ESSENTIAL ELEMENT, LINKAGE LEVELS, AND MINI-MAP
MATH: GRADE 8
M.EE.8.NS.2.A

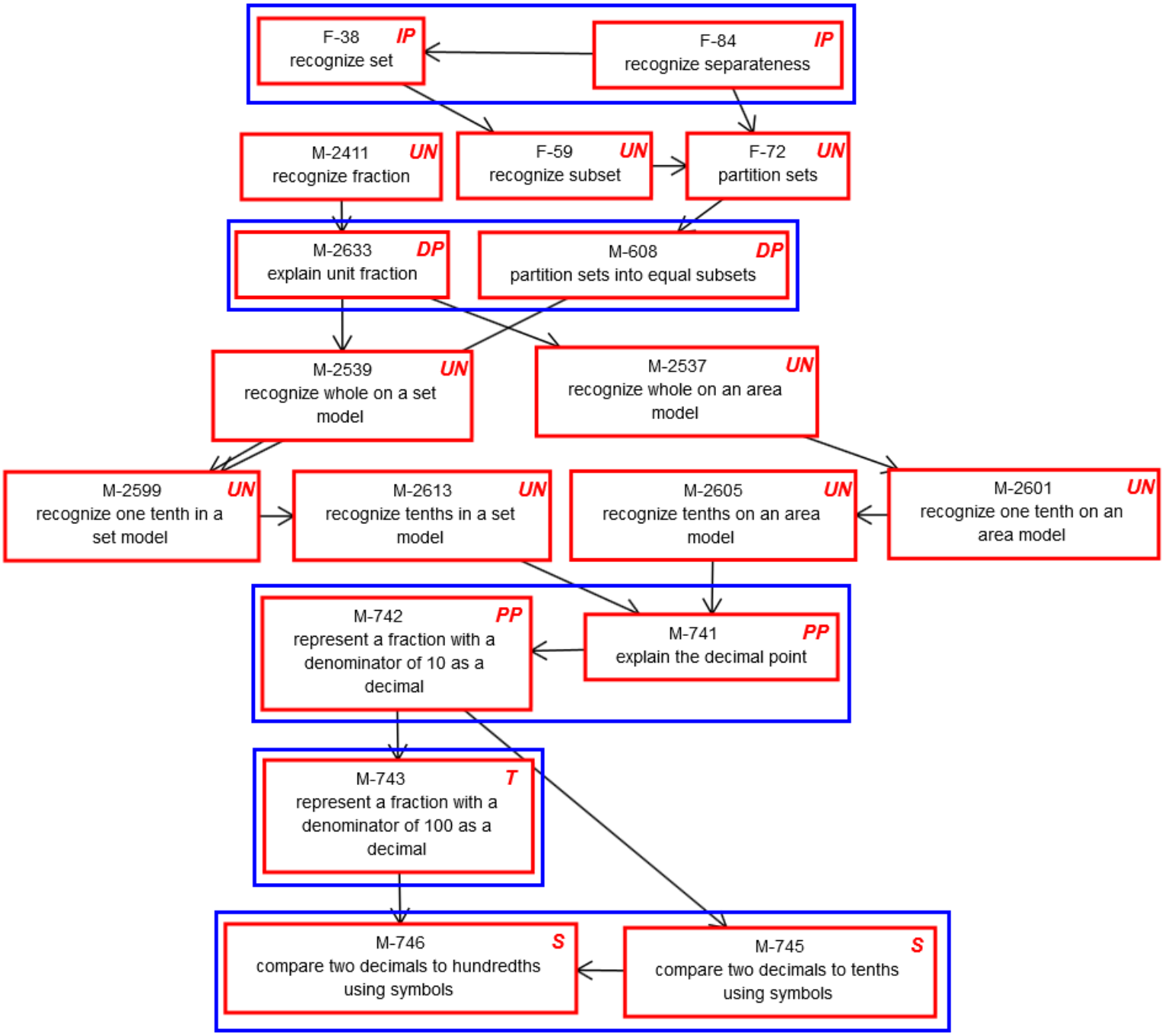
Grade-Level Standard	DLM Essential Element	Linkage Levels
M.8.NS.2 Use that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number	**M.EE.8.NS.2.a** Express a fraction with a denominator of 100 as a decimal	**Initial Precursor:** • Recognize separateness • Recognize set **Distal Precursor:** • Partition sets into equal subsets • Explain unit fraction **Proximal Precursor:** • Explain the decimal point • Represent a fraction with a denominator of 10 as a decimal **Target:** • Represent a fraction with a denominator of 100 as a decimal **Successor:** • Compare two decimals to the tenths using symbols • Compare two decimals to hundredths using symbols

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.8.NS.2.a Express a fraction with a denominator of 100 as a decimal



ESSENTIAL ELEMENT, LINKAGE LEVELS, AND MINI-MAP
MATH: GRADE 8
M.EE.8.NS.2.B

Grade-Level Standard	DLM Essential Element	Linkage Levels
M.8.NS.2 Use rational approximations of irrational numbers to compare the size of irrational numbers locate them approximately on a number line diagram, and estimate the value of expressions (e.g., $\pi^{2)}$)	**M.EE.8.NS.2.b** Compare quantities represented as decimals in real world examples to hundredths	**Initial Precursor:** • Recognize separateness **Distal Precursor:** • Recognize one tenth in a set model • Recognize tenths in a set model **Proximal Precursor:** • Represent a decimal to tenths as a fraction • Represent a decimal to hundredths as a fraction **Target:** • Compare two decimals to hundredths using symbols **Successor:** • Compare two decimals to thousandths and beyond using symbols

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

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DP	Distal Precursor	S	Successor
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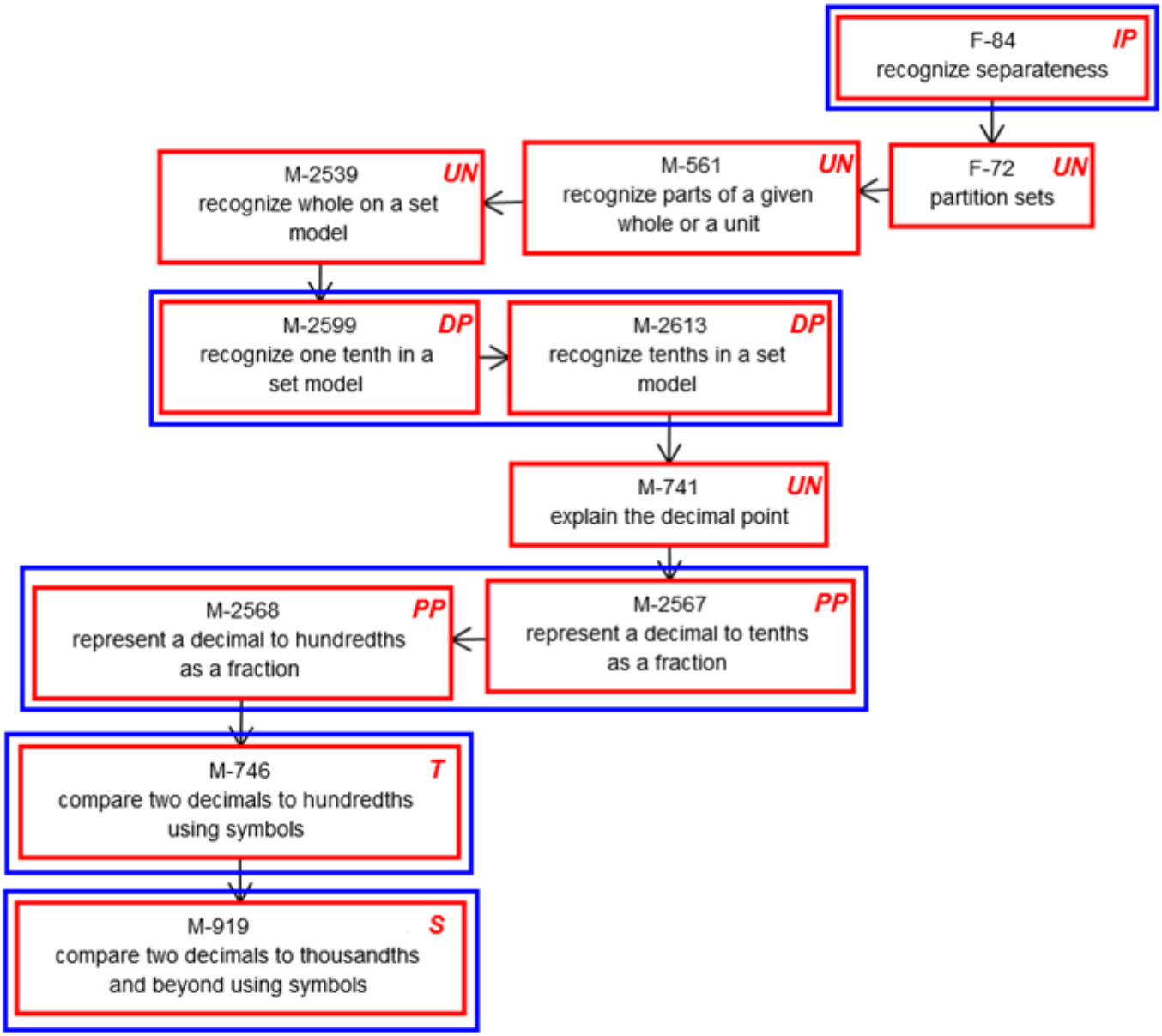
T	Target		

M.EE.8.NS.2.b Compare quantities represented as decimals in real world examples to hundredths



ESSENTIAL ELEMENT, LINKAGE LEVELS, AND MINI-MAP
MATH: GRADE 8
M.EE.8.EE.1

Grade-Level Standard	DLM Essential Element	Linkage Levels
M.8.EE.1 Know and apply the properties of integer exponents to generate equivalent numerical expressions. For example, 3^2X3^-5=3^-3=1/1^3=1/27	**M.EE.8.EE.1** Identify the meaning of an exponent (limited to exponents of 2 and 3)	**Initial Precursor:** • Combine • Combine sets • Demonstrate the concept of addition **Distal Precursor:** • Explain repeated addition • Represent repeated addition with a model • Solve repeated addition problems **Proximal Precursor:** • Demonstrate the concept of multiplication • Explain multiplication problems • Explain product **Target:** • Recognize exponents **Successor:** • Explain product of powers property of exponents • Apply zero exponent property • Explain power of product property of exponents • Explain quotient of powers property of exponents

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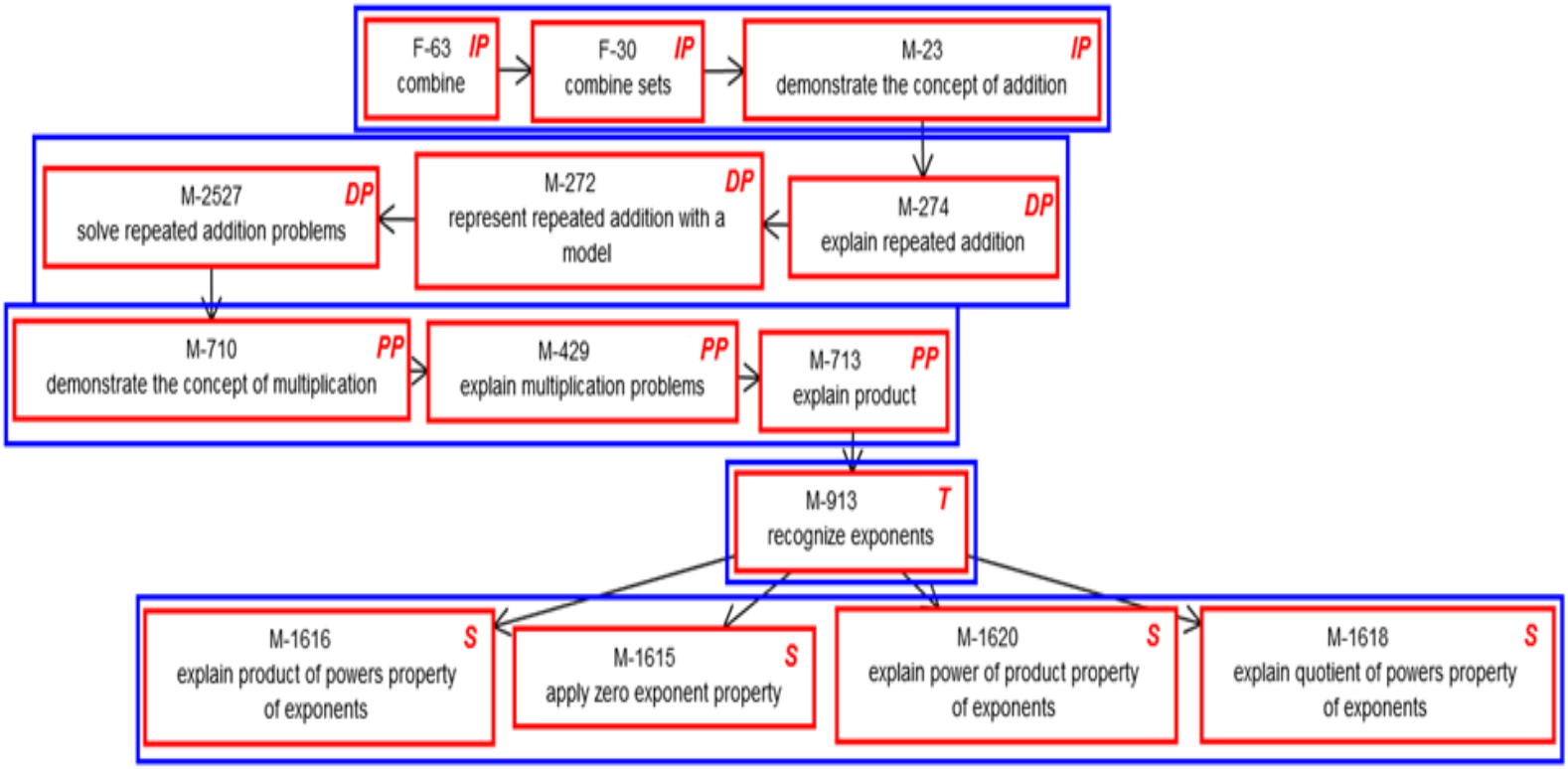
DP	Distal Precursor	S	Successor
PP	Proximal Precursor	UN	Untested
T	Target		

M.EE.8.EE.1 Identify the meaning of an exponent (limited to exponents of 2 and 3)



ESSENTIAL ELEMENT, LINKAGE LEVELS, AND MINI-MAP
MATH: GRADE 8
M.EE.8.NS.1

Grade-Level Standard	DLM Essential Element	Linkage Levels
M.8.NS.1. Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert expansion which repeats eventually into a rational number	**M.EE.8.NS.1** Subtract fractions with like denominators (halves, thirds, fourths, and tenths) with minuends less than or equal to one	**Initial Precursor:** • Recognize separateness • Recognize subset **Distal Precursor:** • Recognize parts of a given whole or unit **Proximal Precursor:** • Decompose a fraction into a sum of unit fractions with the same denominator • Explain the concept of addition and subtraction of fractions **Target:** • Subtract fractions with common denominators **Successor:** • Add or subtract fractions with denominators of 10 and 100

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

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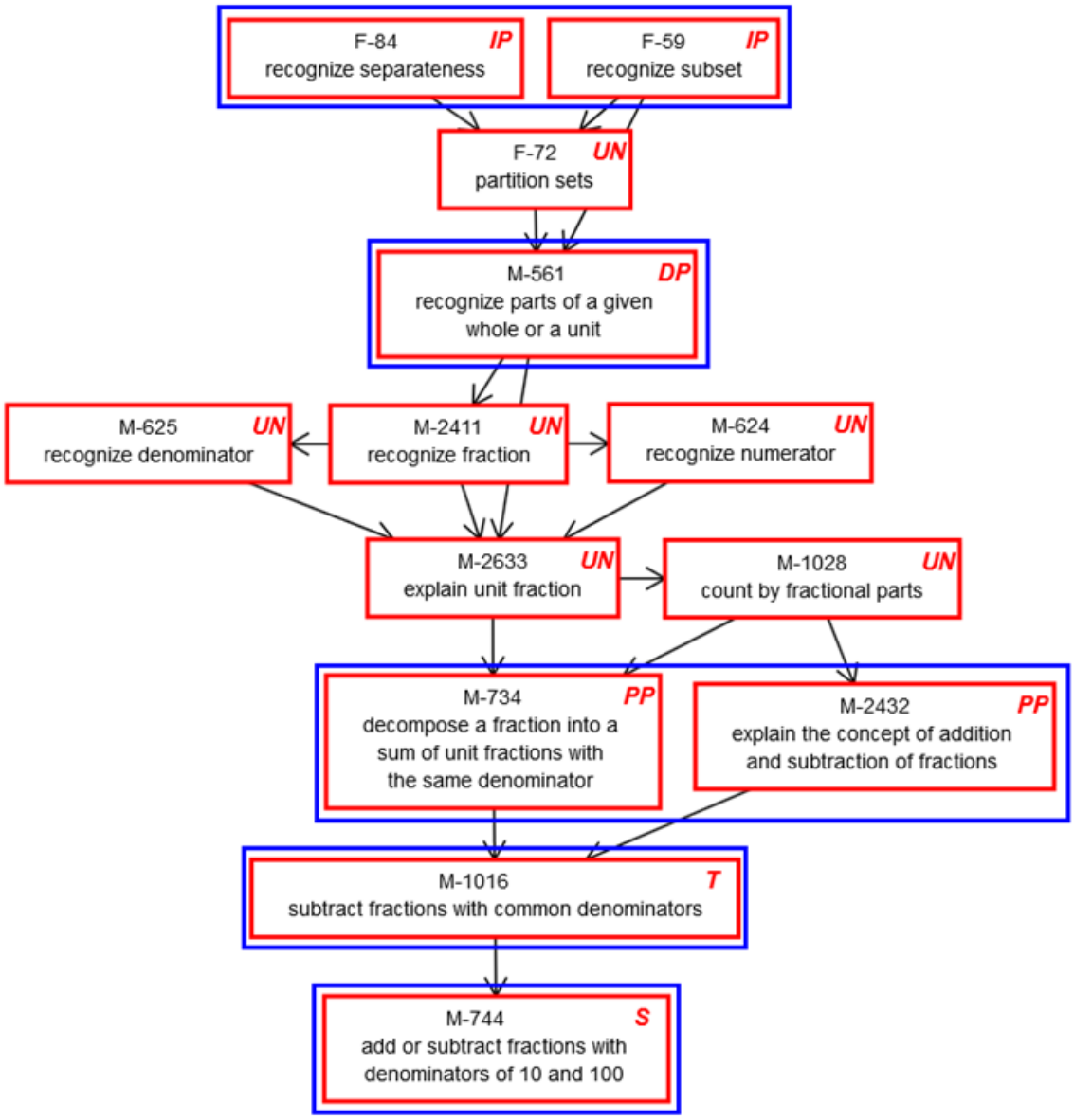
DP	Distal Precursor	S	Successor
PP	Proximal Precursor	UN	Untested
T	Target		

M.EE.8.NS.1 Subtract fractions with like denominators (halves, thirds, fourths, and tenths) with minuends less than or equal to one



ESSENTIAL ELEMENT, LINKAGE LEVELS, AND MINI-MAP
MATH: GRADE 8
M.EE.8.G.1

Grade-Level Standard	DLM Essential Element	Linkage Levels
M.8.G.1 Verify experimentally the properties of rotations, reflections, and translations	**M.EE.8.G.1** Recognize translations, rotations, and reflections of shapes	**Initial Precursor:** • Recognize attribute values **Distal Precursor:** • Recognize the defining attributes of a shape • Recognize the non-defining attributes of a shape **Proximal Precursor:** • Explain transformations **Target:** • Recognize translation • Recognize reflection • Recognize rotation **Successor:** • Explain the properties of lines and line segments in transformations • Explain the properties of angles in transformations • Explain the properties of parallel lines in transformations

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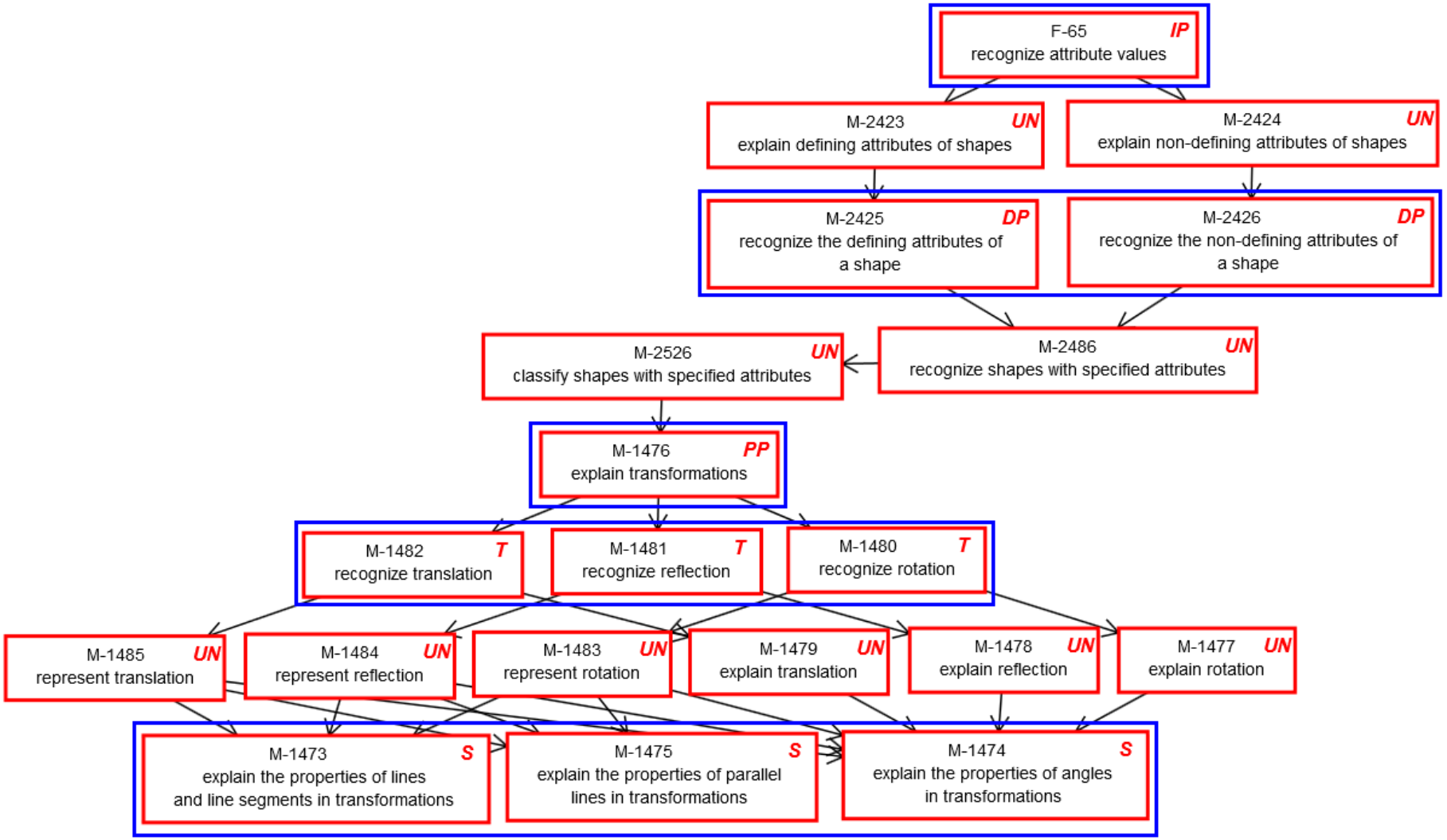
DP	Distal Precursor	S	Successor
PP	Proximal Precursor	UN	Untested
T	Target		

M.EE.8.G.1 Recognize translations, rotations, and reflections of shapes



ESSENTIAL ELEMENT, LINKAGE LEVELS, AND MINI-MAP
MATH: GRADE 8
M.EE.8.G.2

Grade-Level Standard	DLM Essential Element	Linkage Levels
M.8.G.2 Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them	**M.EE.8.G.2** Identify shapes that are congruent	**Initial Precursor:** • Recognize same • Recognize different **Distal Precursor:** • Match the same two-dimensional shape with same size and same orientation • Match the same two-dimensional shape with different sizes and same orientation **Proximal Precursor:** • Describe attributes of shapes • Analyze shapes to identify common attributes • Explain attribute relationships between shapes **Target:** • Recognize congruent figures **Successor:** • Explain the relationship between congruent figures and transformation • Use a sequence of transformations to describe congruence of 2 given figures

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

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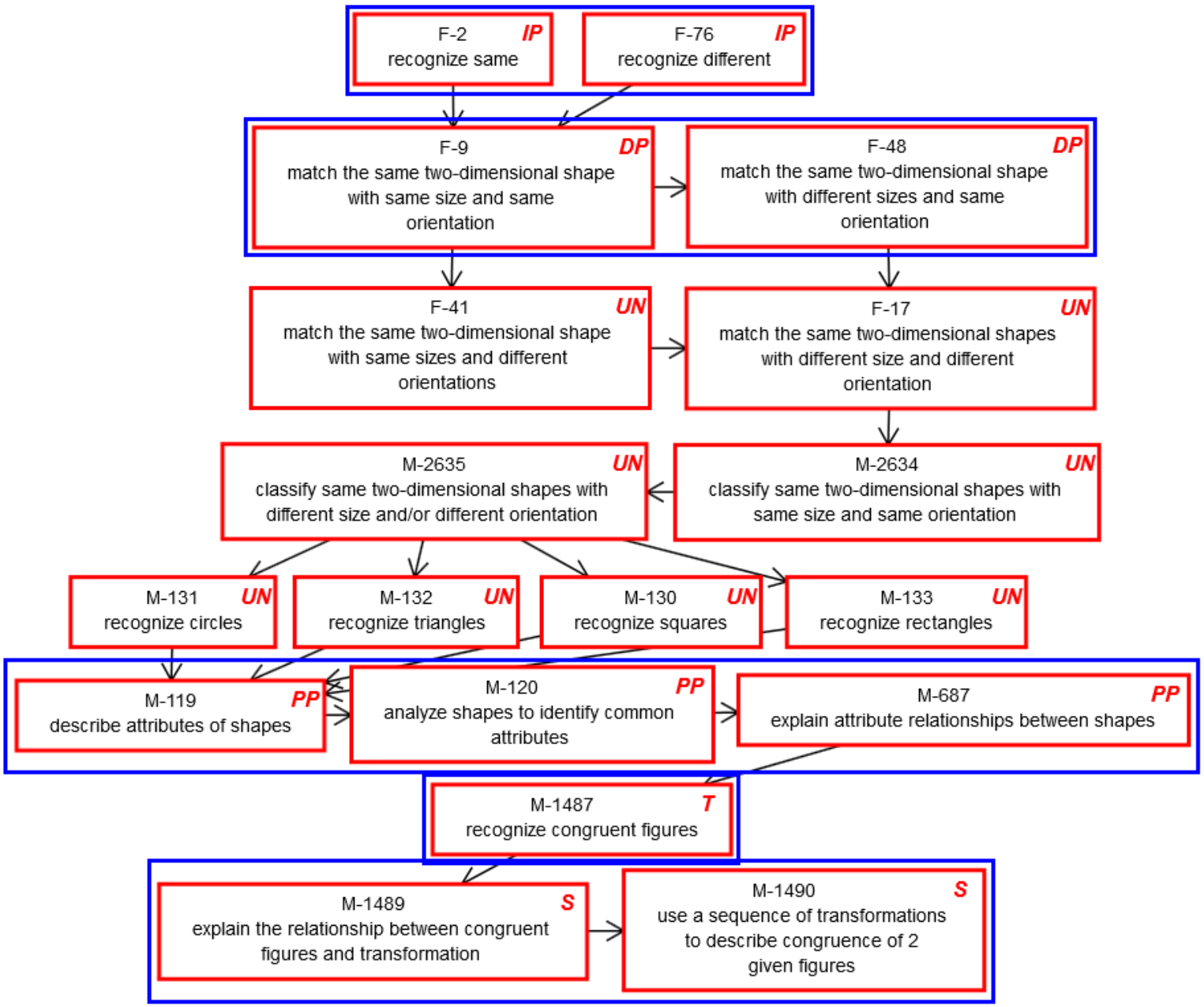
IP	Initial Precursor	SP	Supporting
DP	Distal Precursor	S	Successor
PP	Proximal Precursor	UN	Untested
T	Target		

M.EE.8.G.2 Identify shapes that are congruent



ESSENTIAL ELEMENT, LINKAGE LEVELS, AND MINI-MAP
MATH: GRADE 8
M.EE.8.G.4

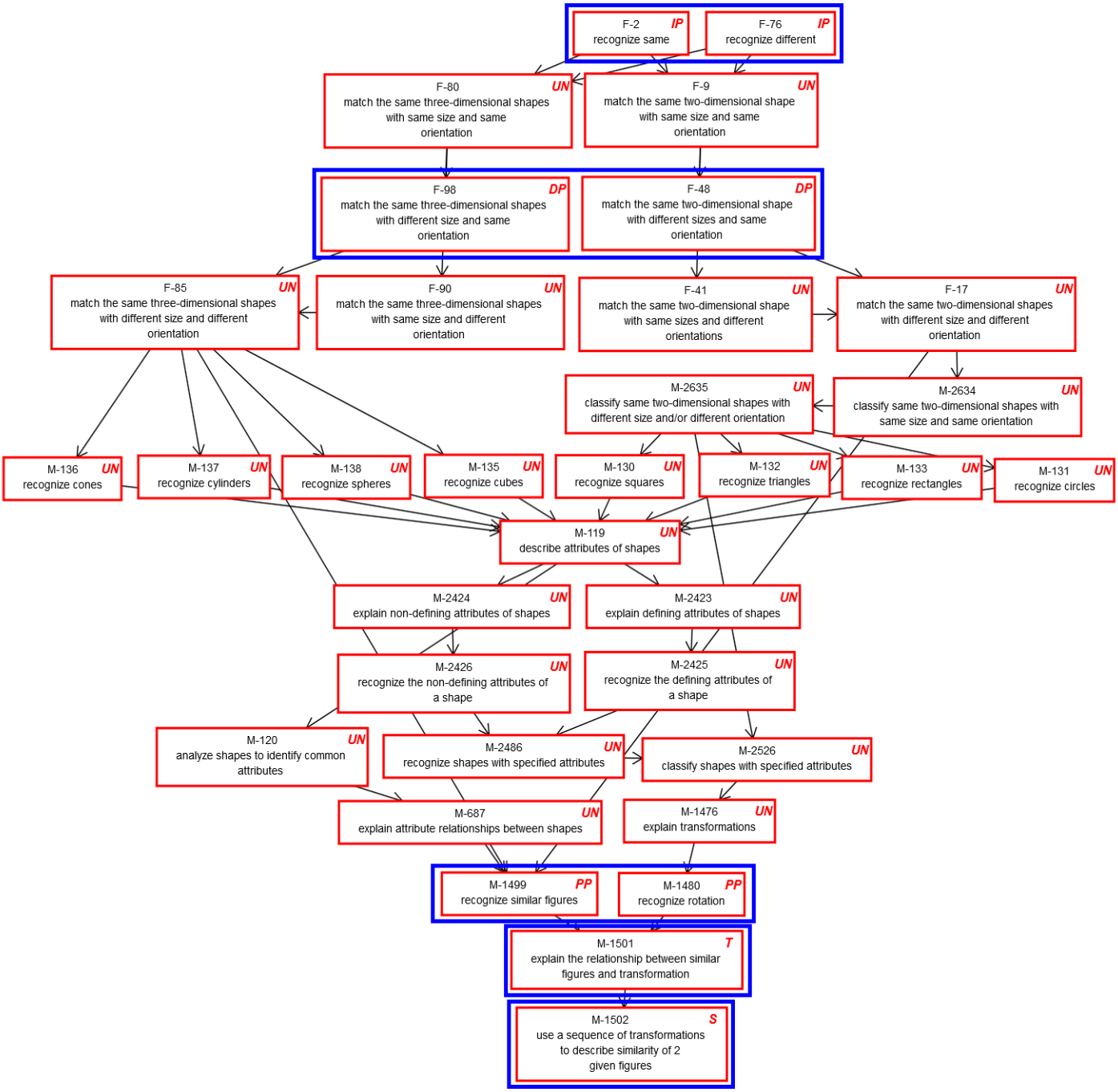
Grade-Level Standard	DLM Essential Element	Linkage Levels
M.8.G.4 Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them	**M.EE.8.G.4** Identify similar shapes with and without rotation	**Initial Precursor:** • Recognize same • Recognize different **Distal Precursor:** • Match the same three-dimensional shapes with different size and same orientation • Match the same two-dimensional shapes with different sizes and same orientation **Proximal Precursor:** • Recognize similar figures • Recognize rotation **Target:** • Explain the relationship between similar figures and transformation **Successor:** • Use a sequence of transformations to describe similarity of 2 given figures

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.8.G.4 Identify similar shapes with and without rotation



ESSENTIAL ELEMENT, LINKAGE LEVELS, AND MINI-MAP
MATH: GRADE 8
M.EE.8.G.5

Grade-Level Standards	DLM Essential Element	Linkage Levels
M.8.G.5 Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles	**M.EE.8.G.5** Compare any angle to a right angle and describe the angle as greater than, less than, or congruent to a right angle	**Initial Precursor:** • Recognize attribute values **Distal Precursor:** • Recognize angle **Proximal Precursor:** • Recognize obtuse angles • Recognize acute angles • Recognize right angles **Target:** • Compare angles to a right angle **Successor:** • Explain complementary angles

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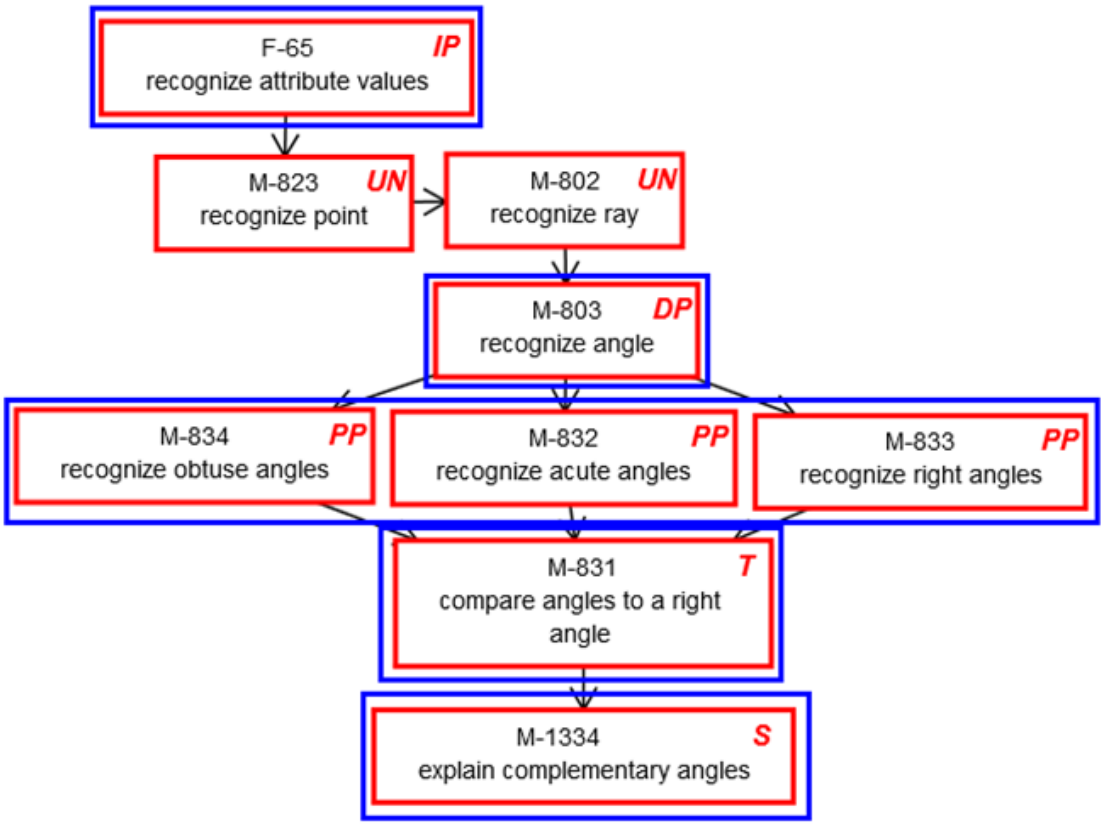
T	Target		

M.EE.8.G.5 Compare any angle to a right angle and describe the angle as greater than, less than, or congruent to a right angle



ESSENTIAL ELEMENT, LINKAGE LEVELS, AND MINI-MAP
MATH: GRADE 8
M.EE.8.G.9

Grade-Level Standard	DLM Essential Element	Linkage Levels
M.8.G.9 Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems	**M.EE.8.G.9** Use the formulas for perimeter, area, and volume to solve real-world and mathematical problems (limited to perimeter and area of rectangles and volume of rectangular prisms)	**Initial Precursor:** • Recognize attribute values **Distal Precursor:** • Recognize measureable attributes **Proximal Precursor:** • Explain volume • Explain area • Explain length • Explain perimeter **Target:** • Calculate volume of right rectangular prisms with formula • Calculate area for rectangles with formula • Calculate the perimeter of parallelograms with formula **Successor:** • Solve word problems involving volume of rectangular prisms • Solve word problems involving area of rectangles • Solve word problems involving perimeter of polygons

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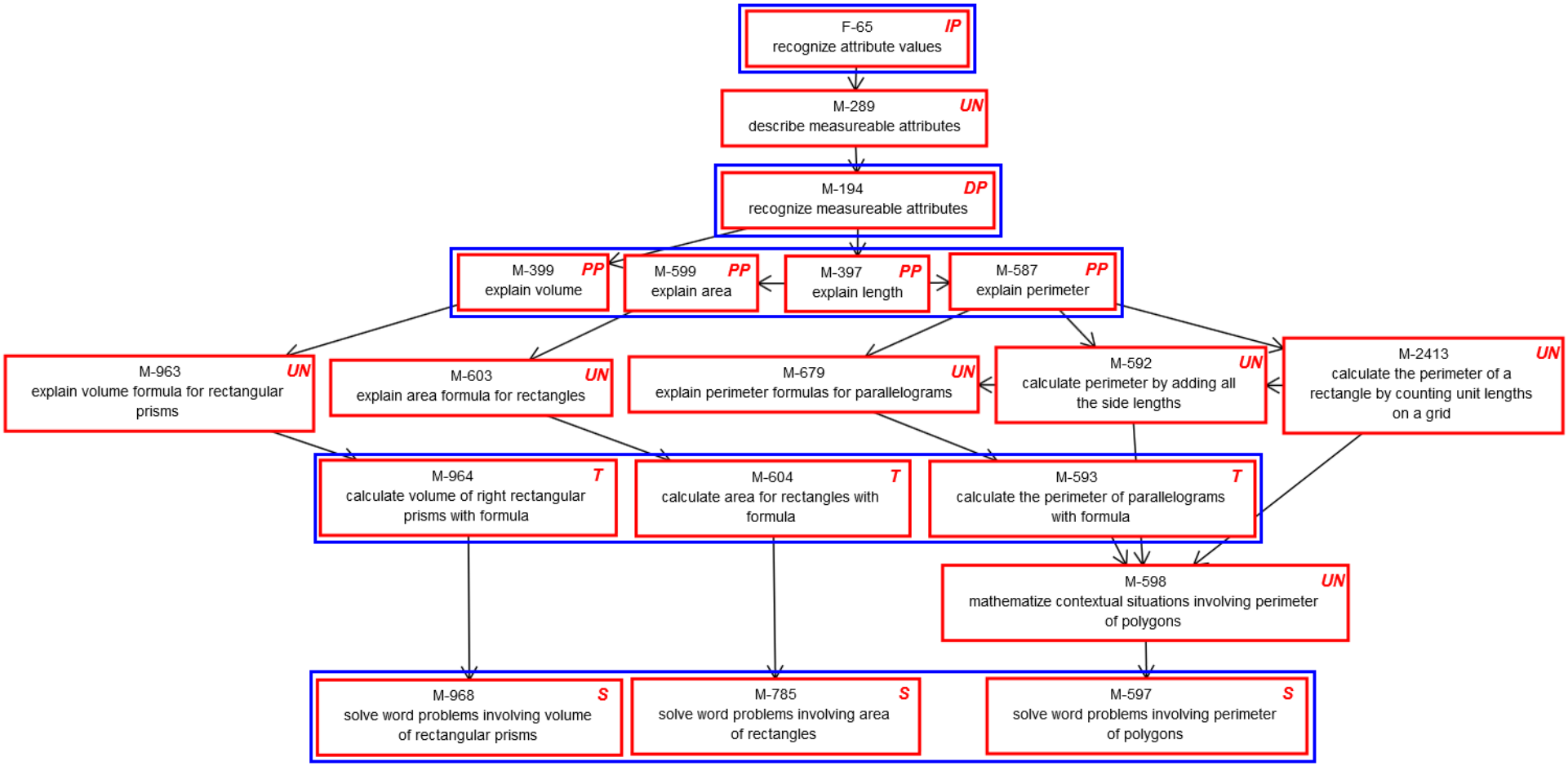
T	Target		

M.EE.8.G.9 Use the formulas for perimeter, area, and volume to solve real-world and mathematical problems (limited to perimeter and area of rectangles and volume of rectangular prisms)



ESSENTIAL ELEMENT, LINKAGE LEVELS, AND MINI-MAP
MATH: GRADE 8
M.EE.8.SP.4

Grade-Level Standard	DLM Essential Element	Linkage Levels
M.8.SP.4 Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables. For example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores?	**M.EE.8.SP.4** Construct a graph or table from given categorical data and compare data categorized in the graph or table	**Initial Precursor:** • Classify • Order objects **Distal Precursor:** • Recognize the structure of a bar graph • Recognize the structure of a picture graph • Recognize the structure of a line plot (dot plot) • Recognize the structure of tally chart **Proximal Precursor:** • Use bar graphs to read the data • Use picture graphs to read the data • Use line plots (dot plots) to read the data • Use tally charts to read the data **Target:** • Use graphs to read between the data • Use tally chart to read between the data • Represent data using bar graph • Represent data using picture graph • Represent data using line plot (dot plot) • Represent data using tally charts **Successor:** • Use graphs to read beyond the data • Use tally charts to read beyond the data

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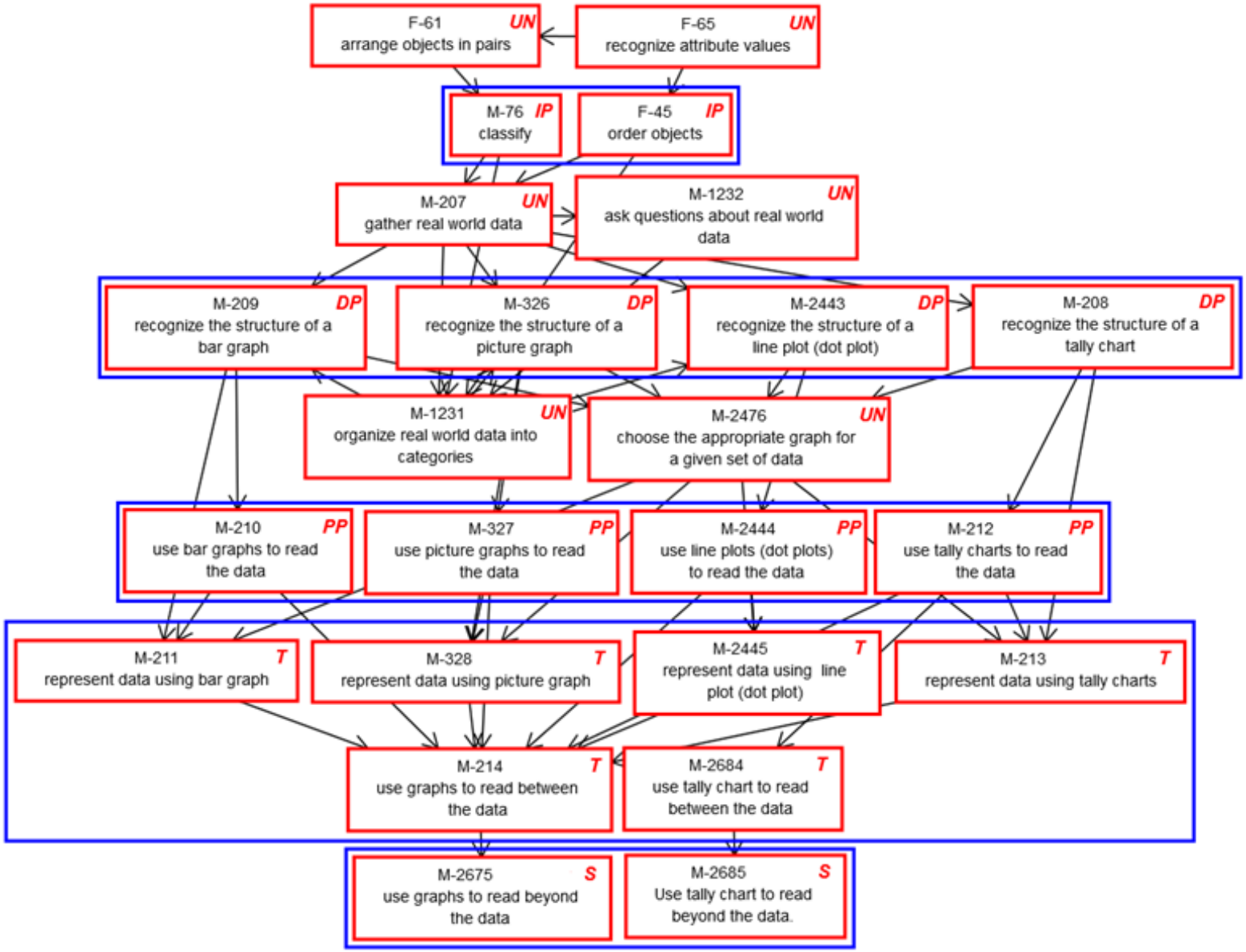
T	Target		

M.EE.8.SP.4 Construct a graph or table from given categorical data and compare data categorized in the graph or table



ESSENTIAL ELEMENT, LINKAGE LEVELS, AND MINI-MAP
MATH: GRADE 8
M.EE.8.EE.7

Grade-Level Standard	DLM Essential Element	Linkage Levels
M.8.EE.7 Solve linear equations in one variable	**M.EE.8.EE.7** Solve simple algebraic equations with one variable using addition and subtraction	**Initial Precursor:** • Combine sets • Partition sets **Distal Precursor:** • Demonstrate the concept of addition • Demonstrate the concept of subtraction **Proximal Precursor:** • Determine the unknown in an addition equation • Determine the unknown in a subtraction equation **Target:** • Solve linear equations in one variable **Successor:** • Solve linear inequalities in 1 variable

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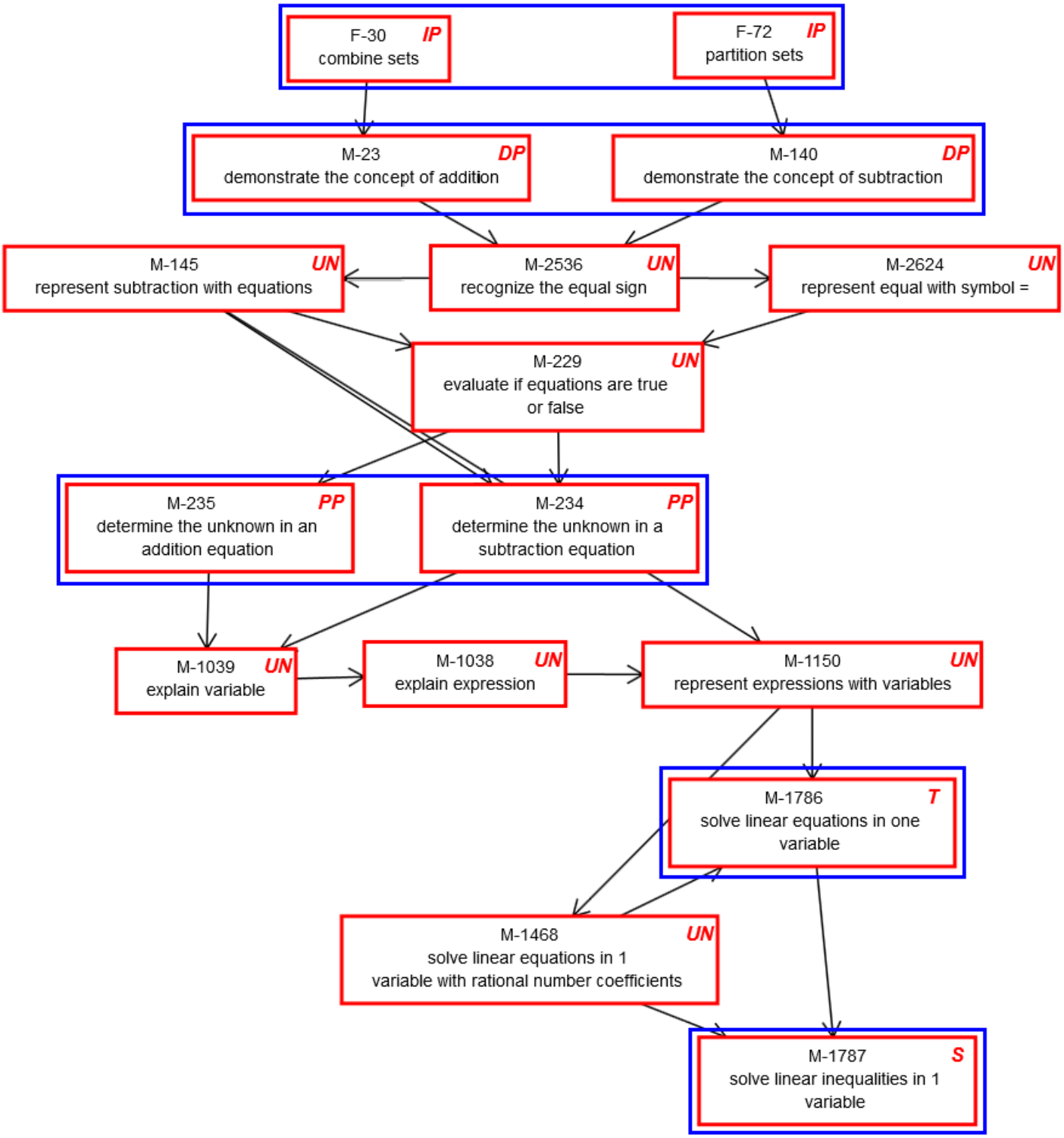
IP	Initial Precursor	SP	Supporting
DP	Distal Precursor	S	Successor
PP	Proximal Precursor	UN	Untested
T	Target		

M.EE.8.EE.7 Solve simple algebraic equations with one variable using addition and subtraction



ESSENTIAL ELEMENT, LINKAGE LEVELS, AND MINI-MAP
MATH: GRADE 8
M.EE.8.EE.2

Grade-Level Standard	DLM Essential Element	Linkage Levels
M.8.EE.2 Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that $\sqrt{2}$ is irrational	**M.EE.8.EE.2** Identify a geometric sequence of whole numbers with a whole number common ratio	**Initial Precursor:** • Classify • Contrast objects • Order objects **Distal Precursor:** • Recognize symbolic patterns • Recognize sequence **Proximal Precursor:** • Recognize shrinking patterns • Recognize growing patterns **Target:** • Recognize geometric sequences **Successor:** • Recognize the recursive rule for geometric sequences

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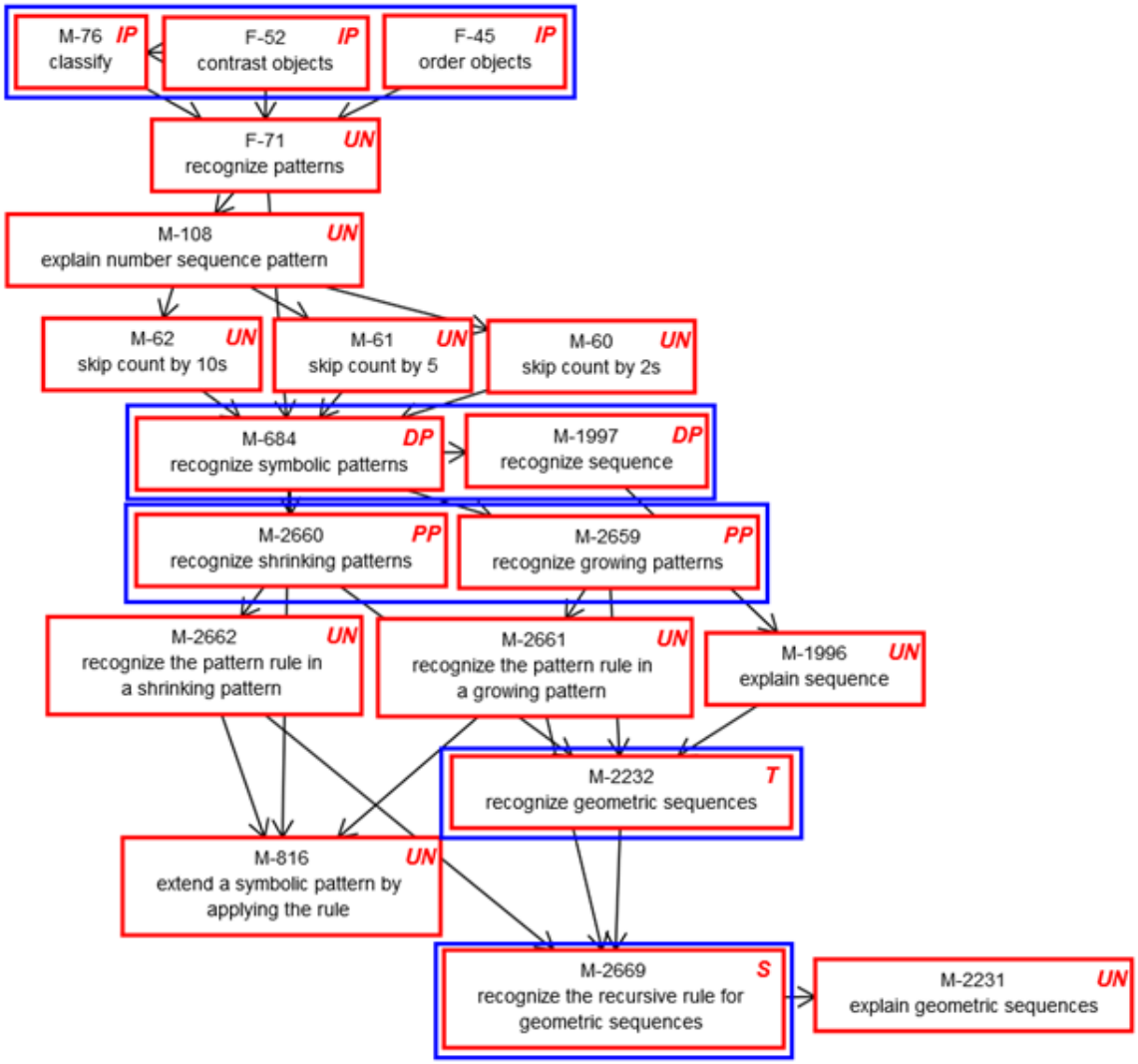
T	Target		

M.EE.8.EE.2 Identify a geometric sequence of whole numbers with a whole number common ratio



ESSENTIAL ELEMENT, LINKAGE LEVELS, AND MINI-MAP
MATH: GRADE 8
M.EE.8.F.1-3

Grade-Level Standard	DLM Essential Element	Linkage Levels
M.8.F.1 Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output**; M.8.F.2** Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions)**; M.8.F.3** Interpret the equation y = mx + b as defining a linear function, whose graph is a straight line; give examples of functions that are not linear	**M.EE.8.F.1-3** Given a function table containing at least 2 complete ordered pairs, identify a missing number that completes another ordered pair (limited to linear functions)	**Initial Precursor:** • Arrange objects in pairs • Order objects **Distal Precursor:** • Recognize growing patterns • Recognize shrinking patterns **Proximal Precursor:** • Extend a symbolic pattern by applying the rule • Explain coordinate pairs (ordered pairs) **Target:** • Generate ordered pairs from 2 distinct numerical patterns **Successor:** • Recognize covariation • Recognize correspondence (function)

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DP	Distal Precursor	S	Successor
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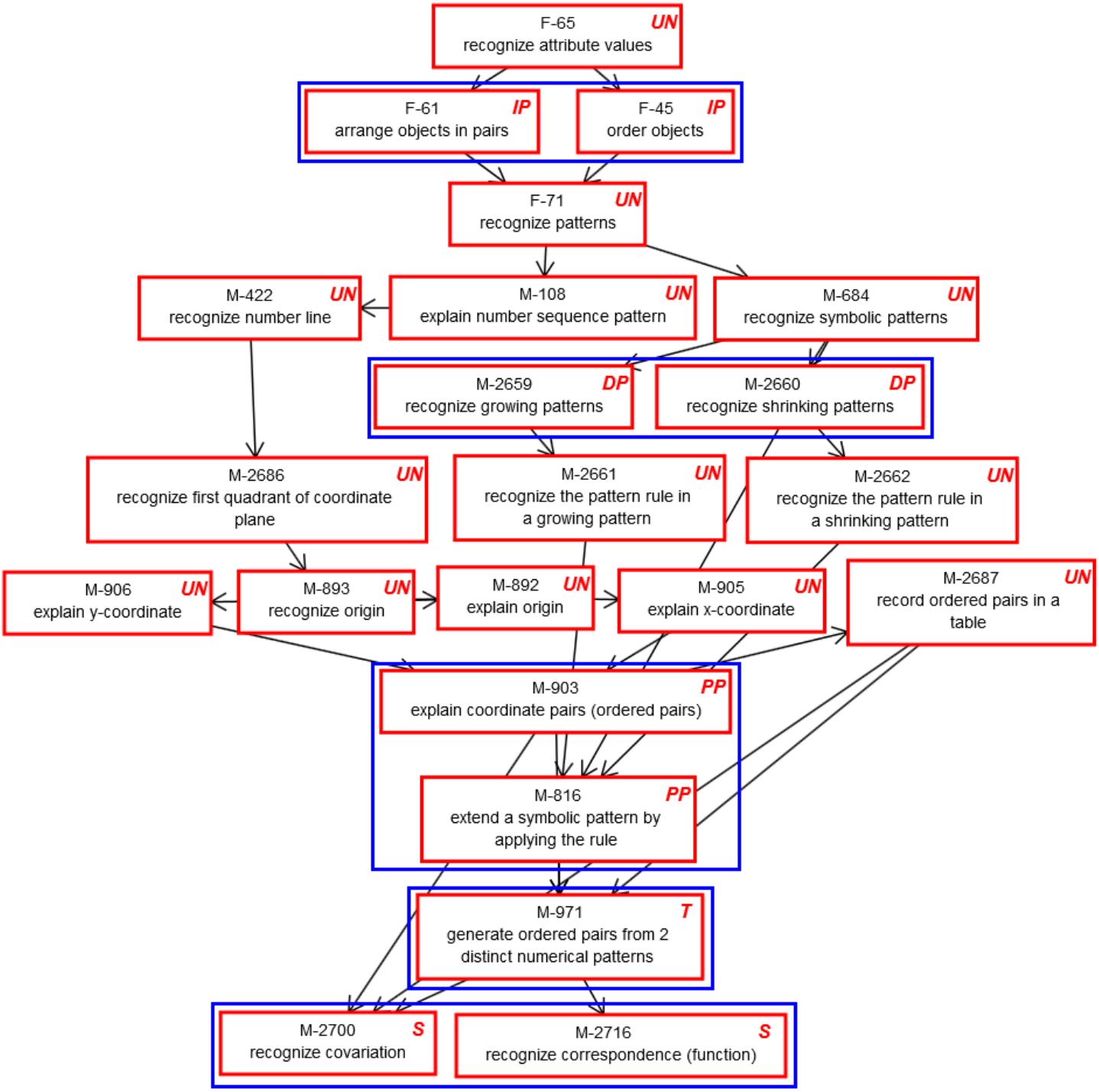
T	Target		

M.EE.8.F.1-3 Given a function table containing at least 2 complete ordered pairs, identify a missing number that completes another ordered pair (limited to linear functions)



ESSENTIAL ELEMENT, LINKAGE LEVELS, AND MINI-MAP
MATH: GRADE 8
M.EE.8.F.4

Grade-Level Standard	DLM Essential Element	Linkage Levels
M.8.F.4 Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (*x, y*) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values	**M.EE.8.F.4** Determine the values or rule of a function using a graph or a table	**Initial Precursor:** • Arrange objects in pairs • Order objects **Distal Precursor:** • Generate ordered pairs from 2 distinct numerical patterns • Extend a symbolic pattern by applying the rule **Proximal Precursor:** • Recognize direction of covariation • Recognize covariation **Target:** • Describe the function rule from the list of ordered pairs given in a table • Describe the function rule from a given graph **Successor:** • Recognize function

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T	Target		

M.EE.8.F.4 Determine the values or rule of a function using a graph or a table