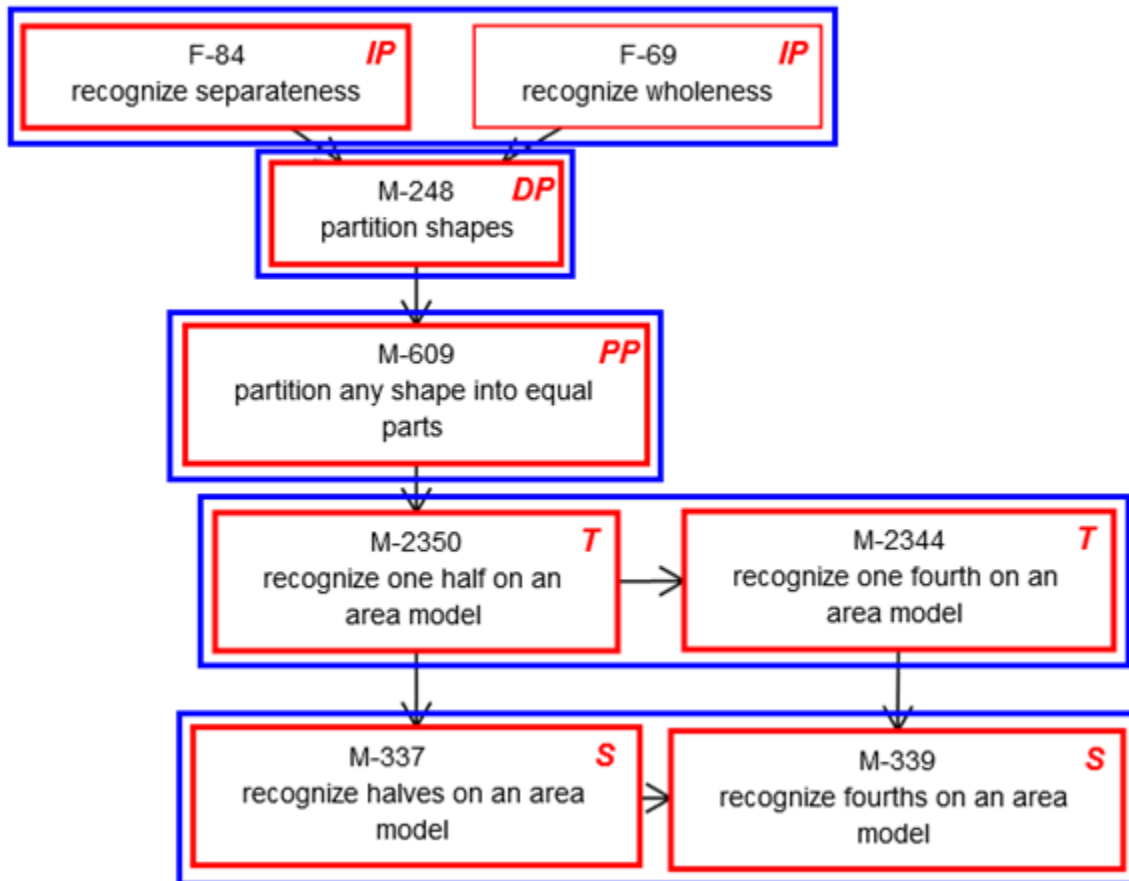
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A diagram showing the relationship of nodes in the mini-map appears below.

Key to map codes in upper right corner of node boxes:

IP	Initial Precursor	SP	Supporting
DP	Distal Precursor	S	Successor
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T	Target		

M.EE.4.NF.1-2 Identify models of one half ($1/2$) and one fourth ($1/4$)



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M.EE.4.NF.3

Grade-Level Standard	DLM Essential Element	Linkage Levels
M.4.NF.3 Understand a fraction a/b with $a > 1$ as a sum of fractions $1/b$	M.EE. 4.NF.3 Differentiate between whole and half	Initial Precursor: <ul style="list-style-type: none"> Recognize wholeness Recognize separateness Distal Precursor: <ul style="list-style-type: none"> Partition shapes Proximal Precursor: <ul style="list-style-type: none"> Recognize parts of a given whole or a unit Explain unit fraction Target: <ul style="list-style-type: none"> Recognize fraction Recognize one half on an area model Recognize whole on an area model Successor: <ul style="list-style-type: none"> Recognize one fourth on an area model Recognize halves on an area model Recognize fourths on an area model

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M.EE.4.NF.3 Differentiate between whole and half



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M.EE.4.NBT.2

Grade-Level Standard	DLM Essential Element	Linkage Levels
M.4.NBT.2 Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using $>$, $=$, and $<$ symbols to record the results of comparisons	M.EE.4.NBT.2 Compare whole numbers to 10 using symbols ($=$, $<$, $>$)	Initial Precursor: <ul style="list-style-type: none"> Recognize set Recognize separateness Distal Precursor: <ul style="list-style-type: none"> Count all objects in a set or subset Recognize same number of Recognize different number of Proximal Precursor: <ul style="list-style-type: none"> Compare 2 quantities up to 10 using models Target: <ul style="list-style-type: none"> Compare 2 numerals up to 10 using symbols ($=$, $<$, $>$) Successor: <ul style="list-style-type: none"> Order more than 2 one-digit numerals or quantities from greatest to least Compare 2 numerals up to 100 using symbols ($=$, $<$, $>$) Order more than 2 one-digit numerals or quantities from least to greatest

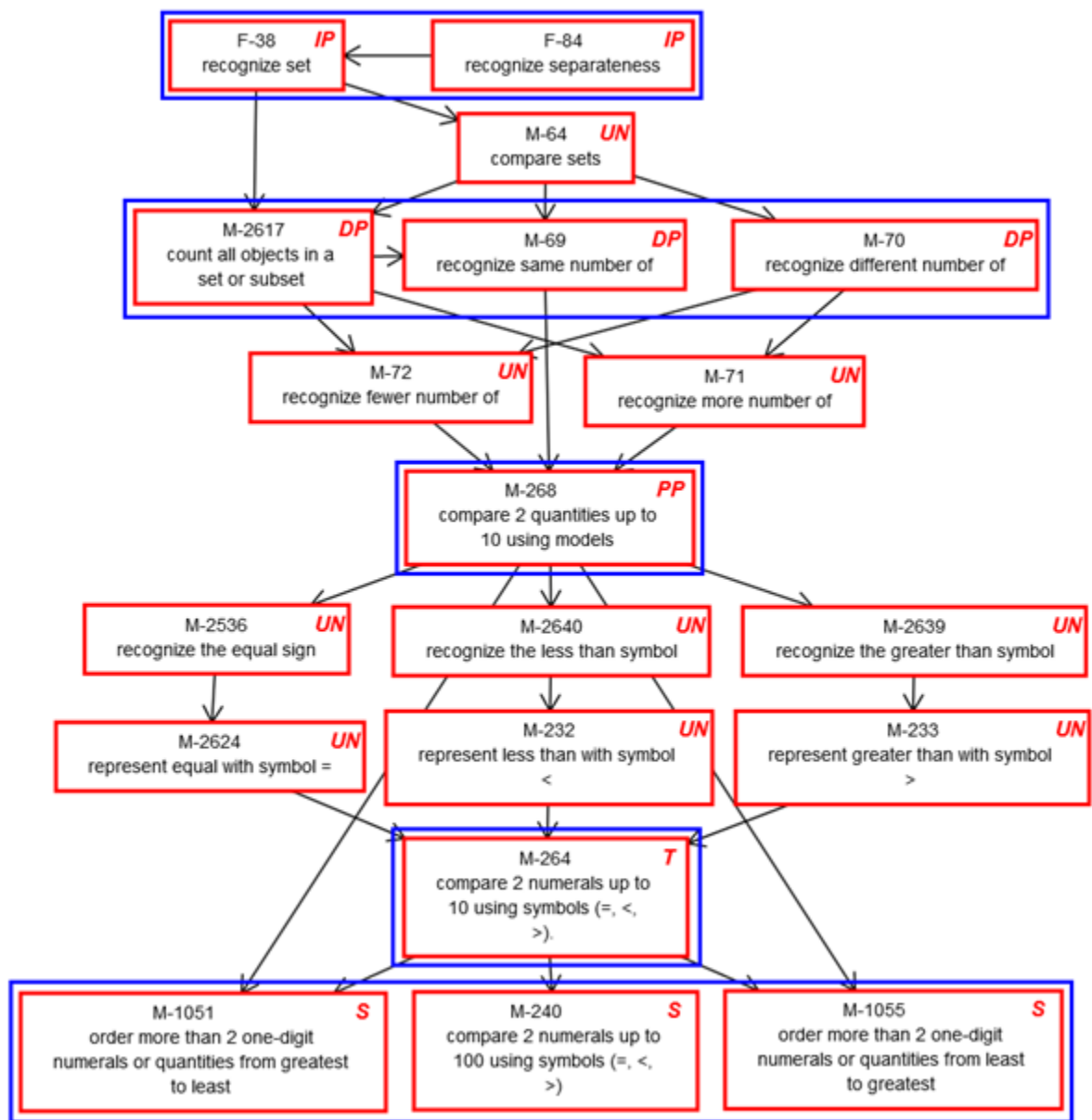
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M.EE.4.NBT.2 Compare whole numbers to 10 using symbols ($=$, $<$, $>$)



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M.EE.4.NBT.3

Grade-Level Standard	DLM Essential Element	Linkage Levels
M.4.NBT.3 Use place value understanding to round multi-digit whole numbers to any place	M.EE.4.NBT.3 Round any whole number 0-30 to the nearest ten	Initial Precursor: <ul style="list-style-type: none"> • Use perceptual subitizing Distal Precursor: <ul style="list-style-type: none"> • Recognize a unit • Explain ten as a composition of ten ones • Recognize ten and something • Recognize multiple tens and something • Decompose numbers based on tens Proximal Precursor: <ul style="list-style-type: none"> • Explain place value for ones and tens • Explain the relationship between rounding and place value Target: <ul style="list-style-type: none"> • Round whole numbers from 0-30 to the nearest ten Successor: <ul style="list-style-type: none"> • Round whole numbers 0-100 to the nearest ten • Round whole numbers to the nearest hundred

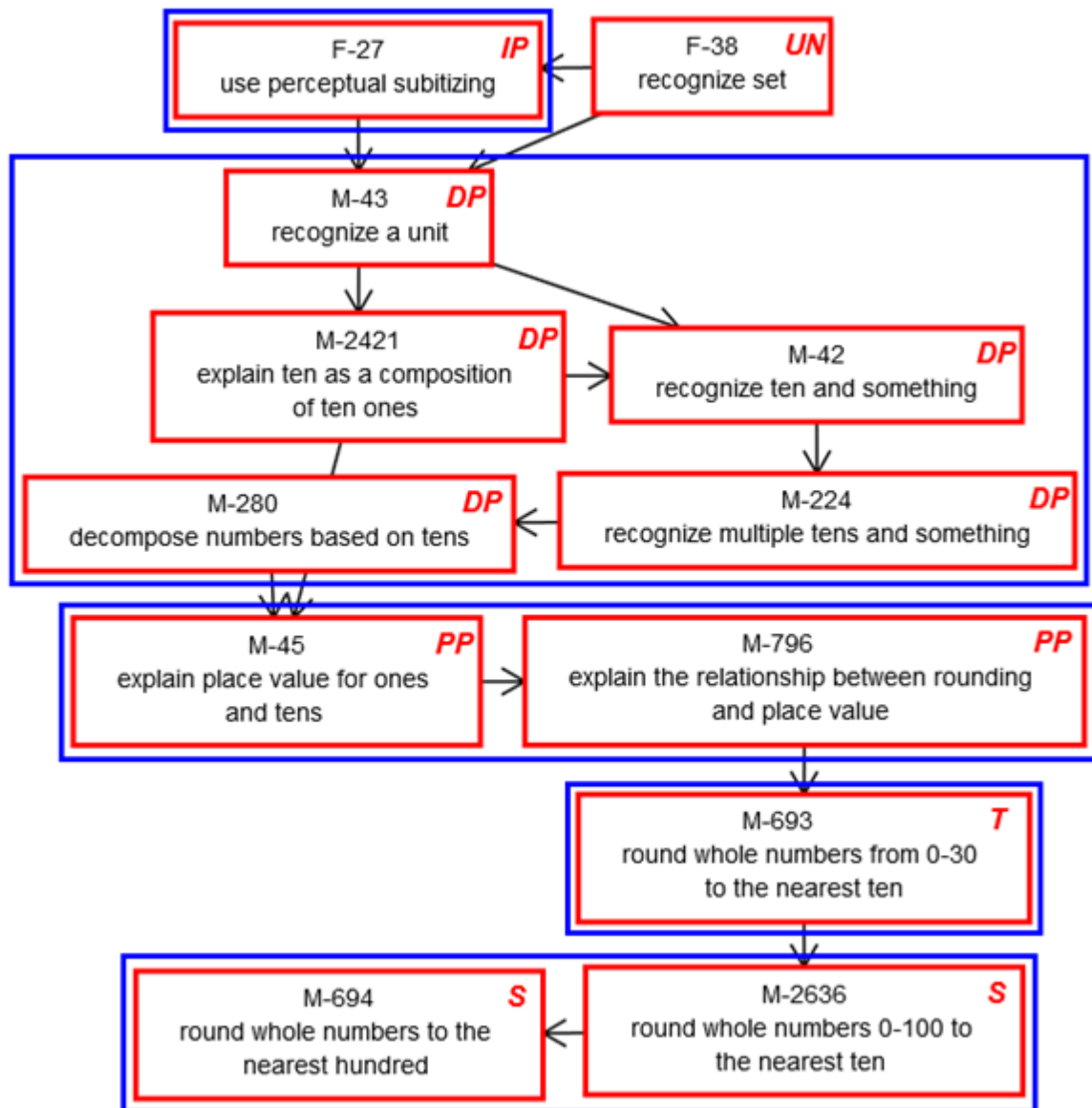
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M.EE.4.NBT.3 Round any whole number 0-30 to the nearest ten



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M.EE.4.NBT.4

Grade-Level Standard	DLM Essential Element	Linkage Levels
M.4.NBT.4 Fluently add and subtract multi-digit whole numbers using the standard algorithm	M.EE. 4.NBT.4 Add and subtract two-digit whole numbers	Initial Precursor: <ul style="list-style-type: none"> Recognize subset Recognize set Recognize separateness Distal Precursor: <ul style="list-style-type: none"> Combine sets Count all objects in a set or subset Partition sets Proximal Precursor: <ul style="list-style-type: none"> Add within 10 Add within 20 Subtract within 20 Subtract within 10 Add within 5 Add 1,2, 3 and/or 4 Add 1 and 1 Subtract 1 from 2 Subtract 1 from up to 5 Subtract within 5 Target: <ul style="list-style-type: none"> Add within 100 where all addends are multiple of 10 Add within 100 Add within 100 with a 2 digit number and a multiple of 10 Subtract within 100 where both numbers are multiple of 10 Subtract within 100 Subtract a multiple of 10 from a 2 digit number within 100 Successor: <ul style="list-style-type: none"> Solve addition word problems within 100 Solve subtraction word problems within 100

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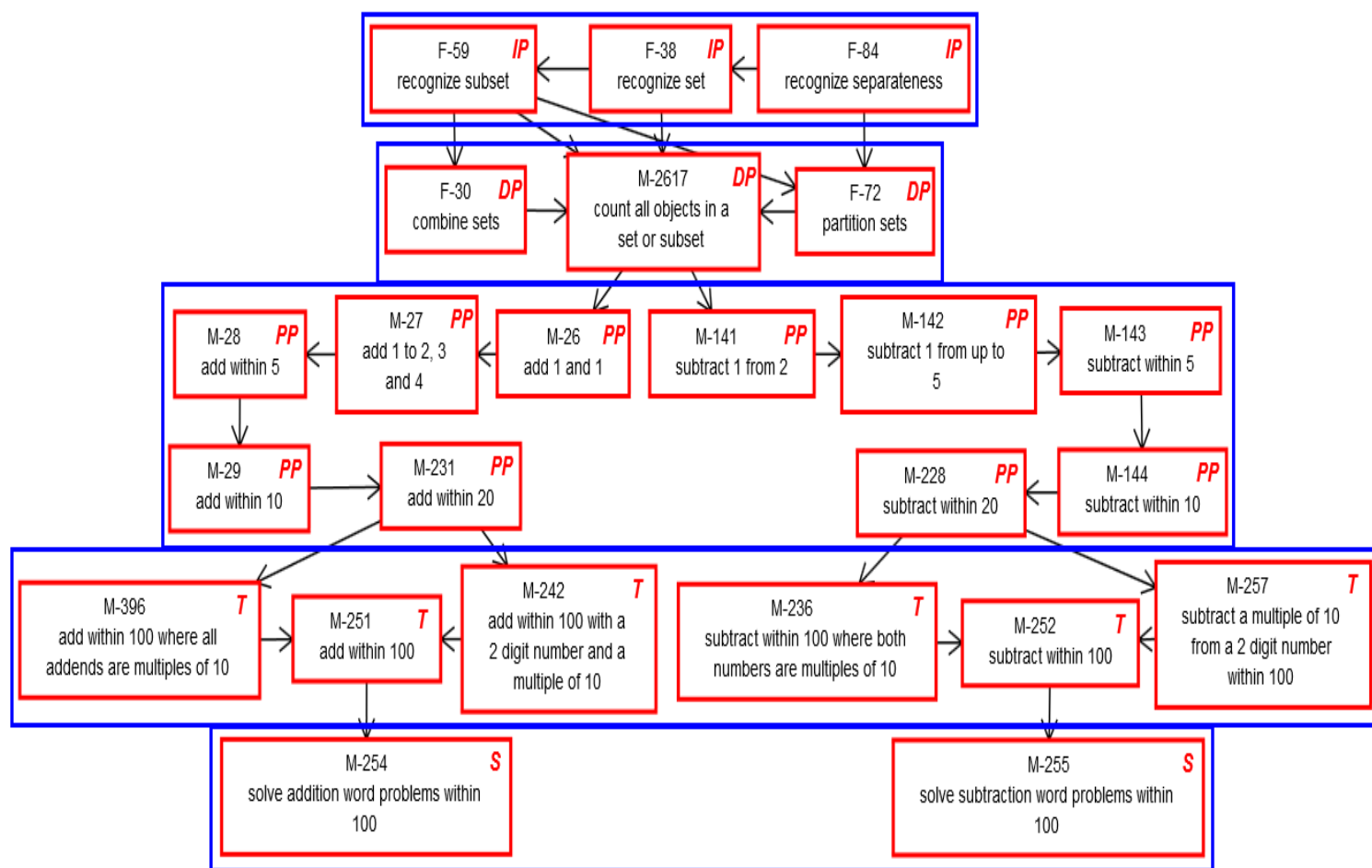
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M.EE.4.NBT.4 Add and subtract two-digit whole numbers



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MATH: GRADE 4

M.EE.4.G.1

Grade-Level Standard	DLM Essential Element	Linkage Levels
M.4.G.1 Draw points, lines, lines segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures	M.EE.4.G.1 Recognize parallel lines and intersecting lines	Initial Precursor: <ul style="list-style-type: none"> Recognize attribute values Distal Precursor: <ul style="list-style-type: none"> Recognize point Proximal Precursor: <ul style="list-style-type: none"> Recognize line Recognize line segment Target: <ul style="list-style-type: none"> Recognize intersecting lines/line segments Recognize parallel lines/line segments Successor: <ul style="list-style-type: none"> Recognize perpendicular lines/line segments Recognize parallel line segments in a two-dimensional figure

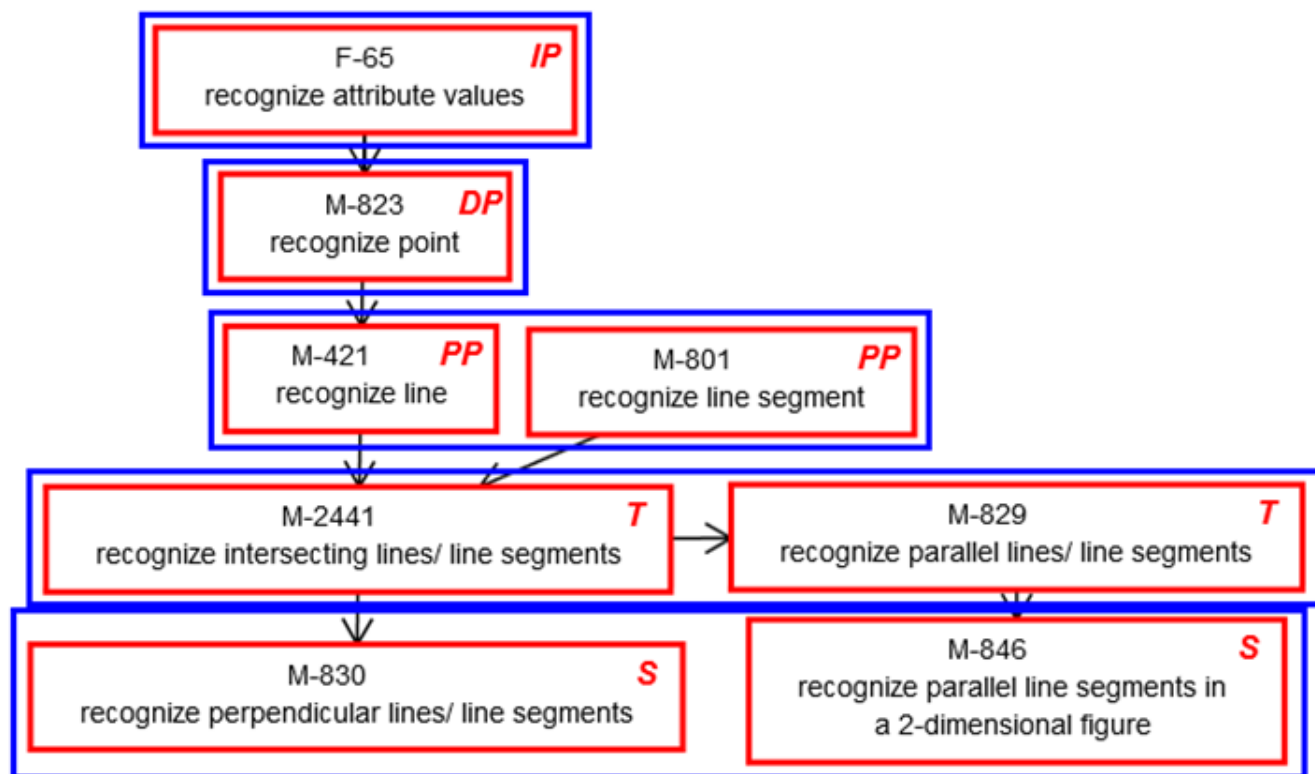
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M.EE.4.G.1 Recognize parallel lines and intersecting lines



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M.EE.4.MD.5

Grade-Level Standard	DLM Essential Element	Linkage Levels
M.4.MD.5 Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement	M.EE. 4.MD.5 Recognize angles in geometric shapes	Initial Precursor: <ul style="list-style-type: none"> Recognize attribute values Distal Precursor: <ul style="list-style-type: none"> Recognize point Proximal Precursor: <ul style="list-style-type: none"> Recognize line Recognize ray Recognize line segment Target: <ul style="list-style-type: none"> Recognize angle Successor: <ul style="list-style-type: none"> Make direct comparison of 2 angles

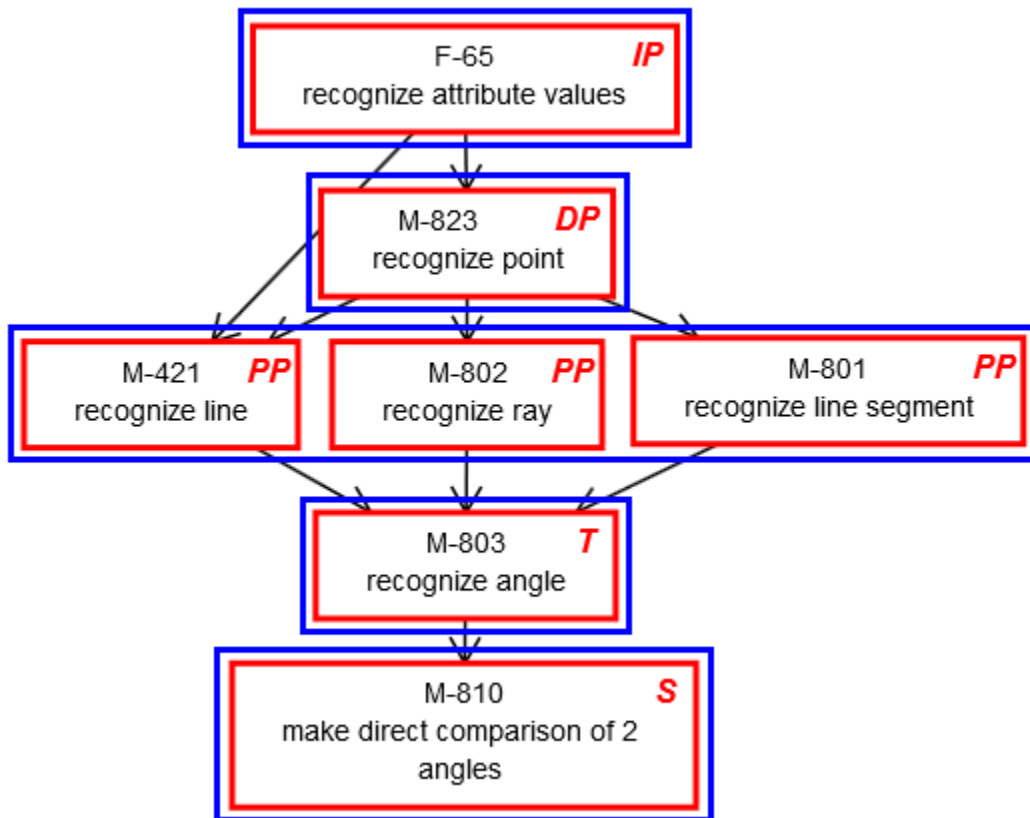
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M.EE.4.MD.5 Recognize angles in geometric shapes



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M.EE.4.MD.6

Grade-Level Standard	DLM Essential Element	Linkage Levels
M.4.MD.6 Measure angles in whole number degrees using a protractor. Sketch angles of specified measure	M.EE. 4.MD.6 Identify angles as larger and smaller	Initial Precursor: <ul style="list-style-type: none"> Recognize attribute values Recognize different Recognize same Distal Precursor: <ul style="list-style-type: none"> Recognize different amount Recognize same amount Proximal Precursor: <ul style="list-style-type: none"> Recognize more amount Recognize less amount Target: <ul style="list-style-type: none"> Make direct comparison of 2 angles Successor: <ul style="list-style-type: none"> Order more than 2 angles using direct comparison

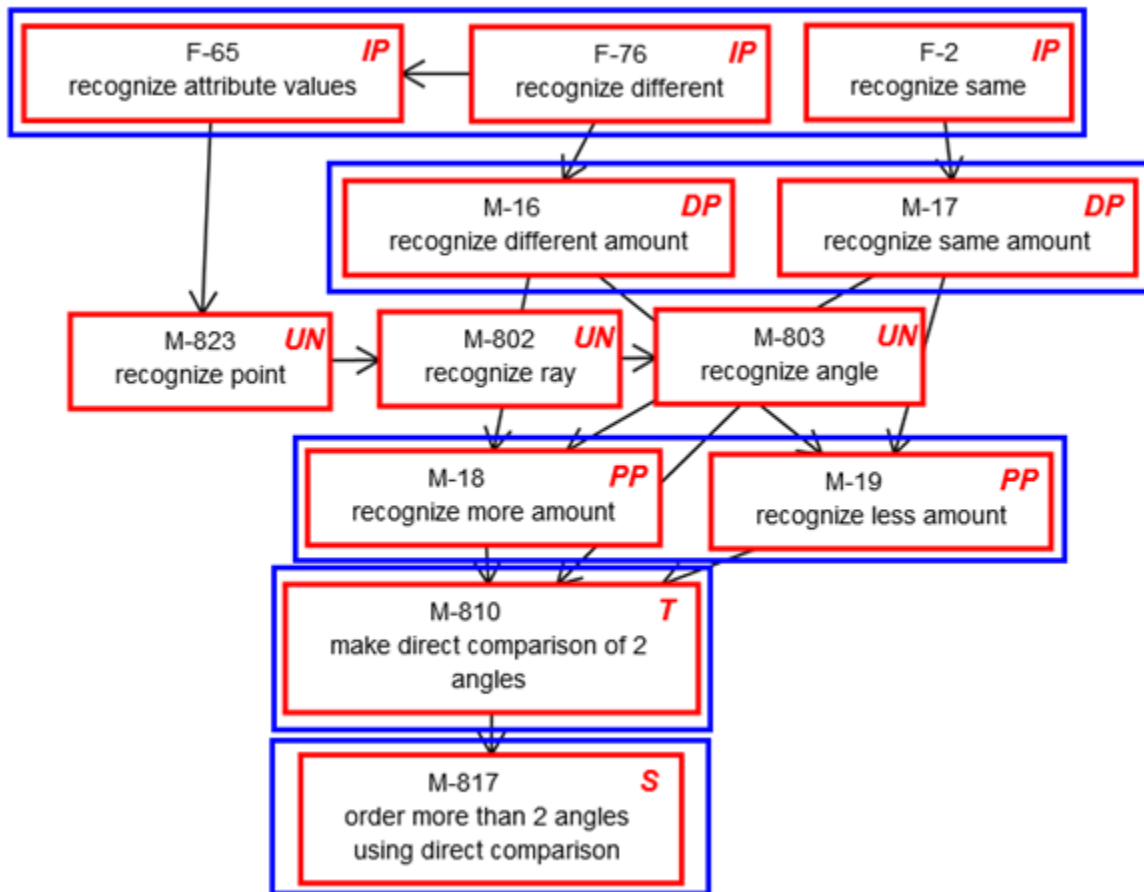
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M.EE.4.MD.6 Identify angles as larger and smaller



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M.EE.4.MD.3

Grade-Level Standard	DLM Essential Element	Linkage Levels
M.4.MD.3 Apply the area and perimeter formulas for rectangles in real world and mathematical problems. For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor	M.EE.4.MD.3 Determine the area of a square or rectangle by counting units of measure (unit squares)	Initial Precursor: <ul style="list-style-type: none"> Recognize some Recognize separateness Distal Precursor: <ul style="list-style-type: none"> Recognize enclosure Proximal Precursor: <ul style="list-style-type: none"> Explain unit square Explain area Target: <ul style="list-style-type: none"> Calculate area by counting unit squares Calculate area of a rectangle with tiling Successor: <ul style="list-style-type: none"> Solve word problems involving area of rectangles

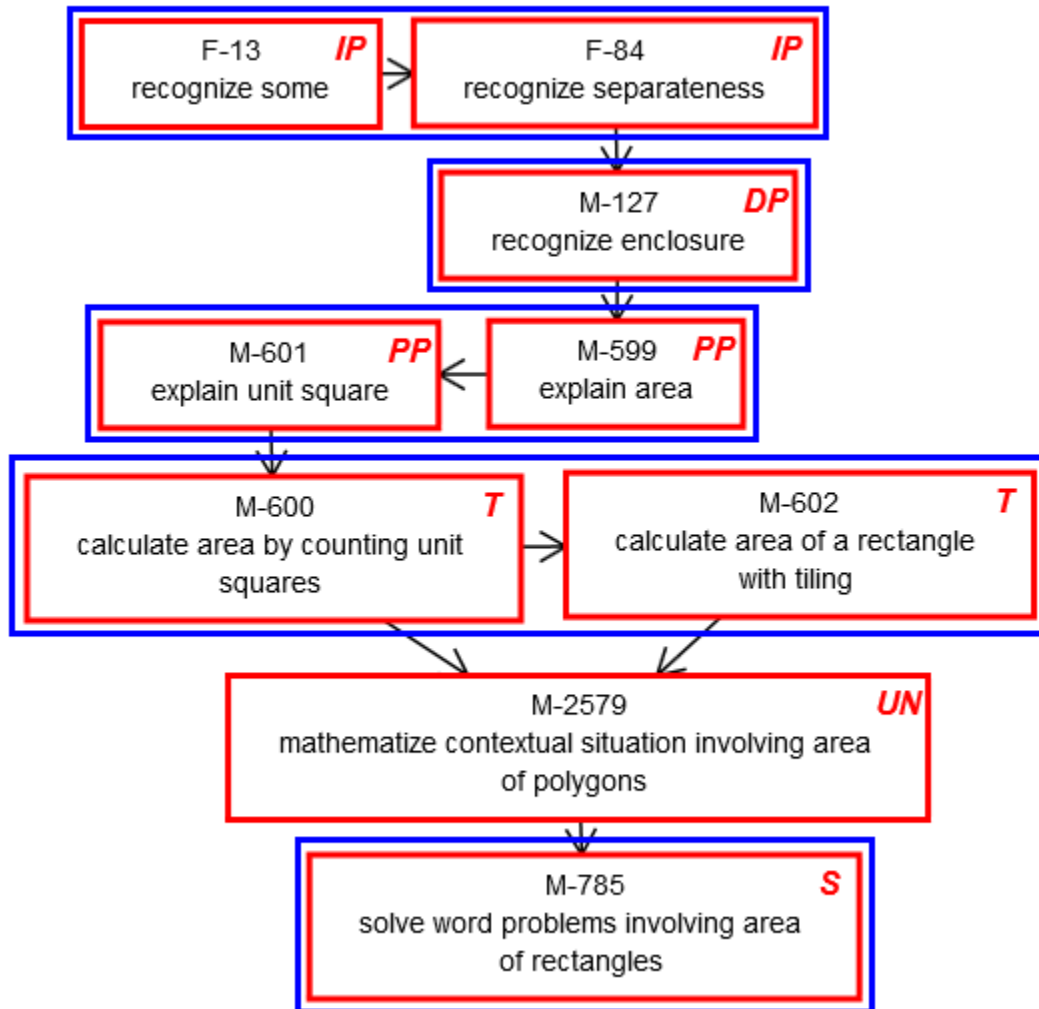
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M.EE.4.MD.3 Determine the area of a square or rectangle by counting units of measure (unit squares)



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M.EE.4.MD.2.A

Grade-Level Standard	DLM Essential Element	Linkage Levels
M. 4.MD.2 Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale	M.EE. 4.MD.2.a Tell time using a digital clock. Tell time to the nearest hour using an analog clock	Initial Precursor: <ul style="list-style-type: none"> Attend Recognize different Distal Precursor: <ul style="list-style-type: none"> Recognize measureable attributes Proximal Precursor: <ul style="list-style-type: none"> Recognize the hour hand Know hours on a clock Recognize the hour on a digital clock Recognize the minute hand Recognize the minute on a digital clock Target: <ul style="list-style-type: none"> Tell time to the hour Read a digital clock Successor: <ul style="list-style-type: none"> Tell time to the half hour Tell time to the quarter hour

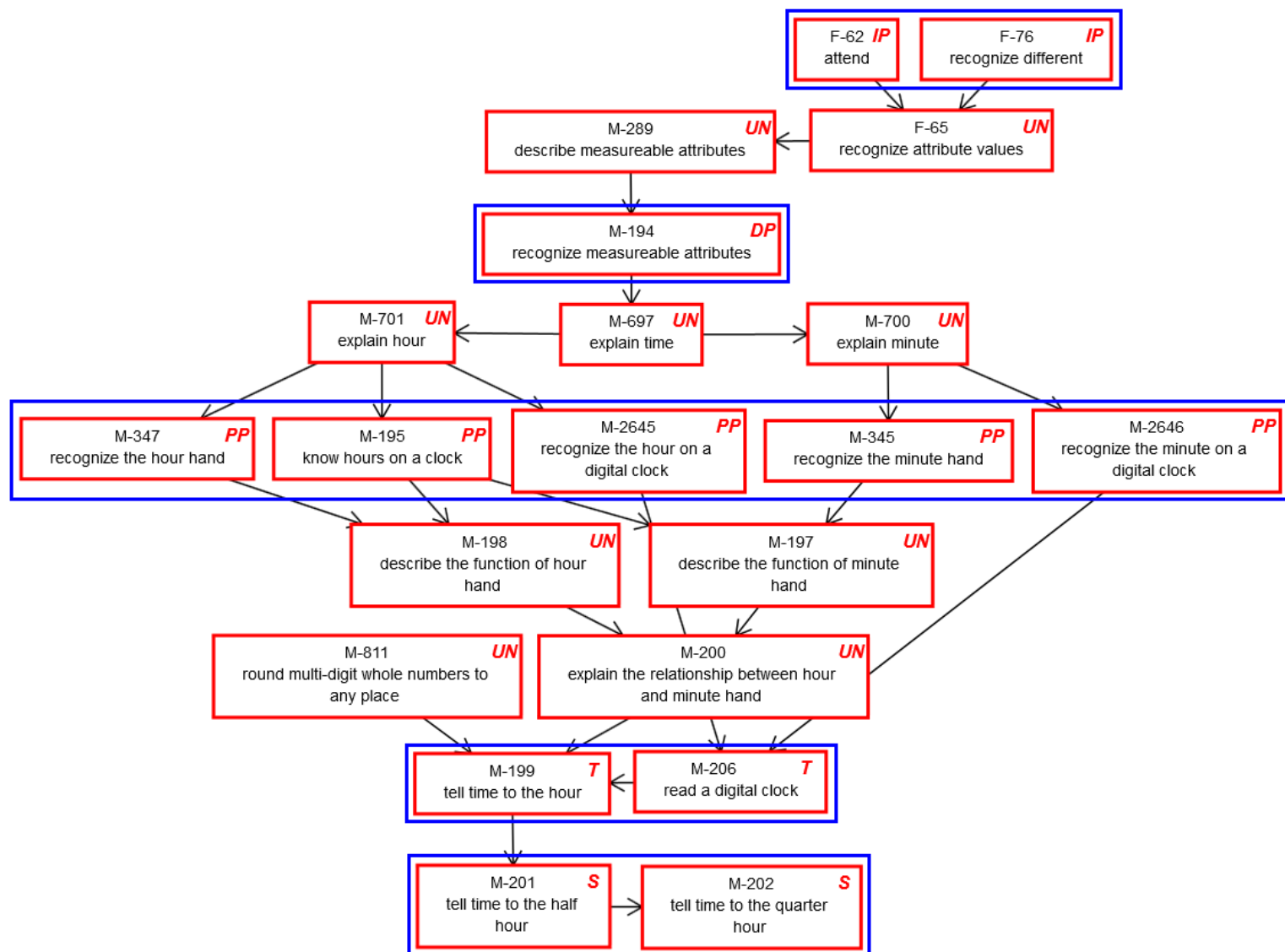
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M.EE. 4.MD.2.a Tell time using a digital clock. Tell time to the nearest hour using an analog clock



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MATH: GRADE 4

M.EE.4.MD.2.B

Grade-Level Standard	DLM Essential Element	Linkage Levels
M.4.MD.2. Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale	M.EE.4.MD.2.b Measure mass or volume using standard tools	Initial Precursor: <ul style="list-style-type: none"> Recognize different Recognize same Distal Precursor: <ul style="list-style-type: none"> Make direct comparison of 2 volumes Make direct comparison of 2 masses Proximal Precursor: <ul style="list-style-type: none"> Measure volume using informal units Measure mass using informal units Target: <ul style="list-style-type: none"> Use an appropriate tool to measure liquid volumes in cups Use an appropriate tool to measure mass in ounces Use an appropriate tool to measure mass in pounds Successor: <ul style="list-style-type: none"> Estimate liquid volume in cups Estimate mass in ounces Estimate mass in pounds

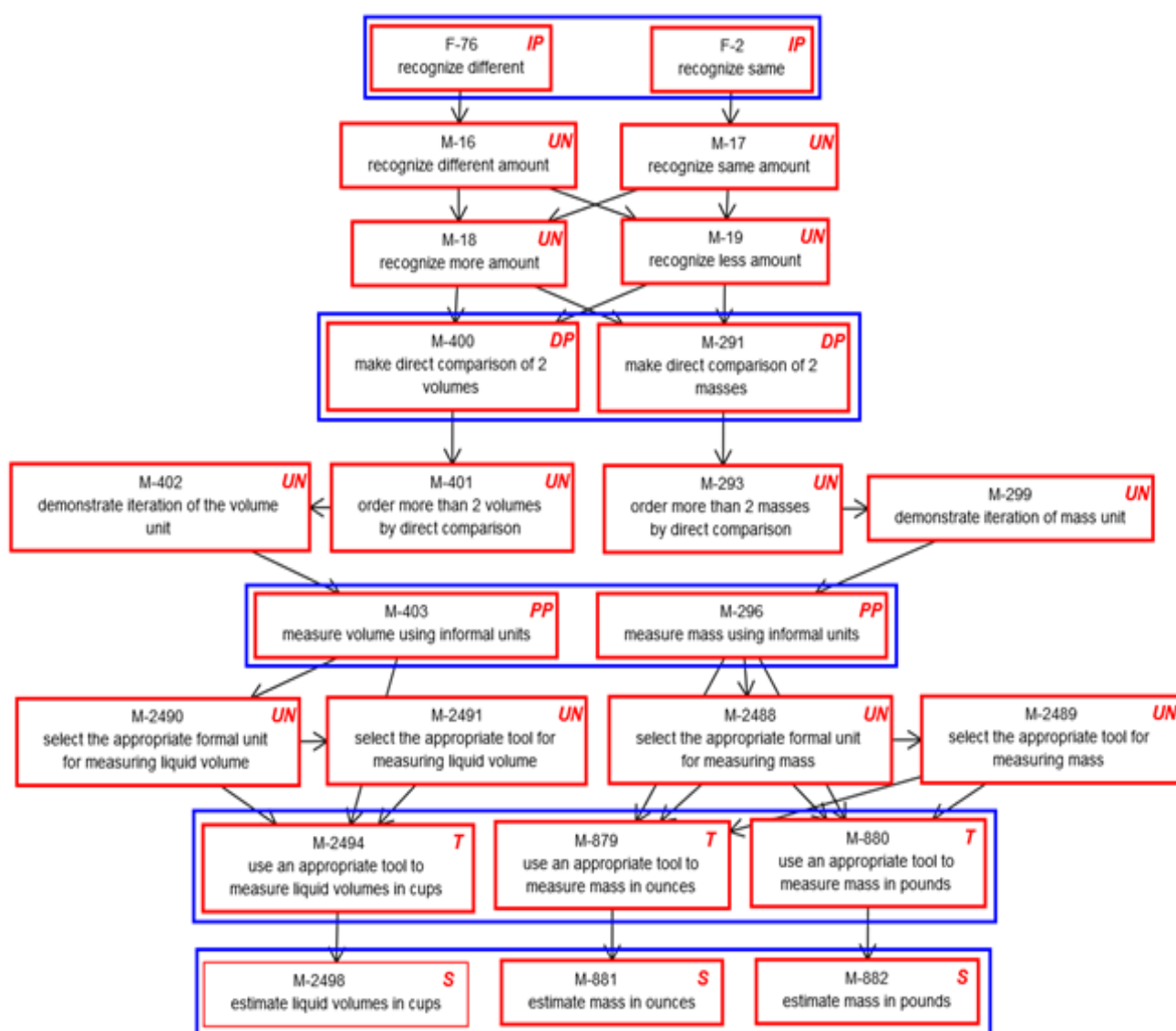
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M.EE.4.MD.2.b Measure mass or volume using standard tools



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MATH: GRADE 4

M.EE.4.MD.2.D

Grade-Level Standard	DLM Essential Element	Linkage Levels
M.4.MD.2.d Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale	M.EE.4.MD.2.d Identify coins (penny, nickel, dime, quarter) and their values	Initial Precursor: <ul style="list-style-type: none"> Attend Distal Precursor: <ul style="list-style-type: none"> Recognize attribute values Proximal Precursor: <ul style="list-style-type: none"> Recognize money Target: <ul style="list-style-type: none"> State value of penny State value of nickel State value of dime State value of quarter Recognize penny Recognize nickel Recognize dime Recognize quarter Successor: <ul style="list-style-type: none"> State the value of a penny related to a quarter State the value of a nickel related to a quarter State the value of a penny related to a dime State the value of a penny related to a nickel State the value of a nickel related to a dime

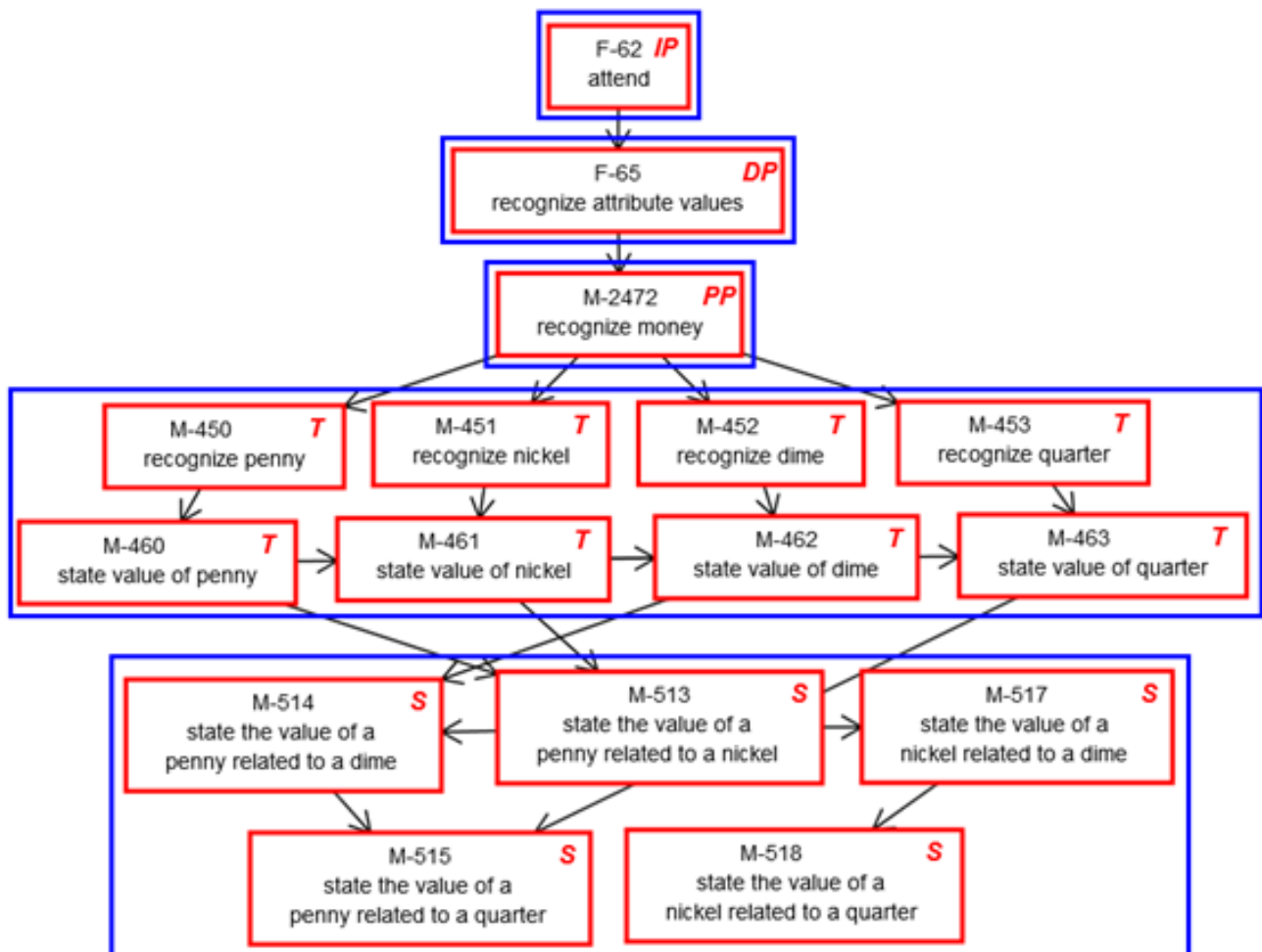
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M.EE.4.MD.2.d Identify coins (penny, nickel, dime, quarter) and their values



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MATH: GRADE 4

M.EE.4.MD.4.B

Grade-Level Standard	DLM Essential Element	Linkage Levels
M.4.MD.4.b Make a line plot to display a data set of measurements in fractions of a unit ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$). Solve problems involving addition and subtraction of fractions by using information presented in line plots	M.EE. 4.MD.4.b Interpret data from a picture or bar graph	Initial Precursor: <ul style="list-style-type: none"> Classify Order objects Distal Precursor: <ul style="list-style-type: none"> Recognize the structure of a bar graph Recognize the structure of a picture graph Proximal Precursor: <ul style="list-style-type: none"> Use bar graphs to read the data Use picture graphs to read the data Target: <ul style="list-style-type: none"> Use graphs to read between the data Successor: <ul style="list-style-type: none"> Use graphs to read beyond the data

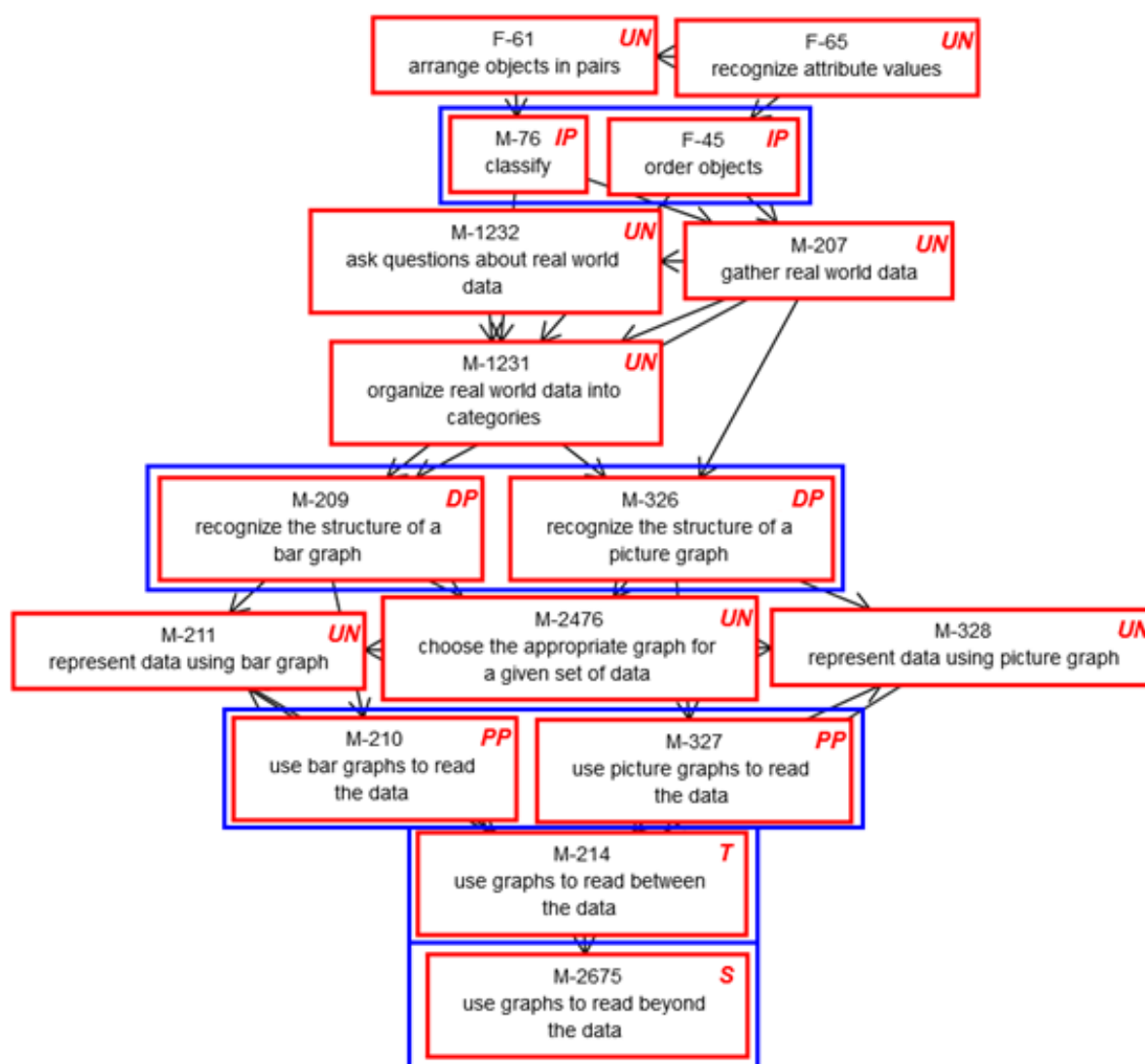
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M.EE.4.MD.4.b Interpret data from a picture or bar graph



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M.EE.4.OA.1-2

Grade-Level Standard	DLM Essential Element	Linkage Levels
M.4.OA.1 Interpret a multiplication equation as a comparison, e.g., interpret $35 = 5 \times 7$ as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations; M.4.OA.2 Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison	M.EE. 4. OA.1-2 Demonstrate the connection between repeated addition and multiplication	Initial Precursor: <ul style="list-style-type: none"> Recognize subset Recognize set Recognize separateness Distal Precursor: <ul style="list-style-type: none"> Demonstrate the concept of addition Combine sets Combine Proximal Precursor: <ul style="list-style-type: none"> Represent repeated addition with an equation Represent repeated addition with a model Target: <ul style="list-style-type: none"> Demonstrate the concept of multiplication Successor: <ul style="list-style-type: none"> Multiply by 5 Multiply by 4 Multiply by 3 Multiply by 2 Multiply by 1

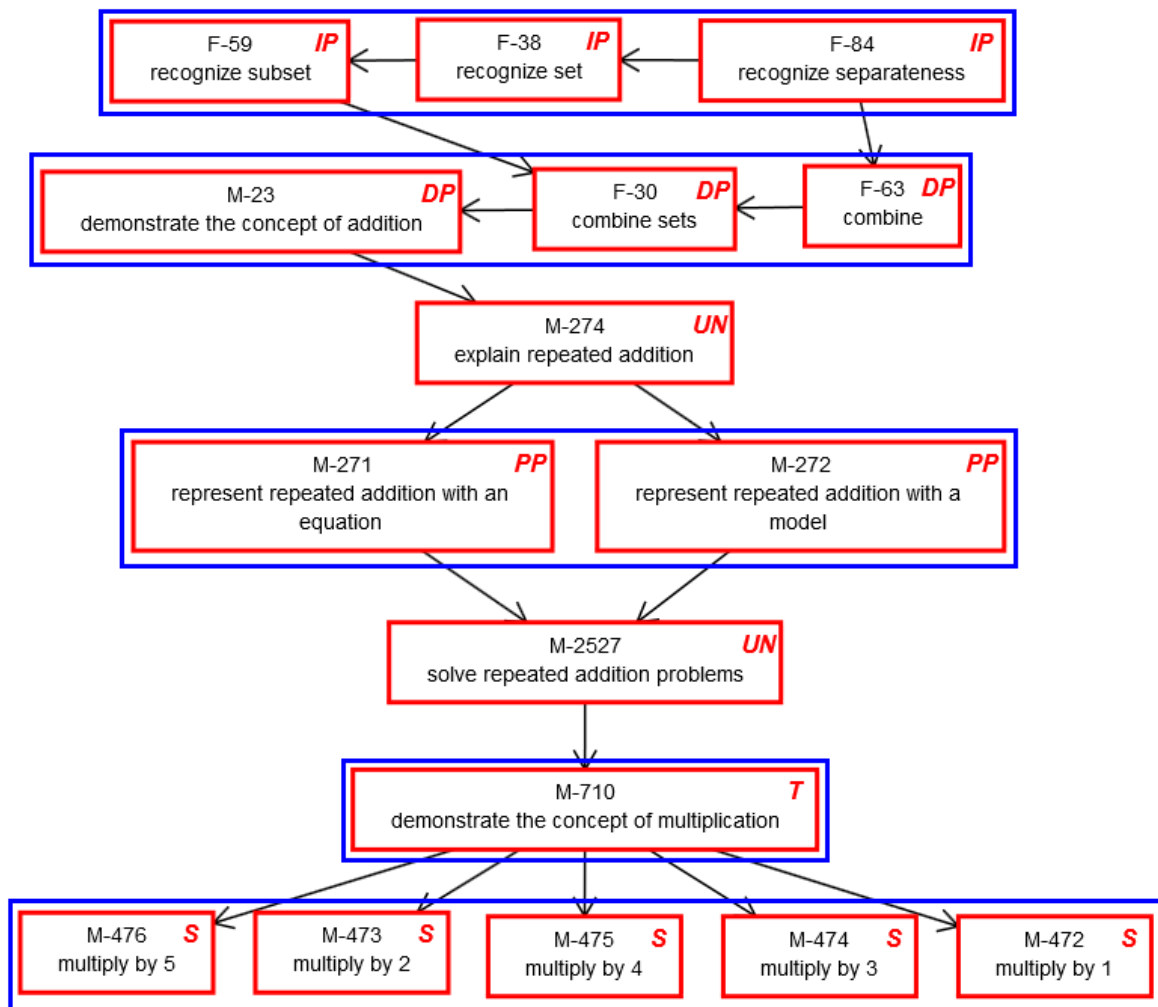
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M.EE.4.OA.1-2 Demonstrate the connection between repeated addition and multiplication



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M.EE.4.OA.3

Grade-Level Standard	DLM Essential Element	Linkage Levels
M.4.OA.3 Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding	M.EE.4.OA.3 Solve one-step real-world problems using addition and subtraction within 100	Initial Precursor: <ul style="list-style-type: none"> Combine sets Partition sets Distal Precursor: <ul style="list-style-type: none"> Demonstrate the concept of addition Demonstrate the concept of subtraction Proximal Precursor: <ul style="list-style-type: none"> Determine the unknown in an addition equation Determine the unknown in a subtraction equation Target: <ul style="list-style-type: none"> Solve subtraction word problems within 100 Solve addition word problems within 100 Successor: <ul style="list-style-type: none"> Solve 2-step addition and subtraction word problems

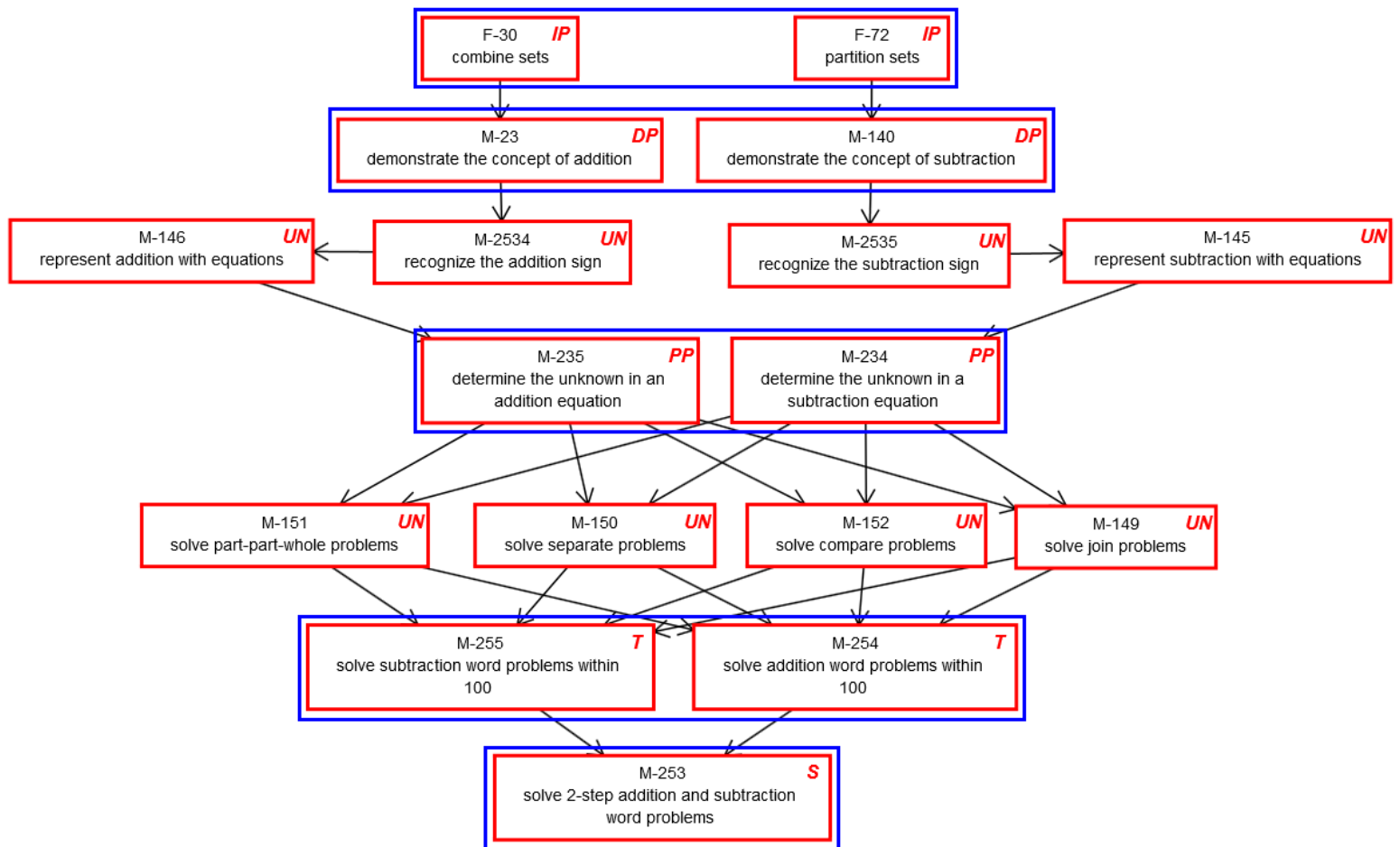
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PP	Proximal Precursor	UN	Untested
T	Target		

M.EE.4.OA.3 Solve one-step real-world problems using addition and subtraction within 100



ESSENTIAL ELEMENT, LINKAGE LEVELS, AND MINI-MAP

MATH: GRADE 4

M.EE.4.OA.5

Grade-Level Standard	DLM Essential Element	Linkage Levels
M.4.OA.5 Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way	M.EE.4.OA.5 Use repeating patterns to make predictions	Initial Precursor: <ul style="list-style-type: none"> Recognize attribute values Arrange objects in pairs Distal Precursor: <ul style="list-style-type: none"> Recognize patterns Proximal Precursor: <ul style="list-style-type: none"> Recognize symbolic patterns Recognize repeating patterns Recognize pictorial patterns Target: <ul style="list-style-type: none"> Recognize the core unit in a repeated pattern Successor: <ul style="list-style-type: none"> Extend a pictorial pattern by applying the rule Extend a symbolic pattern by applying the rule

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A diagram showing the relationship of nodes in the mini-map appears below.

Key to map codes in upper right corner of node boxes:

IP	Initial Precursor	SP	Supporting
DP	Distal Precursor	S	Successor
PP	Proximal Precursor	UN	Untested
T	Target		

M.EE.4.OA.5 Use repeating patterns to make predictions

