ESSENTIAL ELEMENT, LINKAGE LEVELS, AND MINI-MAP
MATH: HIGH SCHOOL
M.EE.N-CN.2.A

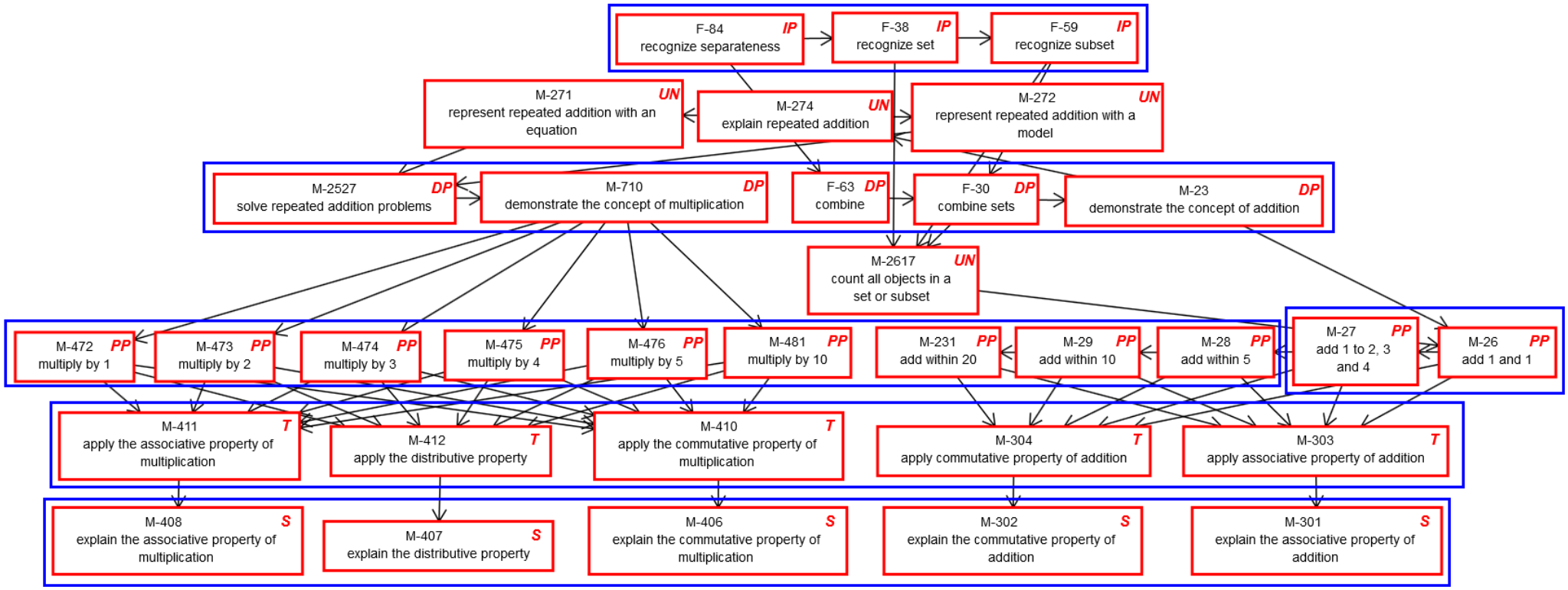
Grade-Level Standard	DLM Essential Element	Linkage Levels
M.N-CN.2.a Use the relation $i^2 = -1$ and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers	**M.EE.N-CN.2.a** Use the commutative, associative, and distribute properties to add, subtract, and multiply whole numbers	**Initial Precursor:** • Recognize separateness • Recognize set • Recognize subset **Distal Precursor:** • Combine sets • Demonstrate the concept of addition • Combine • Demonstrate the concept of multiplication • Solve repeated addition problems **Proximal Precursor:** • Add 1 and 1 • Add 1 to 2, 3, and/or 4 • Add within 5 • Add within 10 • Add within 20 • Multiply by 1, 2, 3, 4, 5, and/or 10 **Target:** • Apply associative property of addition • Apply commutative property of addition • Apply the commutative property of multiplication • Apply the associative property of multiplication • Apply the distributive property **Successor:** • Explain the associative property of addition • Explain the commutative property of addition • Explain the commutative property of multiplication • Explain the distributive property • Explain the associative property of multiplication

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.N-CN.2.a Use the commutative, associative, and distribute properties to add, subtract, and multiply whole numbers



ESSENTIAL ELEMENT, LINKAGE LEVELS, AND MINI-MAP
MATH: HIGH SCHOOL
M.EE.N-CN.2.B

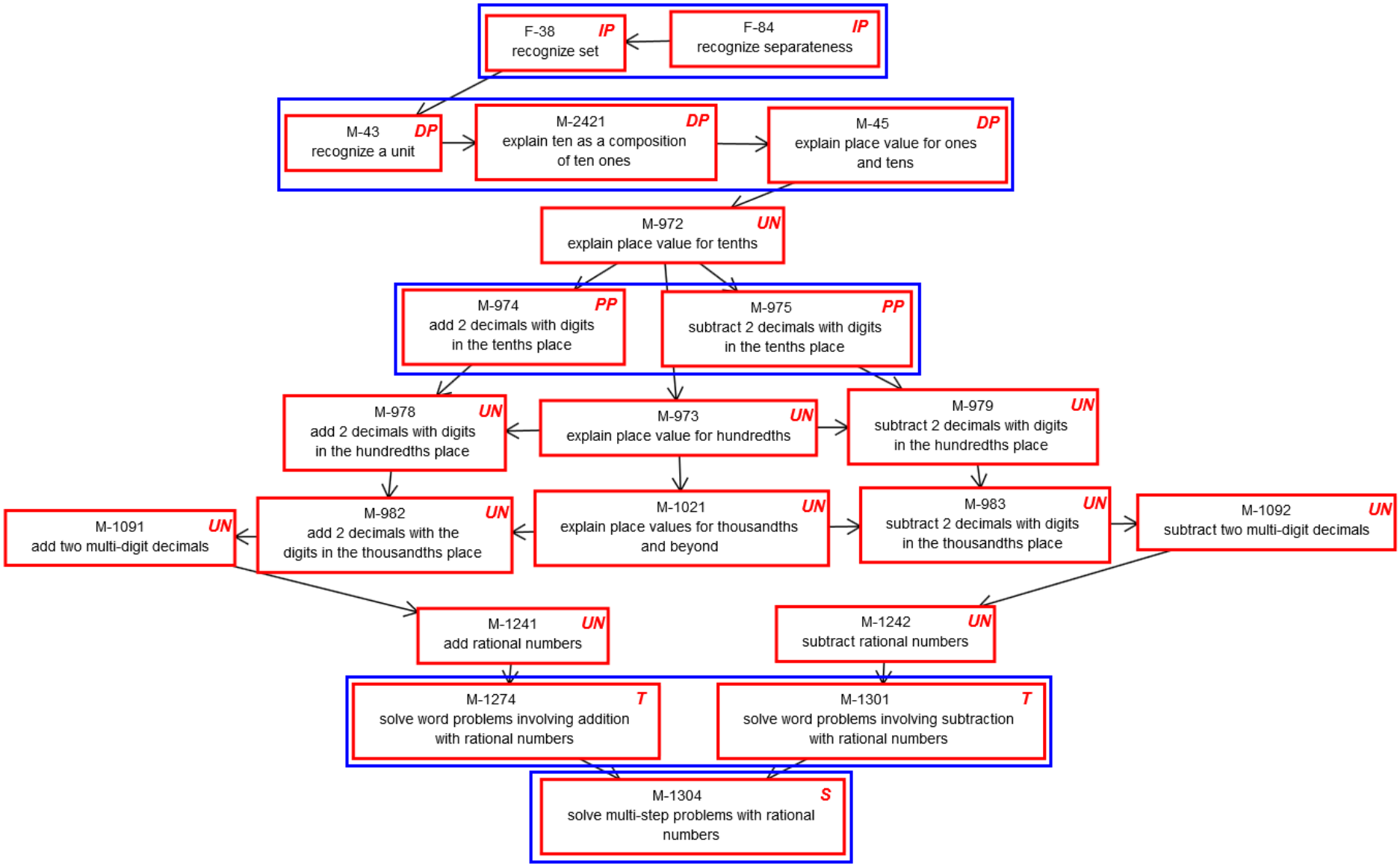
Grade-Level Standard	DLM Essential Element	Linkage Levels
M.N-CN.2 Use the relation $i^2 = -1$ and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers	**M.EE.N-CN.2.b** Solve real-world problems involving addition and subtraction of decimals and whole numbers, using models when needed	**Initial Precursor:** • Recognize set • Recognize separateness **Distal Precursor:** • Recognize a unit • Explain ten as a composition of ten ones • Explain place value for ones and tens **Proximal Precursor:** • Add 2 decimals with digits in the tenths place • Subtract 2 decimals with digits in the tenths place **Target:** • Solve word problems involving addition with rational numbers • Solve word problems involving subtraction with rational numbers **Successor:** • Solve multi-step problems with rational numbers

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.N-CN.2.b Solve real-world problems involving addition and subtraction of decimals, using models when needed



ESSENTIAL ELEMENT, LINKAGE LEVELS, AND MINI-MAP
MATH: HIGH SCHOOL
M.EE.N-CN.2.C

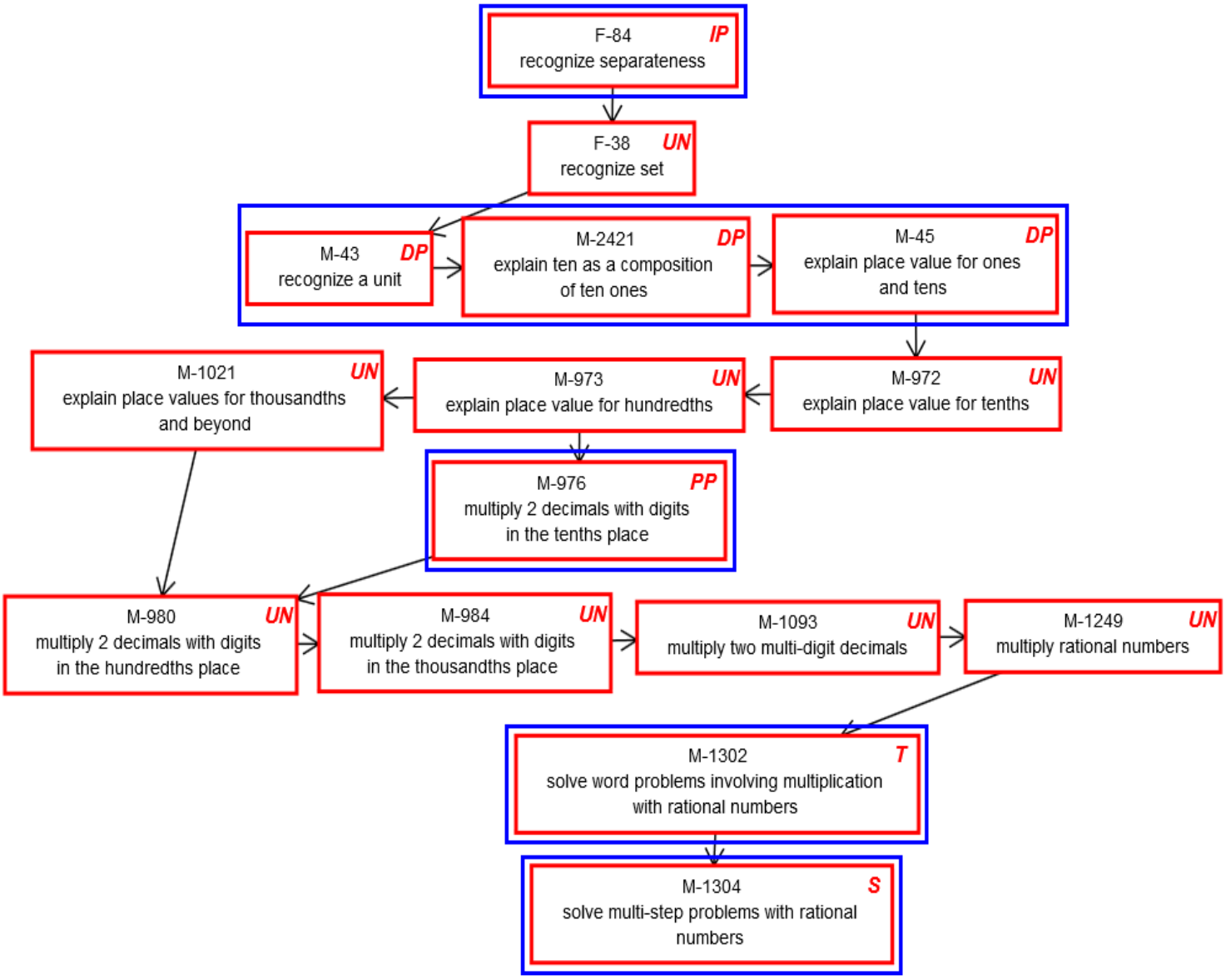
Grade-Level Standard	DLM Essential Element	Linkage Levels
M.N-CN.2 Use the relation $i^2 = -1$ and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers	**M.EE.N-CN.2.c** Solve real-world problems involving multiplication of decimals and whole numbers, using models when needed	**Initial Precursor:** • Recognize separateness **Distal Precursor:** • Recognize a unit • Explain place value for ones and tens • Explain ten as a composition of ten ones **Proximal Precursor:** • Multiply 2 decimals with digits in the tenths place **Target:** • Solve word problems involving multiplication with rational numbers **Successor:** • Solve multi-step problems with rational numbers

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.N-CN.2.c Solve real-world problems involving multiplication of decimals and whole numbers, using models when needed



ESSENTIAL ELEMENT, LINKAGE LEVELS, AND MINI-MAP
MATH: HIGH SCHOOL
M.EE.N-RN.1

Grade-Level Standard	DLM Essential Element	Linkage Levels
M.N-RN.1 Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents. For example, we define $5^{1/3}$ to be the cube root of 5 because we want $(5^{1/3})^3 = 5^{(1/3)3}$ to hold, so $(5^{1/3})^3$ must equal 5	**M.EE.N-RN.1** Determine the value of quantity that is squared or cubed	**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:** • Explain product • Explain multiplication problems • Demonstrate the concept of multiplication **Target:** • Evaluate expressions with whole number exponents **Successor:** • Explain perfect cubes • Explain perfect squares

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

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

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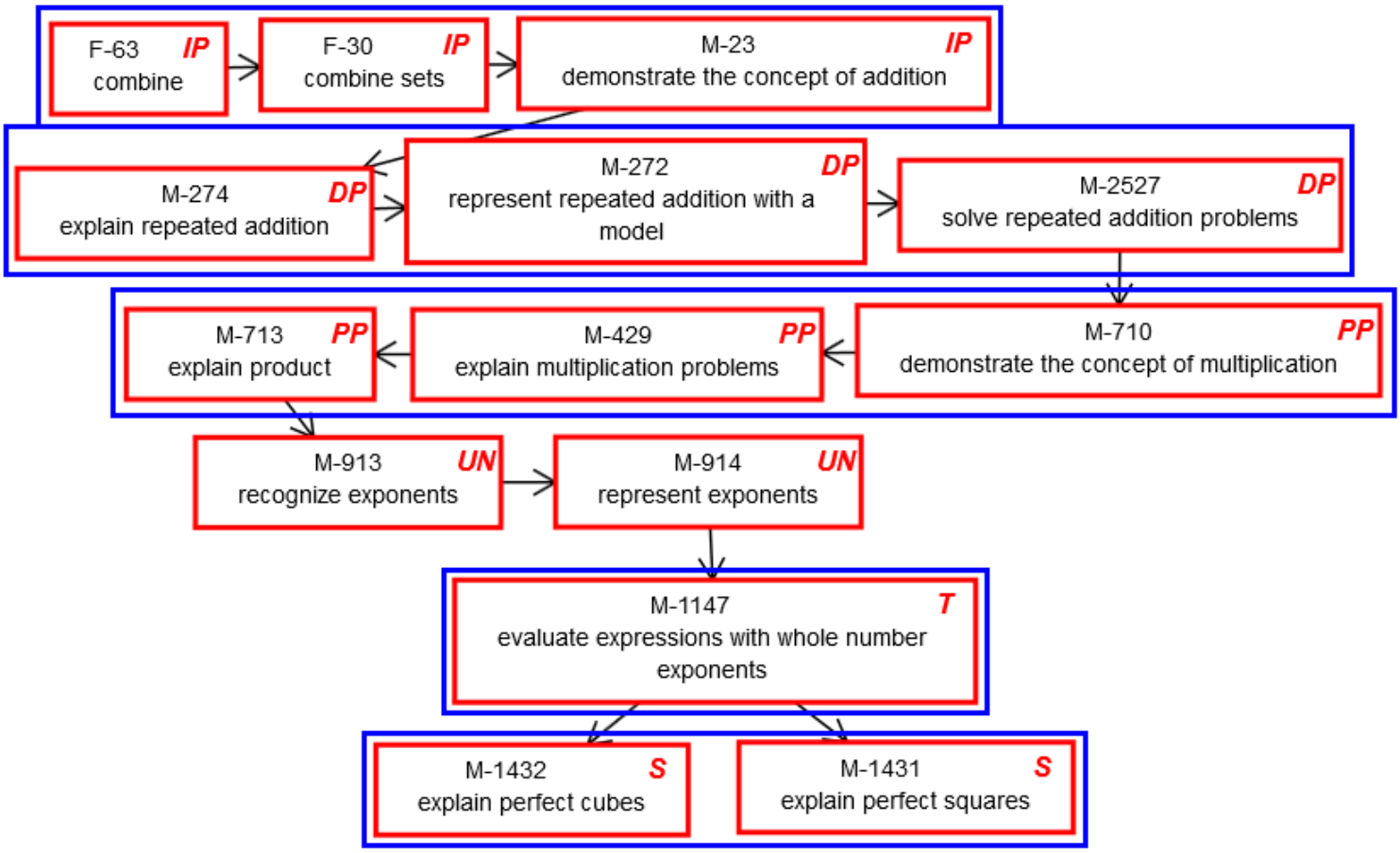
DP	Distal Precursor	S	Successor
PP	Proximal Precursor	UN	Untested
T	Target		

M.EE.N-RN.1 Determine the value of quantity that is squared or cubed



ESSENTIAL ELEMENT, LINKAGE LEVELS, AND MINI-MAP
MATH: HIGH SCHOOL
M.EE.S-CP.1-5

Grade-Level Standard	DLM Essential Element	Linkage Levels
M.S-CP.1 Describe events as subsets of a sample space (the set of outcomes) using characteristics (or categories) of the outcomes, or as unions, intersections, or complements of other events ("or," "and," "not")**; M.S-CP.2** Understand that two events A and B are independent if the probability of A and B occurring together is the product of their probabilities, and use this characterization to determine if they are independent**; M.S-CP.3** Understand the conditional probability of A given B as P(A and B)/P(B), and interpret independence of A and B as saying that the conditional probability of A given B is the same as the probability of A, and the conditional probability of B given A is the same as the probability of B**; M.S-CP.4** Construct and interpret two-way frequency tables of data when two categories are associated with each object being classified. Use the two-way table as a sample space to decide if events are independent and to approximate conditional probabilities**; M.S-CP.5** Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations	**M.EE.S-CP.1-5** Identify when events are independent or dependent	**Initial Precursor:** • Compare objects for sameness • Arrange objects in pairs • Contrast objects **Distal Precursor:** • Classify **Proximal Precursor:** • Recognize possible outcomes • Explain simple events • Recognize impossible outcomes **Target:** • Determine if 2 events are independent or dependent **Successor:** • Explain compound events

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

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

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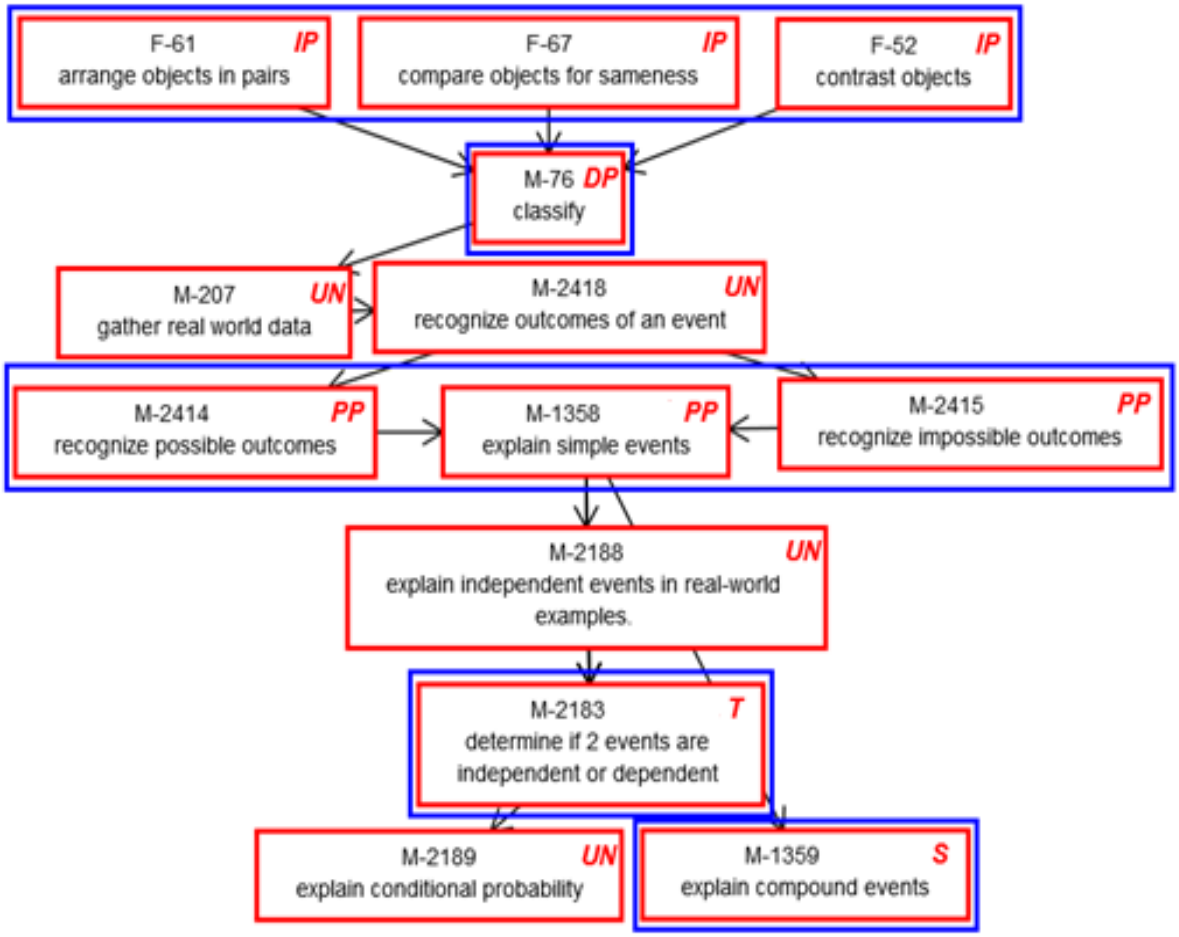
DP	Distal Precursor	S	Successor
PP	Proximal Precursor	UN	Untested
T	Target		

M.EE.S-CP.1-5 Identify when events are independent or dependent



ESSENTIAL ELEMENT, LINKAGE LEVELS, AND MINI-MAP
MATH: HIGH SCHOOL
M.EE.S-IC.1-2

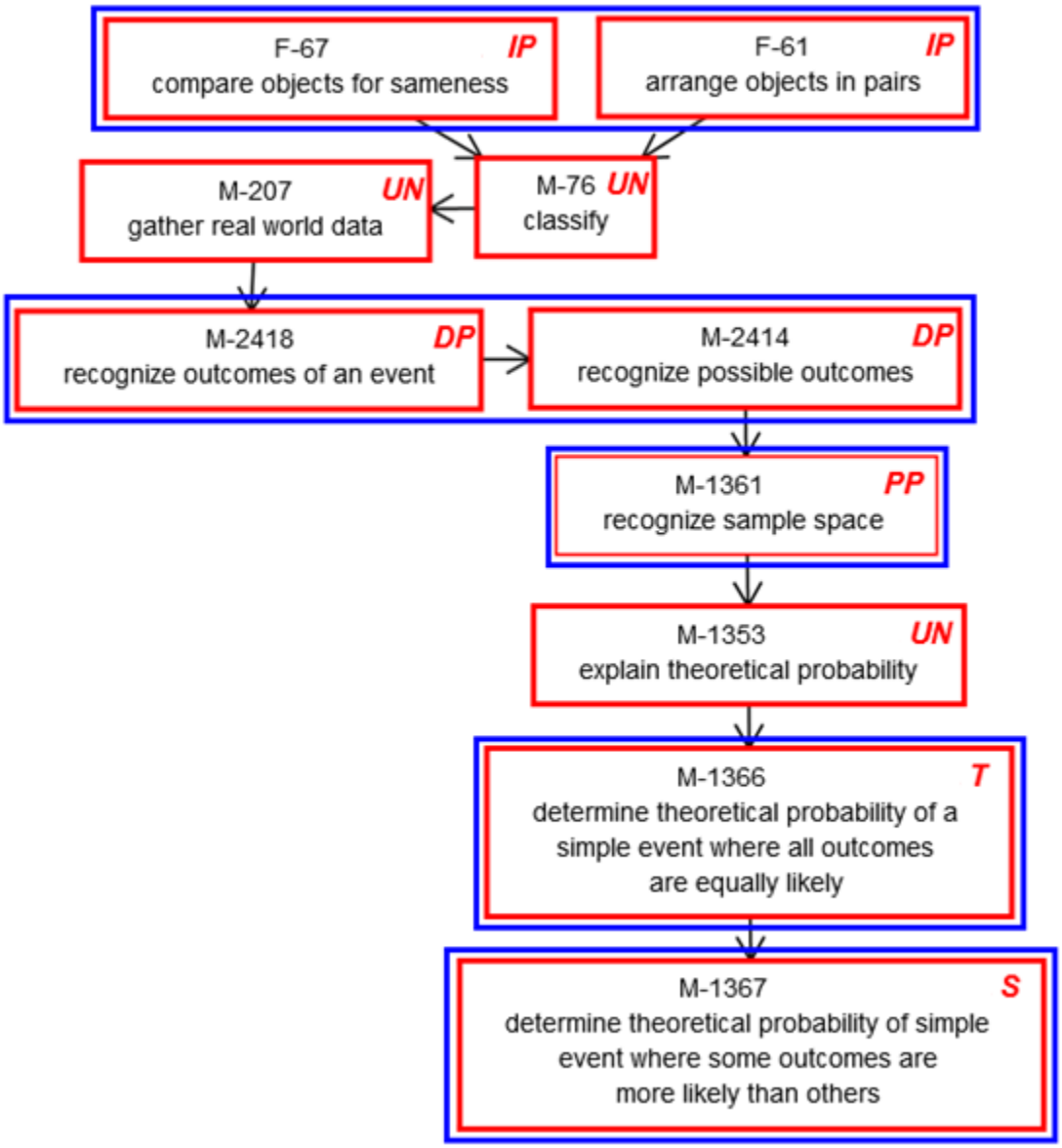
Grade-Level Standard	DLM Essential Element	Linkage Levels
M.S-IC.1 Understand statistics as a process for making inferences about population parameters based on a random sample from that population**;** **M.S-IC.2** Decide if a specified model is consistent with results from a given data generating process, e.g., using simulation. For example, a model says a spinning coin falls heads up with probability 0.5. Would a result of 5 tails in a row cause you to question the model?	**M.EE.S-IC.1-2** Determine the likelihood of an event occurring when the outcomes are equally likely to occur	**Initial Precursor:** • Compare objects for sameness • Arrange objects in pairs **Distal Precursor:** • Recognize outcomes of an event • Recognize possible outcomes **Proximal Precursor:** • Recognize sample space **Target:** • Determine theoretical probability of a simple event where all outcomes are equally likely **Successor:** • Determine theoretical probability of simple event where some outcomes are more likely than others

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.S-IC.1-2 Determine the likelihood of an event occurring when the outcomes are equally likely to occur



ESSENTIAL ELEMENT, LINKAGE LEVELS, AND MINI-MAP
MATH: HIGH SCHOOL
M.EE.G.CO.1

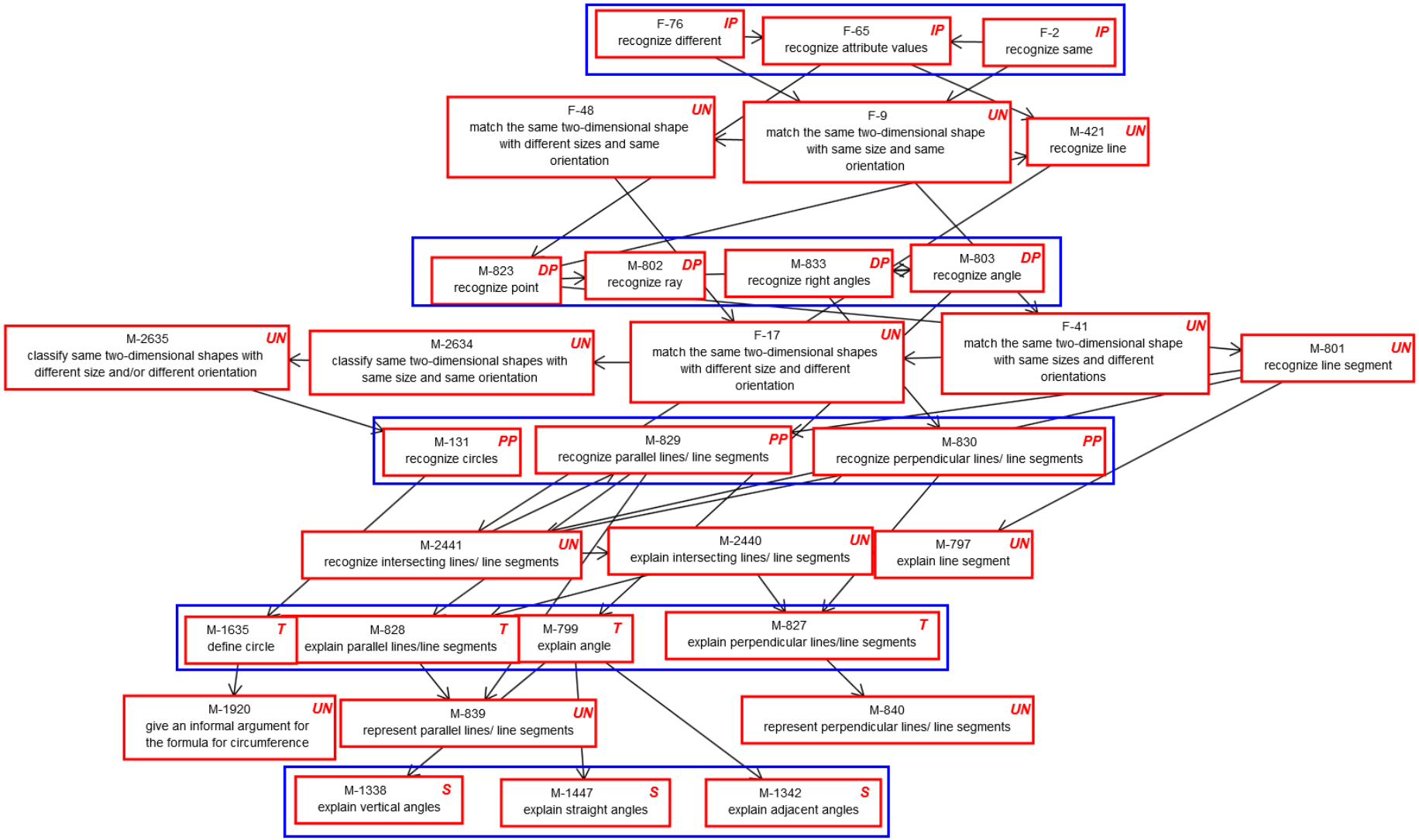
Grade-Level Standard	DLM Essential Element	Linkage Levels
M.G.CO.1 Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc	**M.EE.G.CO.1** Know the attributes of perpendicular lines, parallel lines, and line segments, angles, and circles	**Initial Precursor:** • Recognize same • Recognize different • Recognize attribute values **Distal Precursor:** • Recognize point • Recognize ray • Recognize angle • Recognize right angles **Proximal Precursor:** • Recognize circles • Recognize parallel lines/line segments • Recognize perpendicular lines/line segments **Target:** • Define circle • Explain angle • Explain perpendicular lines/line segments • Explain parallel lines/line segments **Successor:** • Explain straight angles • Explain adjacent angles • Explain vertical angles

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.G.CO.1 Know the attributes of perpendicular lines, parallel lines, and line segments, angles, and circles



ESSENTIAL ELEMENT, LINKAGE LEVELS, AND MINI-MAP
MATH: HIGH SCHOOL
M.EE.G-CO.4-5

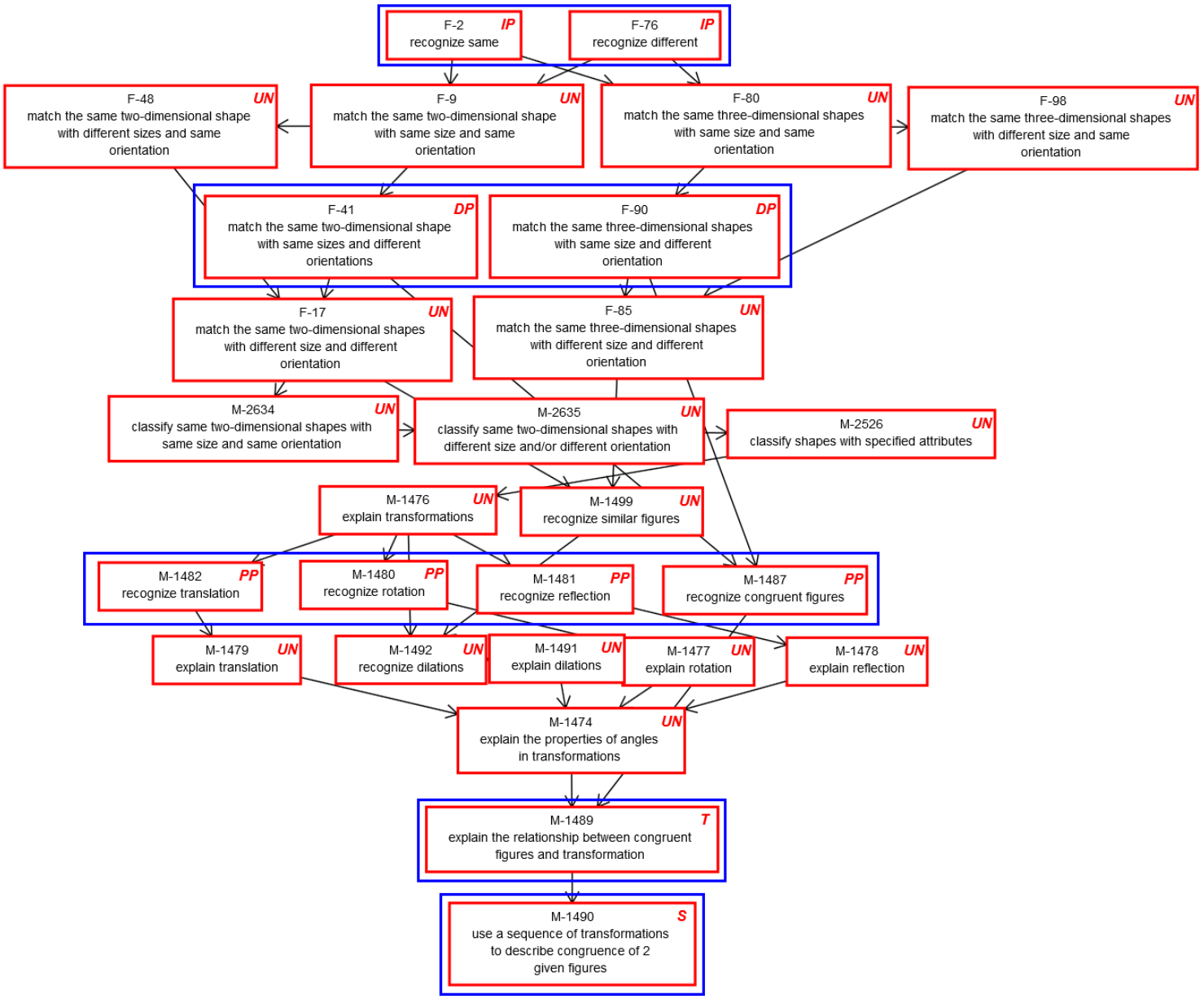
Grade-Level Standard	DLM Essential Element	Linkage Levels
M.G-CO-4 Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments**;** **M.G-CO.5** Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using, e.g., graph paper, tracing paper, or geometry software. Specify a sequence of transformations that will carry a given figure onto another	**M.EE.G-CO.4-5** Given a geometric figure and a rotation, reflection, or translation of that figure, identify the components of the two figures that are congruent	**Initial Precursor:** • Recognize same • Recognize different **Distal Precursor:** • Match the same three-dimensional shapes with same size and different orientation • Match the same two-dimensional shape with same sizes and different orientations **Proximal Precursor:** • Recognize translation • Recognize rotation • Recognize reflection • Recognize congruent figures **Target:** • Explain the relationship between congruent figures and transformation **Successor:** • 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.

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.G-CO.4-5 Given a geometric figure and a rotation, reflection, or translation of that figure, identify the components of the two figures that are congruent



ESSENTIAL ELEMENT, LINKAGE LEVELS, AND MINI-MAP
MATH: HIGH SCHOOL
M.EE.G-CO.6-8

Grade-Level Standard	DLM Essential Element	Linkage Levels
M.G-CO.6 Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent**; M.G-CO.7** Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent**; M.G-CO.8** Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions	**M.EE.G-CO.6-8** Identify corresponding congruent and similar parts of shapes	**Initial Precursor:** • Recognize same • Recognize different **Distal Precursor:** • Match the same two-dimensional shape with different sizes and same orientation • Match the same two-dimensional shape with same size and same orientation • Match the same three-dimensional shape with different size and same orientation • Match the same three-dimensional shape with same size and same orientation **Proximal Precursor:** • Recognize congruent figures • Recognize similar figures **Target:** • Explain congruent figures • Explain similar figures **Successor:** • Explain the relationship between congruent figures and transformation • Explain the relationship between similar figures and transformation

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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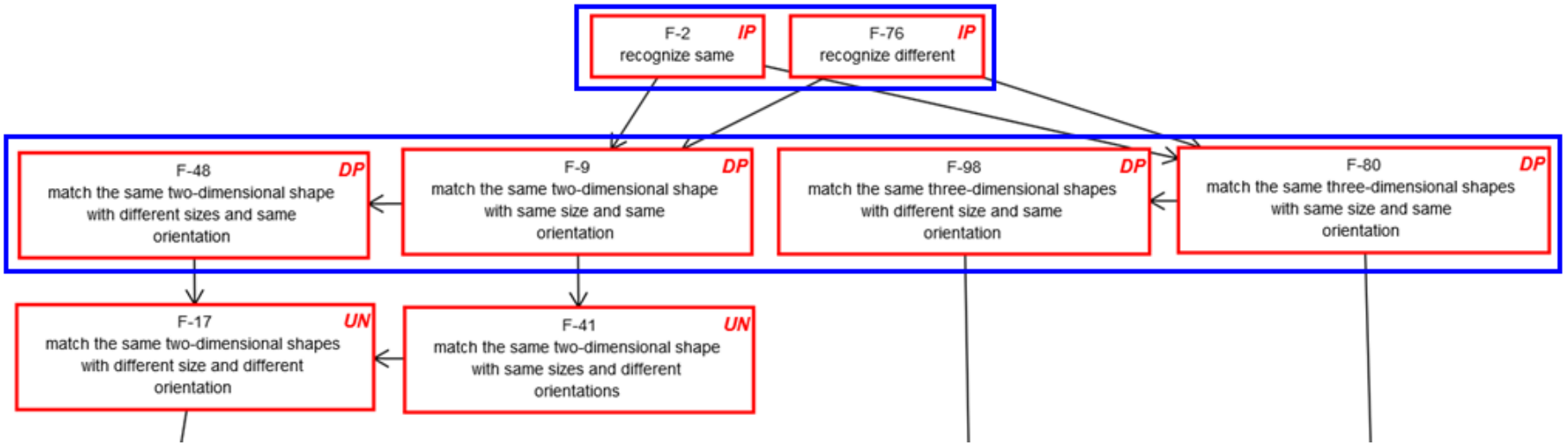
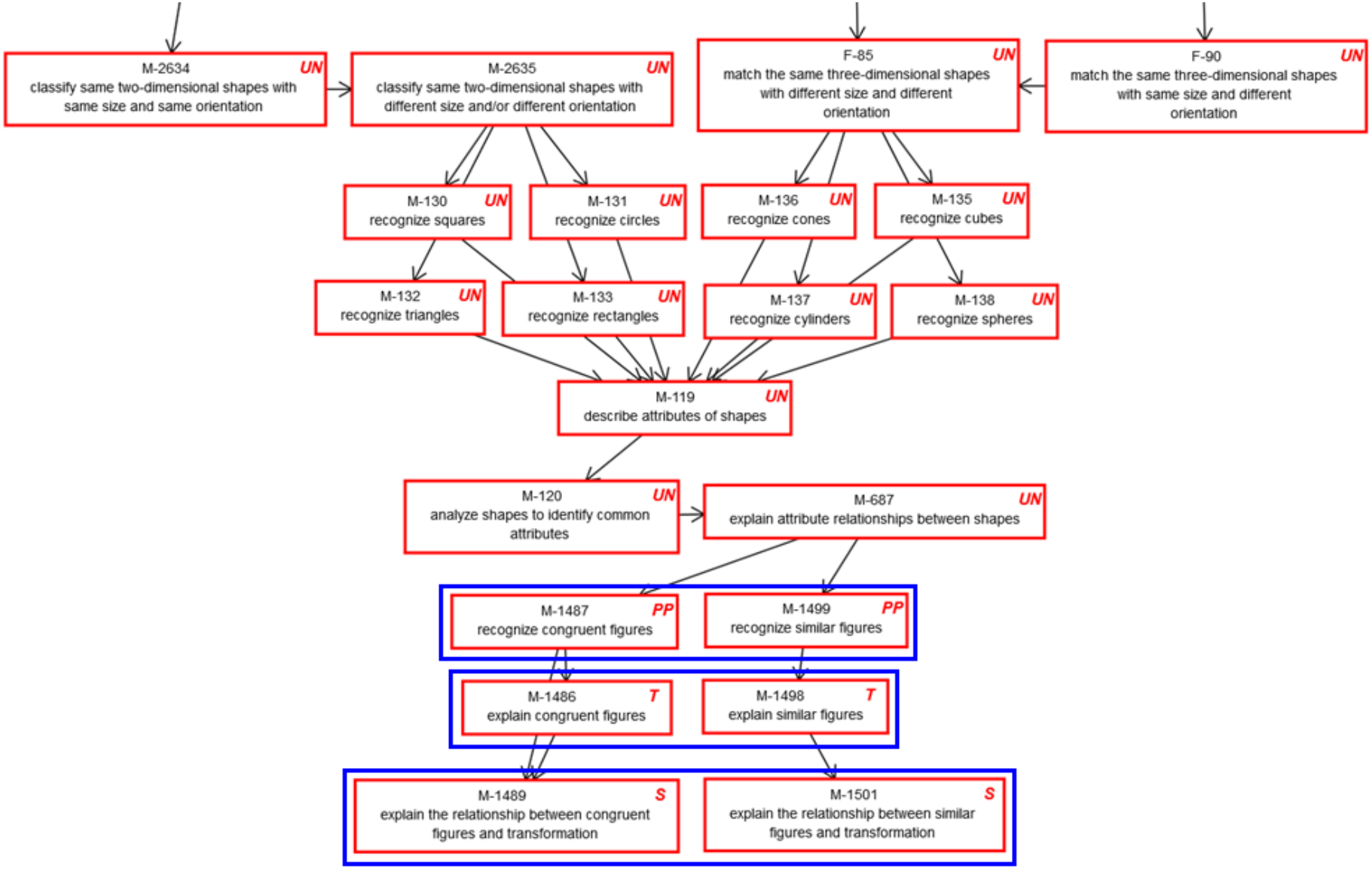
T	Target		

M.EE.G-CO.6-8 Identify corresponding congruent and similar parts of shapes





ESSENTIAL ELEMENT, LINKAGE LEVELS, AND MINI-MAP
MATH: HIGH SCHOOL
M.EE.G-MG.1-3

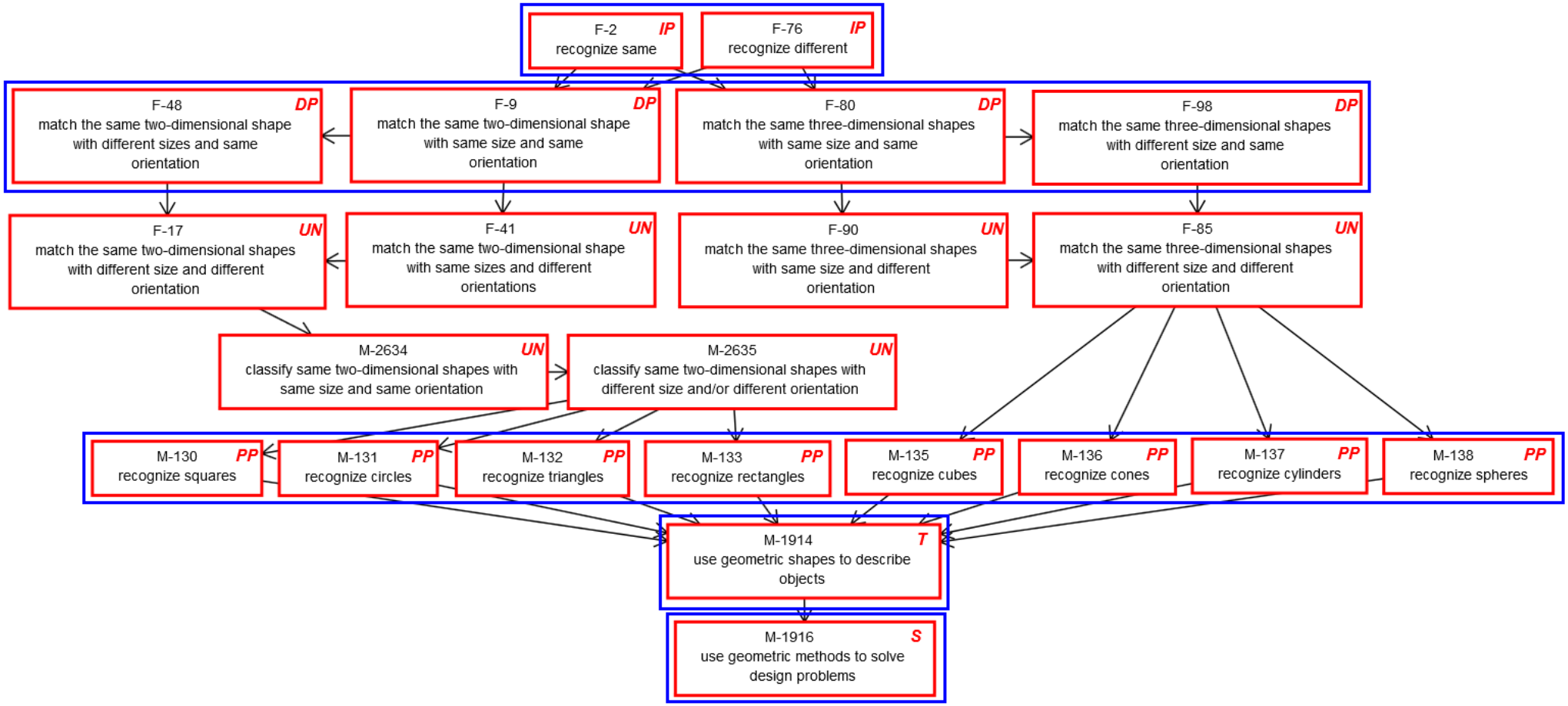
Grade-Level Standard	DLM Essential Element	Linkage Levels
M.G-MG.1 Use geometric shapes, their measures, and their properties to describe objects**;** **M.G-MG.2** Apply concepts of density based on area and volume in modeling situations **M.G-MG.3** Apply geometric methods to solve design problems	**M.EE.G-MG.1-3** Use properties of geometric shapes to describe real-life objects	**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 size and same orientation • Match the same three-dimensional shapes with same size and same orientation • Match the same three-dimensional shapes with different size and same orientation **Proximal Precursor:** • Recognize squares, circles, triangles, rectangles, cubes, cones, cylinders, and/or spheres **Target:** • Use geometric shapes to describe objects **Successor:** • Use geometric methods to solve design problems

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.G-MG.1-3 Use properties of geometric shapes to describe real-life objects



ESSENTIAL ELEMENT, LINKAGE LEVELS, AND MINI-MAP
MATH: HIGH SCHOOL
M.EE.G-GPE.7

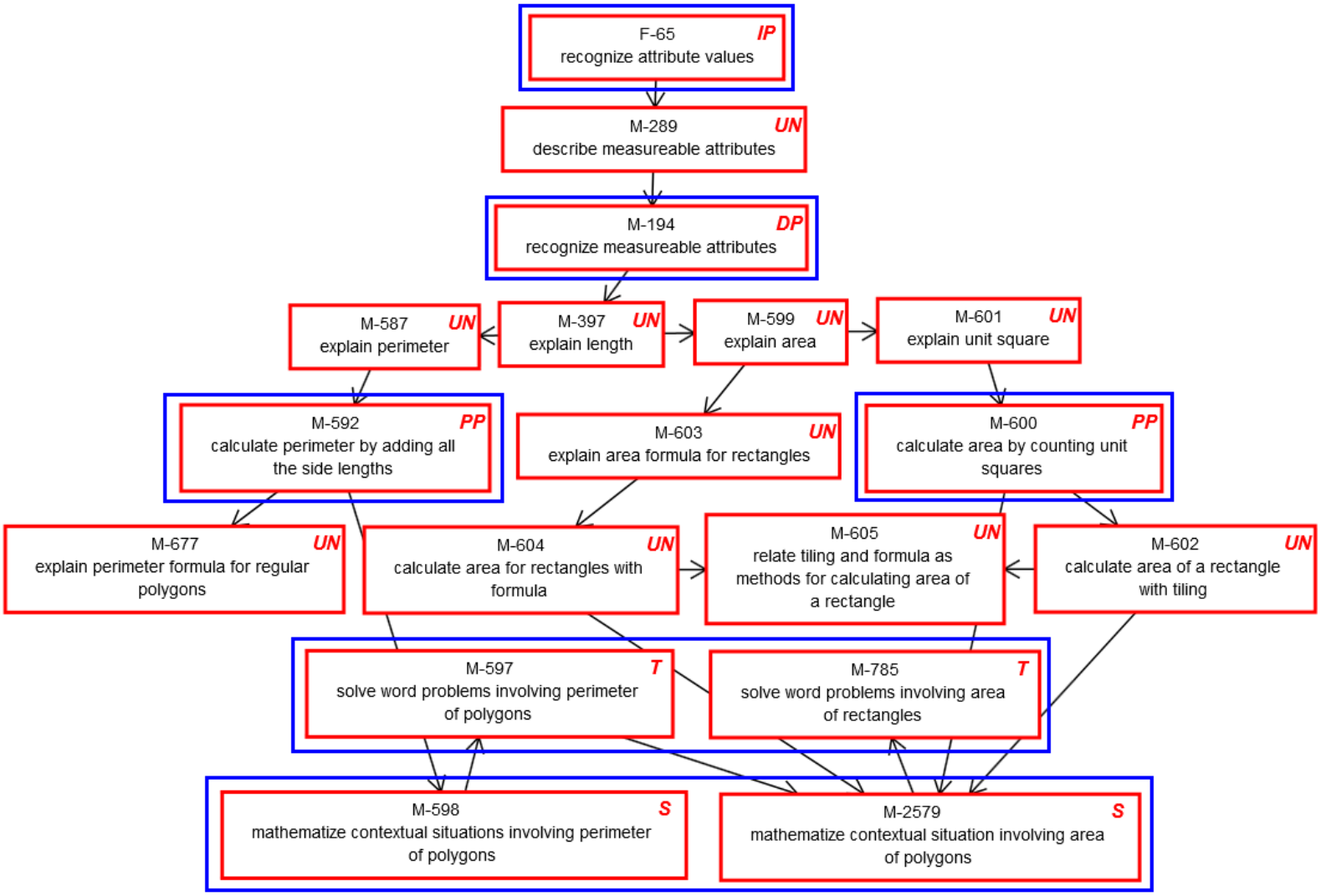
Grade-Level Standard	DLM Essential Element	Linkage Levels
M.G-GPE.7 Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula	**M.EE.G-GPE.7** Find perimeters and areas of squares and rectangles to solve real-world problems	**Initial Precursor:** • Recognize attribute values **Distal Precursor:** • Recognize measureable attributes **Proximal Precursor:** • Calculate perimeter by adding all the side lengths • Calculate area by counting unit squares **Target:** • Solve word problems involving perimeter of polygons • Solve word problems involving area of rectangles **Successor:** • Mathematize contextual situation involving perimeter of polygons • Mathematize contextual situations involving area of polygons

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.G-GPE.7 Find perimeters and areas of squares and rectangles to solve real-world problems



ESSENTIAL ELEMENT, LINKAGE LEVELS, AND MINI-MAP
MATH: HIGH SCHOOL
M.EE.N-Q.1-3

Grade-Level Standard	DLM Essential Element	Linkage Levels
M.N-Q.1 Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays**;** **M.N-Q.2** Define appropriate quantities for the purpose of descriptive modeling**;** **M.N-Q.3** Choose a level of accuracy appropriate to limitations on measurement when reporting quantities	**M.EE.N-Q.1-3** Express quantities to the appropriate precision of measurement	**Initial Precursor:** • Use perceptual subitizing **Distal Precursor:** • Round decimals to any place **Proximal Precursor:** • Solve word problems involving multiplication with rational numbers • Solve word problems involving subtraction with rational numbers • Solve word problems involving addition with rational numbers **Target:** • Express numerical answers with a degree of precision appropriate for the problem context **Successor:** • Solve multi-step problems with rational numbers

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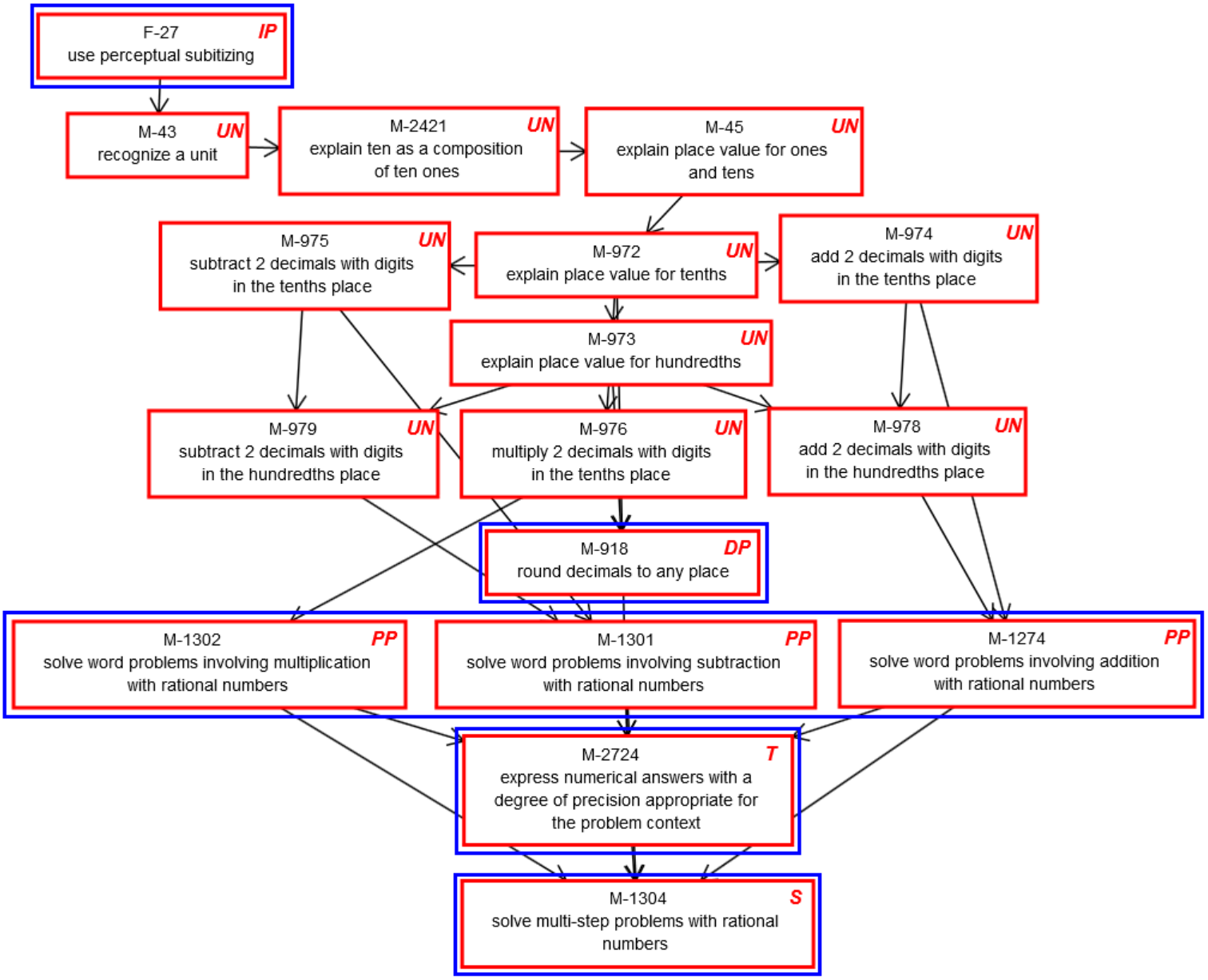
DP	Distal Precursor	S	Successor
PP	Proximal Precursor	UN	Untested
T	Target		

M.EE.N-Q.1-3 Express quantities to the appropriate precision of measurement



ESSENTIAL ELEMENT, LINKAGE LEVELS, AND MINI-MAP
MATH: HIGH SCHOOL
M.EE.S-ID.1-2

Grade-Level Standard	DLM Essential Element	Linkage Levels
M.S-ID.1 Represent data with plots on the real number line (dot plots, histograms, and box plots)**;** **M.S-ID.2** Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets	**M.EE.S-ID.1-2** Given data, construct a simple graph (table, line, pie, bar, or picture) and interpret data	**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 graph • Recognize the structure of a pie chart **Proximal Precursor:** • Use bar graphs to read the data • Use picture graphs to read the data • Use line graphs to read the data • Use pie charts to read the data **Target:** • Use graphs to read beyond the data • Represent data using bar graph • Represent data using picture graph • Represent data using line graph • Represent data using pie charts **Successor:** • Use graphs to read beyond the data

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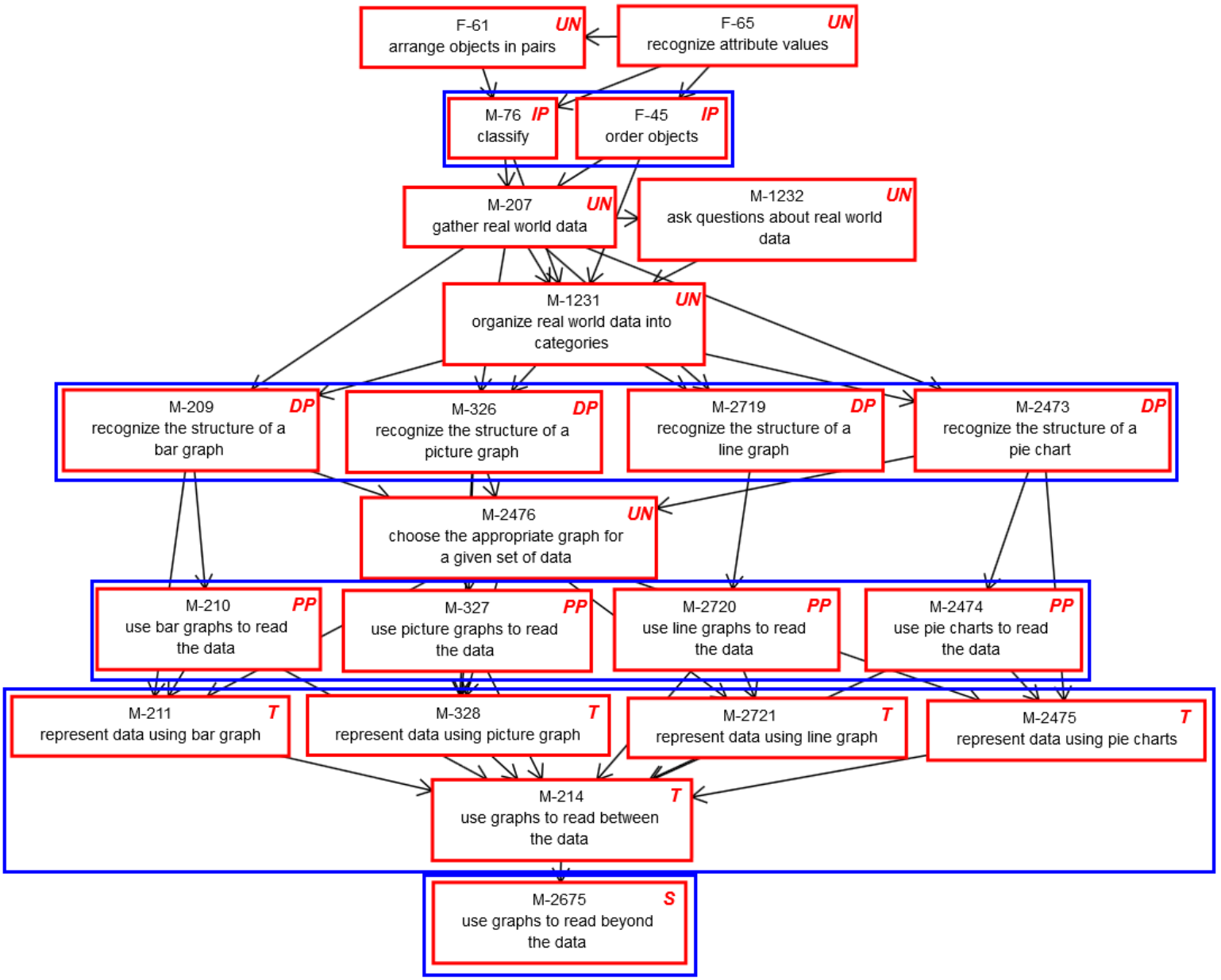
DP	Distal Precursor	S	Successor
PP	Proximal Precursor	UN	Untested
T	Target		

M.EE.S-ID.1-2 Given data, construct a simple graph (table, line, pie, bar, or picture) and interpret data



ESSENTIAL ELEMENT, LINKAGE LEVELS, AND MINI-MAP
MATH: HIGH SCHOOL
M.EE.S-ID.3

Grade-Level Standard	DLM Essential Element	Linkage Levels
M.S-ID.3 Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers)	**M.EE.S-ID.3** Interpret general trends on a graph or chart	**Initial Precursor:** • Order objects • Classify **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 a pie chart **Proximal Precursor:** • Recognize symmetric distribution • Recognize outliers • Recognize peaks in data distribution • Recognize variability in a date set **Target:** • Analyze overall shape of the data distribution • Draw inferences by interpreting general trends on a graph or chart **Successor:** • Draw inferences by comparing two data sets

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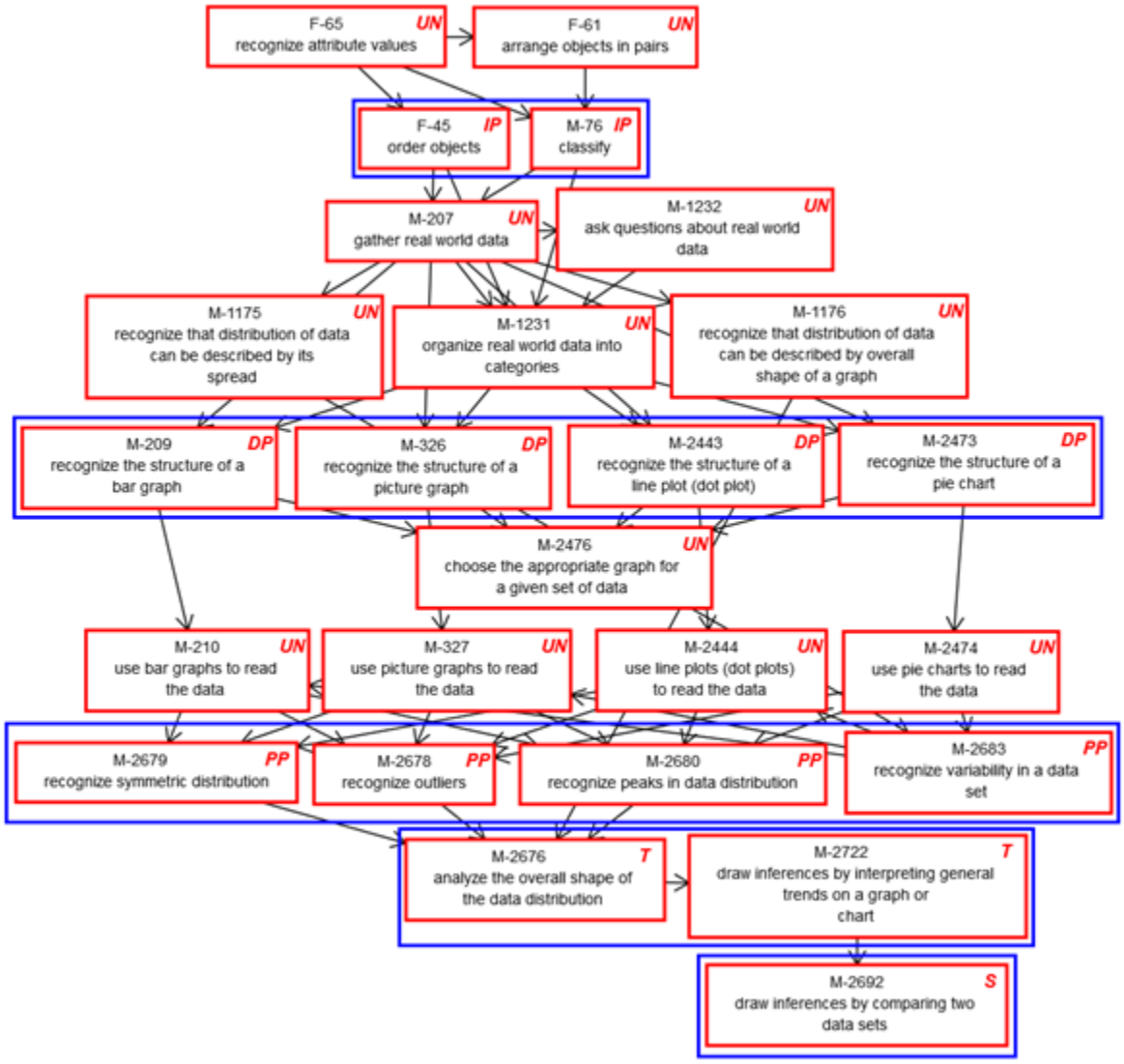
DP	Distal Precursor	S	Successor
PP	Proximal Precursor	UN	Untested
T	Target		

M.EE.S-ID.3 Interpret general trends on a graph or chart



ESSENTIAL ELEMENT, LINKAGE LEVELS, AND MINI-MAP
MATH: HIGH SCHOOL
M.EE.S-ID.4

Grade-Level Standard	DLM Essential Element	Linkage Levels
M.S-ID.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.S-ID.4** Calculate the mean of a given data set (limit the number of data points to fewer than five)	**Initial Precursor:** • Recognize attribute values **Distal Precursor:** • Classify **Proximal Precursor:** • Summarize data by the number of observations **Target:** • Calculate mean **Successor:** • Summarize data by measurement

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

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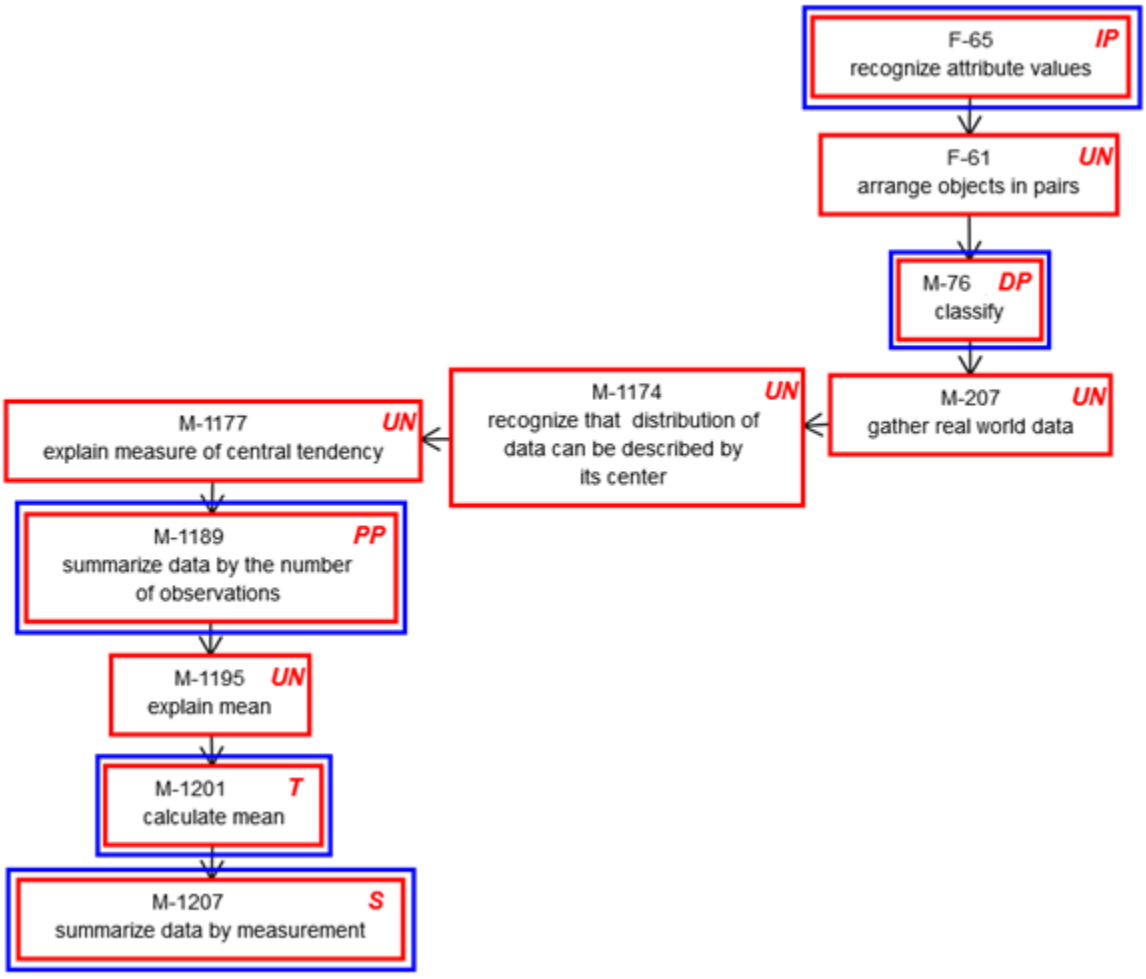
IP	Initial Precursor	SP	Supporting
DP	Distal Precursor	S	Successor
PP	Proximal Precursor	UN	Untested
T	Target		

M.EE.S-ID.4 Calculate the mean of a given data set (limit the number of data points to fewer than five)



ESSENTIAL ELEMENT, LINKAGE LEVELS, AND MINI-MAP
MATH: HIGH SCHOOL
M.EE.A-CED.1

Grade-Level Standard	DLM Essential Element	Linkage Levels
M.A-CED.1 Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions	**M.EE.A-CED.1** Create an equation involving one operation with one variable, and use it to solve a real-world problem	**Initial Precursor:** • Combine sets • Partition sets **Distal Precursor:** • Represent multiplication with equations • Represent division with equations • Represent subtraction with equations • Represent addition with equations **Proximal Precursor:** • Represent expressions with variables • Represent the unknown in an equation **Target:** • Solve real-world problems using equations with non-negative rational numbers • Represent real-world problems as equations **Successor:** • Solve rational equations in 1 variable

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

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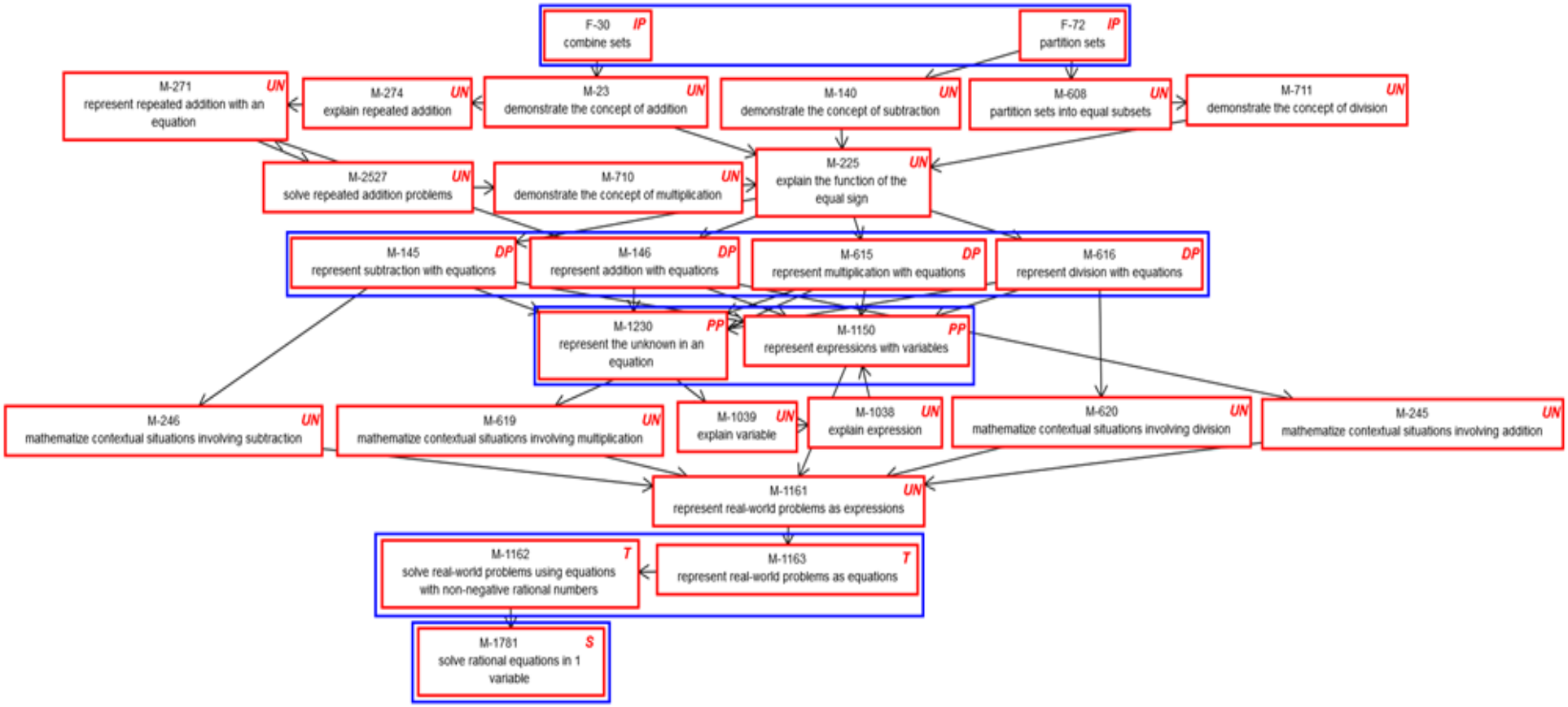
IP	Initial Precursor	SP	Supporting
DP	Distal Precursor	S	Successor
PP	Proximal Precursor	UN	Untested
T	Target		

M.EE.A-CED.1 Create an equations involving one operation with one variable, and use it to solve a real-world problem



ESSENTIAL ELEMENT, LINKAGE LEVELS, AND MINI-MAP
MATH: HIGH SCHOOL
M.EE.A-CED.2-4

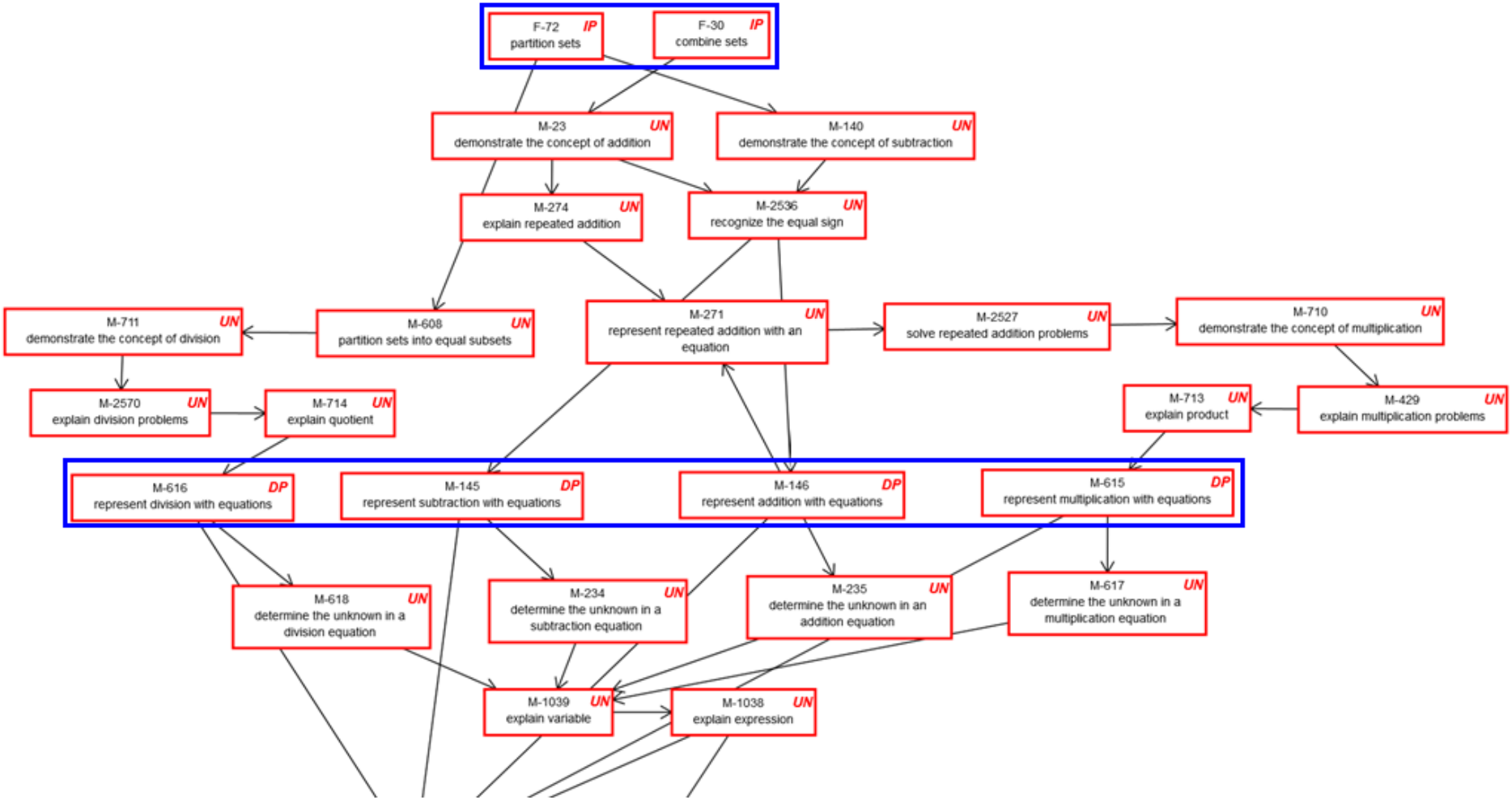
Grade-Level Standard	DLM Essential Element	Linkage Levels
M.A-CED.2 Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales**;** **M.A-CED.3** Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context.**;** **M.A-CED.4** Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations	**M.EE.A-CED.2-4** Solve one-step inequalities	**Initial Precursor:** • Partition sets • Combine sets **Distal Precursor:** • Represent division with equations • Represent subtraction with equations • Represent addition with equations • Represent multiplication with equations **Proximal Precursor:** • Solve linear equalities in one variable **Target:** • Solve linear inequalities in 1 variable • Represent solutions of inequalities on a number line **Successor:** • Explain solution to a linear inequality in one variable

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

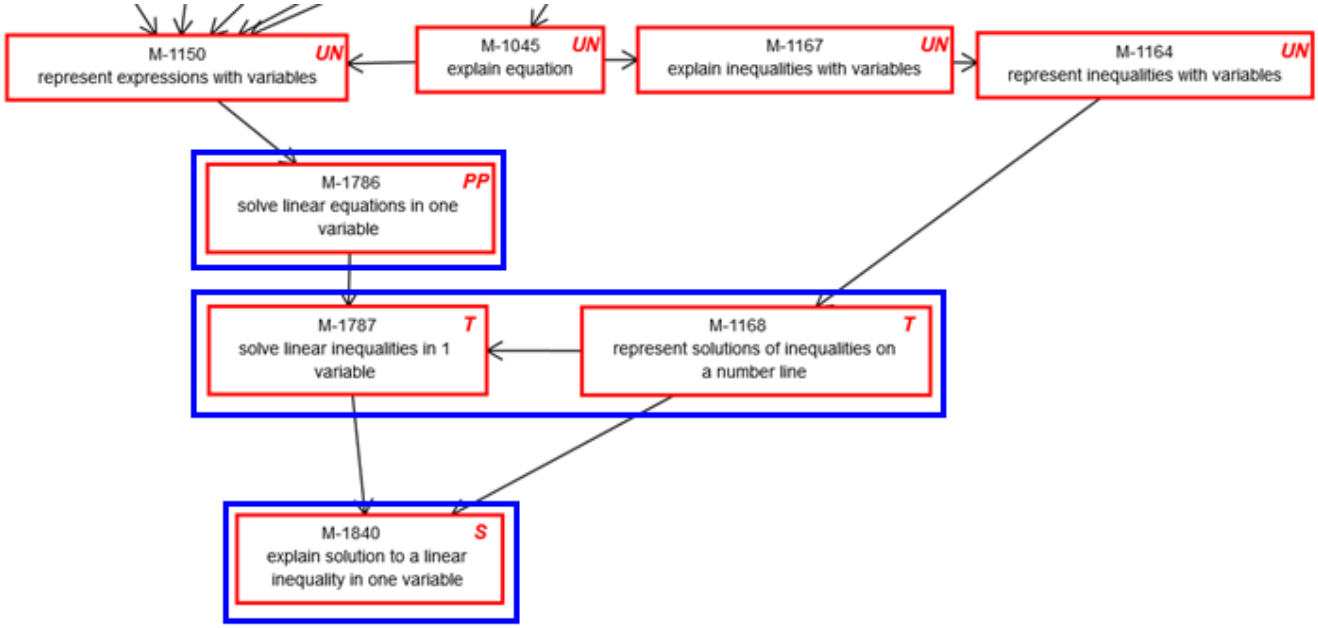
Key to map codes in upper right corner of node boxes:

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

M.EE.A-CED.2-4 Solve one-step inequalities



M.EE.A-CED.2-4 Solve one-step inequalities



ESSENTIAL ELEMENT, LINKAGE LEVELS, AND MINI-MAP
MATH: HIGH SCHOOL
M.EE.A-SSE.1

Grade-Level Standard	DLM Essential Element	Linkage Levels
M.A-SSE.1 Interpret expressions that represent a quantity in terms of its context	**M.EE.A-SSE.1** Identify an algebraic expression involving one arithmetic operation to represent a real-world problem	**Initial Precursor:** • Combine sets • Partition sets **Distal Precursor:** • Represent subtraction with equations • Represent addition with equations • Represent multiplication with equations • Represent division with equations **Proximal Precursor:** • Represent the unknown in an equation • Represent expressions with variables **Target:** • Represent real-world problems as equations • Represent real-world problems as expressions **Successor:** • Solve real-world problems using equations with non-negative rational numbers

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

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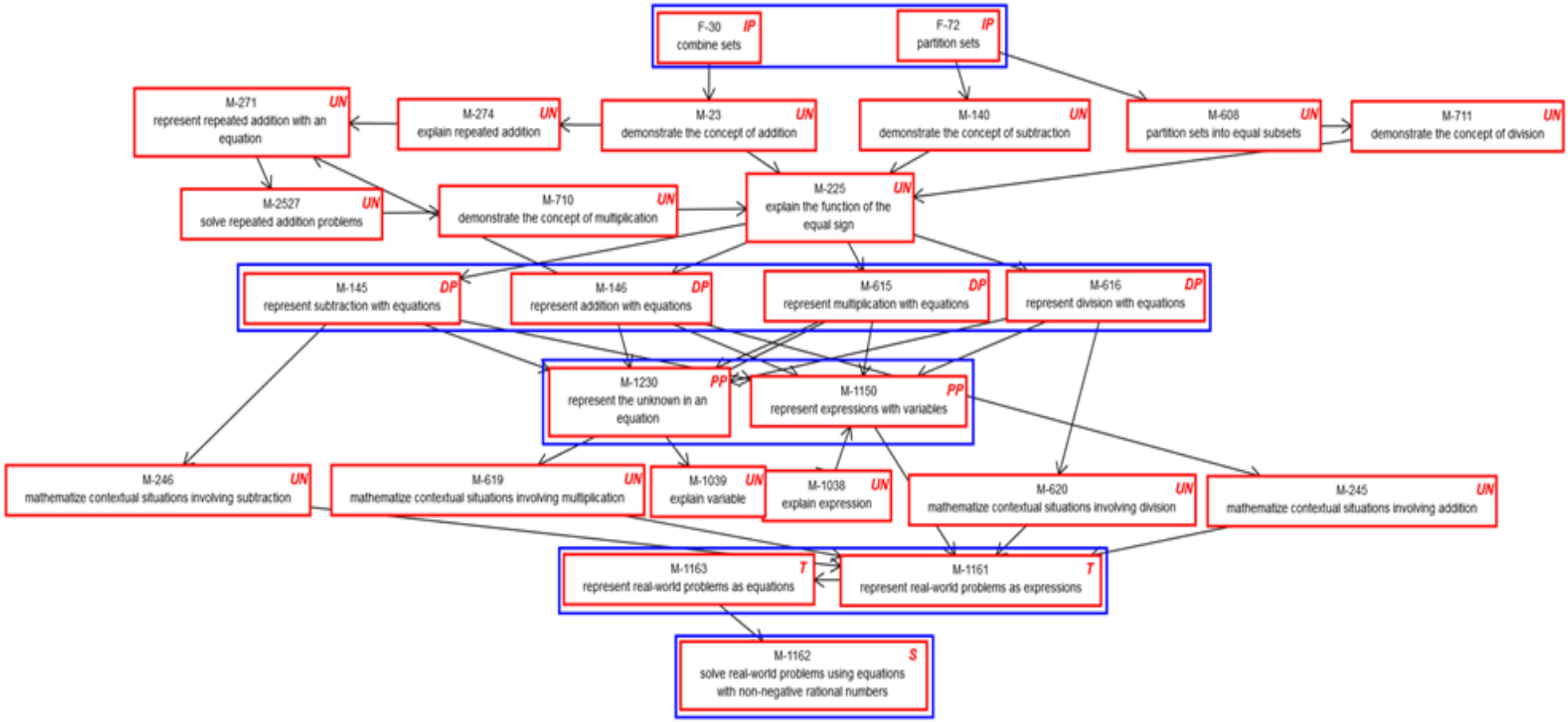
DP	Distal Precursor	S	Successor
PP	Proximal Precursor	UN	Untested
T	Target		

M.EE.A-SSE.1 Identify an algebraic expression involving one arithmetic operation to represent a real-world problem



ESSENTIAL ELEMENT, LINKAGE LEVELS, AND MINI-MAP
MATH: HIGH SCHOOL
M.EE.A-SSE.3

Grade-Level Standard	DLM Essential Element	Linkage Levels
M.A-SSE.3 Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression	**M.EE.A-SSE.3** Solve simple algebraic equations with one variable using multiplication and division	**Initial Precursor:** • Partition sets • Combine sets **Distal Precursor:** • Demonstrate the concept of division • Demonstrate the concept of multiplication **Proximal Precursor:** • Determine the unknown in a division equation • Determine the unknown in a multiplication equation **Target:** • Solve linear equations in one variable • Solve linear equations in 1 variable with rational number coefficients **Successor:** • Solve linear inequalities in 1 variable

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

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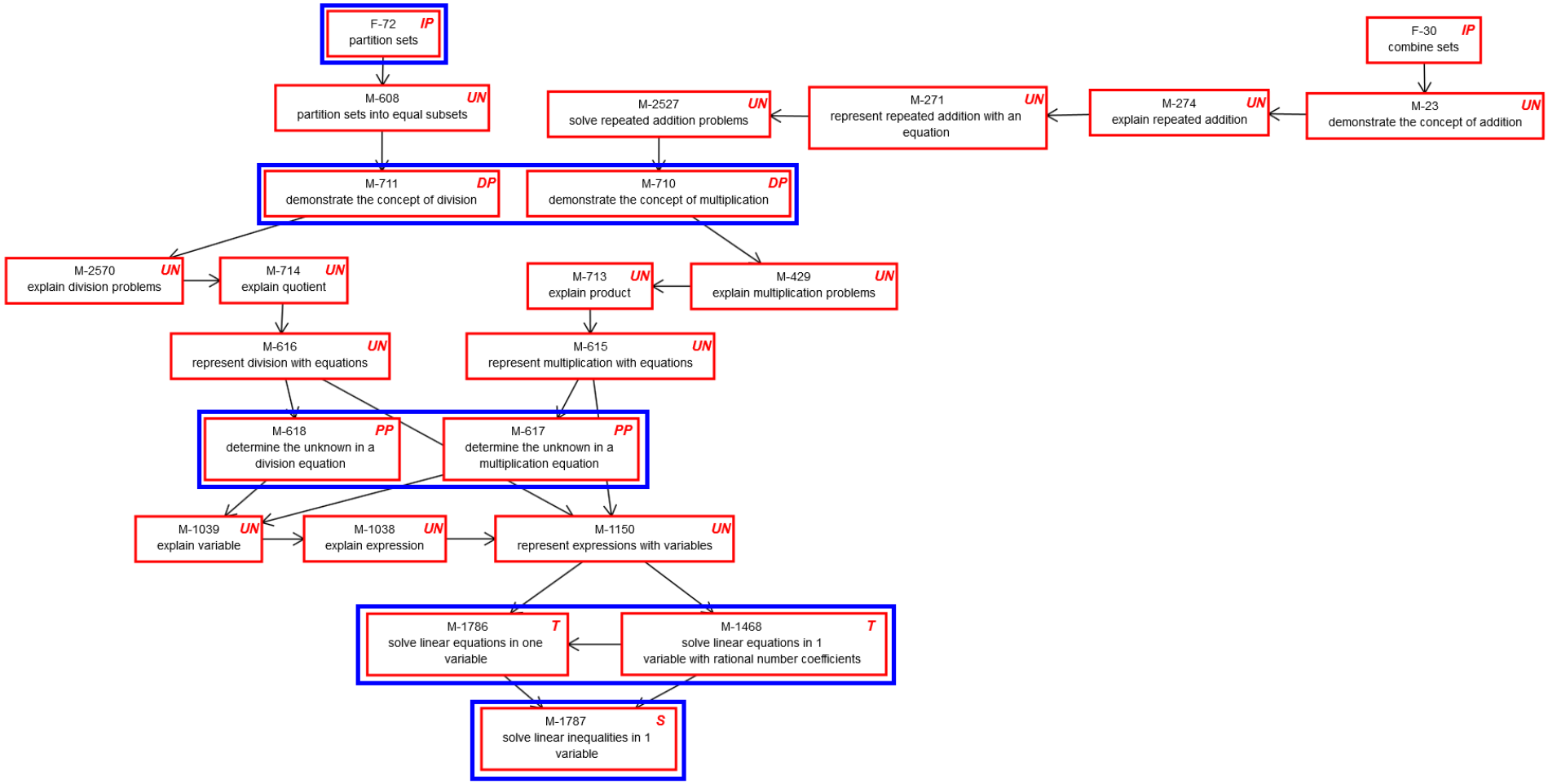
DP	Distal Precursor	S	Successor
PP	Proximal Precursor	UN	Untested
T	Target		

M.EE.A-SSE.3 Solve simple algebraic equations with one variable using multiplication and division



ESSENTIAL ELEMENT, LINKAGE LEVELS, AND MINI-MAP
MATH: HIGH SCHOOL
M.EE.A-REI.10-12

Grade-Level Standard	DLM Essential Element	Linkage Levels
M.A-REI.10 Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line)**; M.A-REI.11** Explain why the x-coordinates of the points where the graphs of the equations y = f(x) and y = g(x) intersect are the solutions of the equation f(x) = g(x); find the solutions approximately**; M.A-REI.12** Graph the solutions to a linear inequality in two variables as a half-plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes	**M.EE.A-REI.10-12** Interpret the meaning of a point on the graph of a line. For example, on a graph of pizza purchases, trace the graph to a point and tell the number of pizzas purchased and the total cost of the pizzas	**Initial Precursor:** • Arrange objects in pairs • Order objects **Distal Precursor:** • Explain coordinate pairs (ordered pairs) • Explain x-coordinate • Explain y-coordinate **Proximal Precursor:** • Recognize covariation • Recognize direction of covariation • Describe rate of change in a graph **Target:** • Analyze linear function graphs • interpret a point on the graph of a linear function **Successor:** • Solve real-world problems by interpreting linear function graphs

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

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

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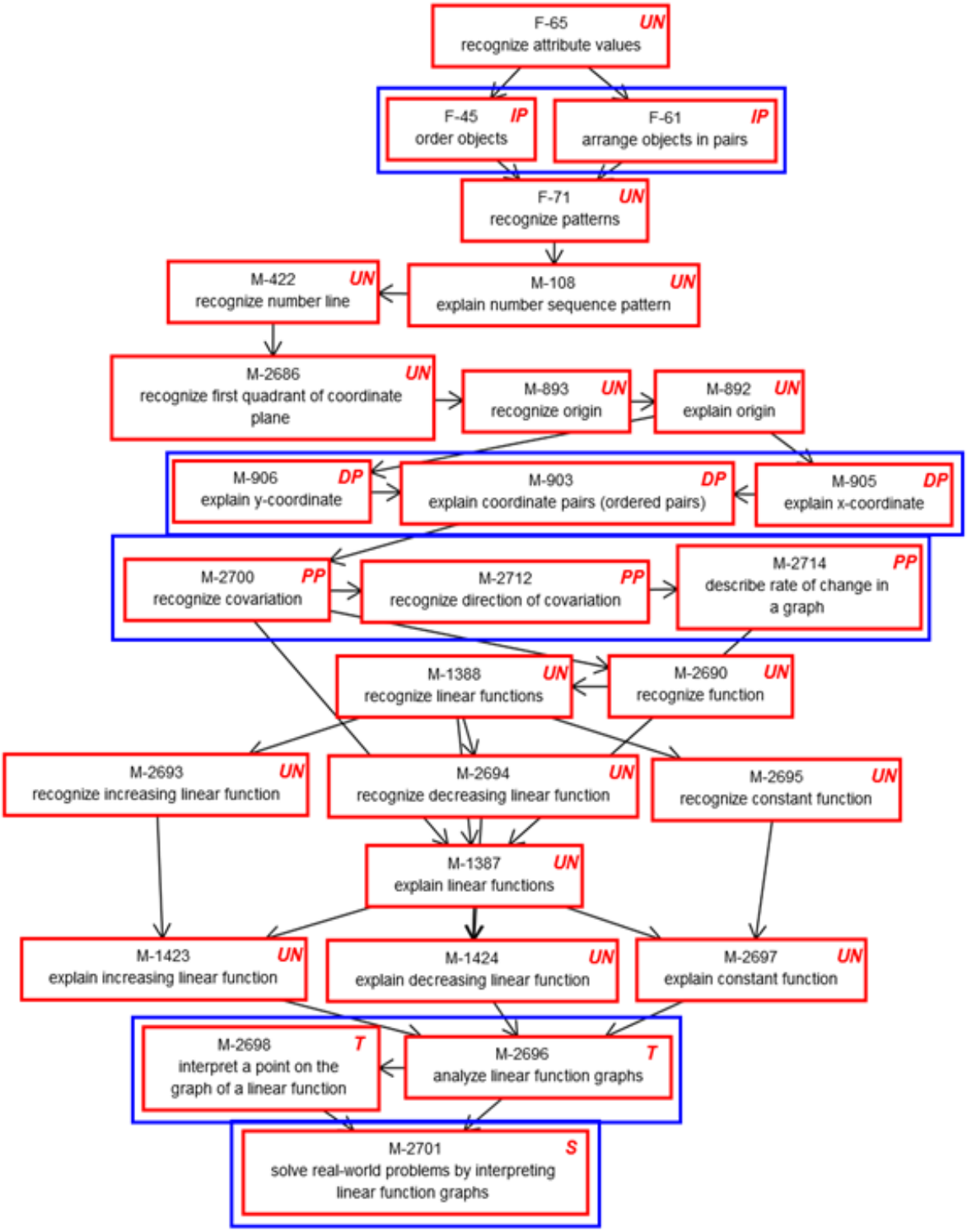
T	Target		

M.EE.A-REI.10-12 Interpret the meaning of a point on the graph of a line



ESSENTIAL ELEMENT, LINKAGE LEVELS, AND MINI-MAP
MATH: HIGH SCHOOL
M.EE.A-SSE.4

Grade-Level Standard	DLM Essential Element	Linkage Levels
M.A-SSE.4 Derive the formula for the sum of a finite geometric series (when the common ratio is not 1), and use the formula to solve problems. For example, calculate mortgage payments	**M.EE.A-SSE.4** Determine the successive term in a geometric sequence given the common ratio	**Initial Precursor:** • Classify • Contrast objects • Order objects **Distal Precursor:** • Recognize symbolic patterns • Recognize sequence **Proximal Precursor:** • Recognize the recursive rule for geometric sequences • Recognize geometric sequences **Target:** • Extend a geometric sequence by applying the recursive rule **Successor:** • Determine the term in a geometric sequence given the nth term formula

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

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

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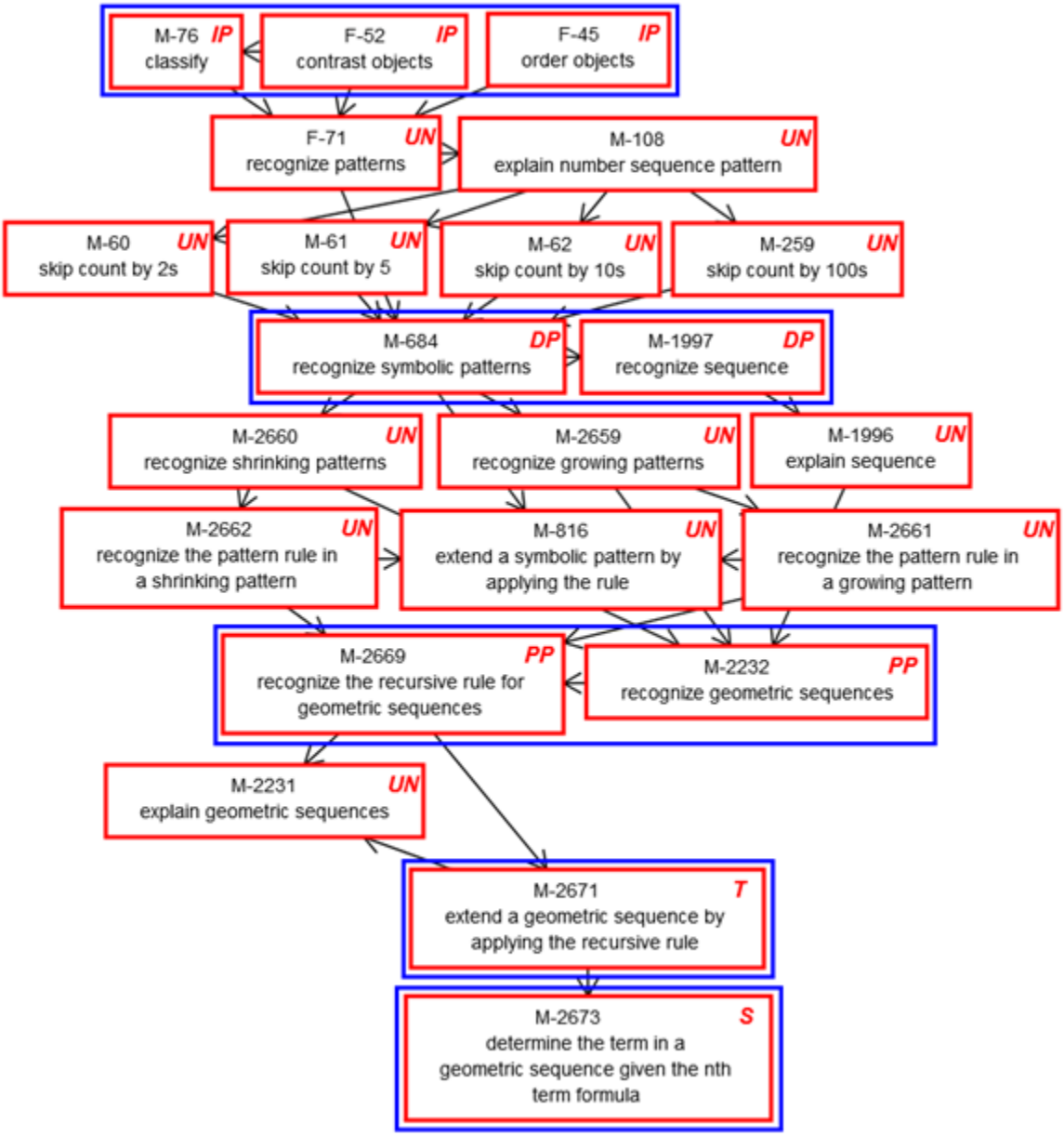
DP	Distal Precursor	S	Successor
PP	Proximal Precursor	UN	Untested
T	Target		

M.EE.A-SSE.4 Determine the successive term in a geometric sequence given the common ratio



ESSENTIAL ELEMENT, LINKAGE LEVELS, AND MINI-MAP
MATH: HIGH SCHOOL
M.EE.F-BF.1

Grade-Level Standard	DLM Essential Element	Linkage Levels
M.F-BF.1 Write a function that describes a relationship between two quantities	**M.EE.F-BF.1** Select the appropriate graphical representation (first quadrant) given a situation involving constant rate of change	**Initial Precursor:** • Order objects • Arrange objects in pairs **Distal Precursor:** • Explain y-coordinate • Explain coordinate pairs (ordered pairs) • Explain x-coordinate **Proximal Precursor:** • Recognize covariation • Recognize direction of covariation • Describe rate of change in a graph **Target:** • Represent real-world problems as graphs **Successor:** • Solve real-world problems by interpreting linear function graphs

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

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

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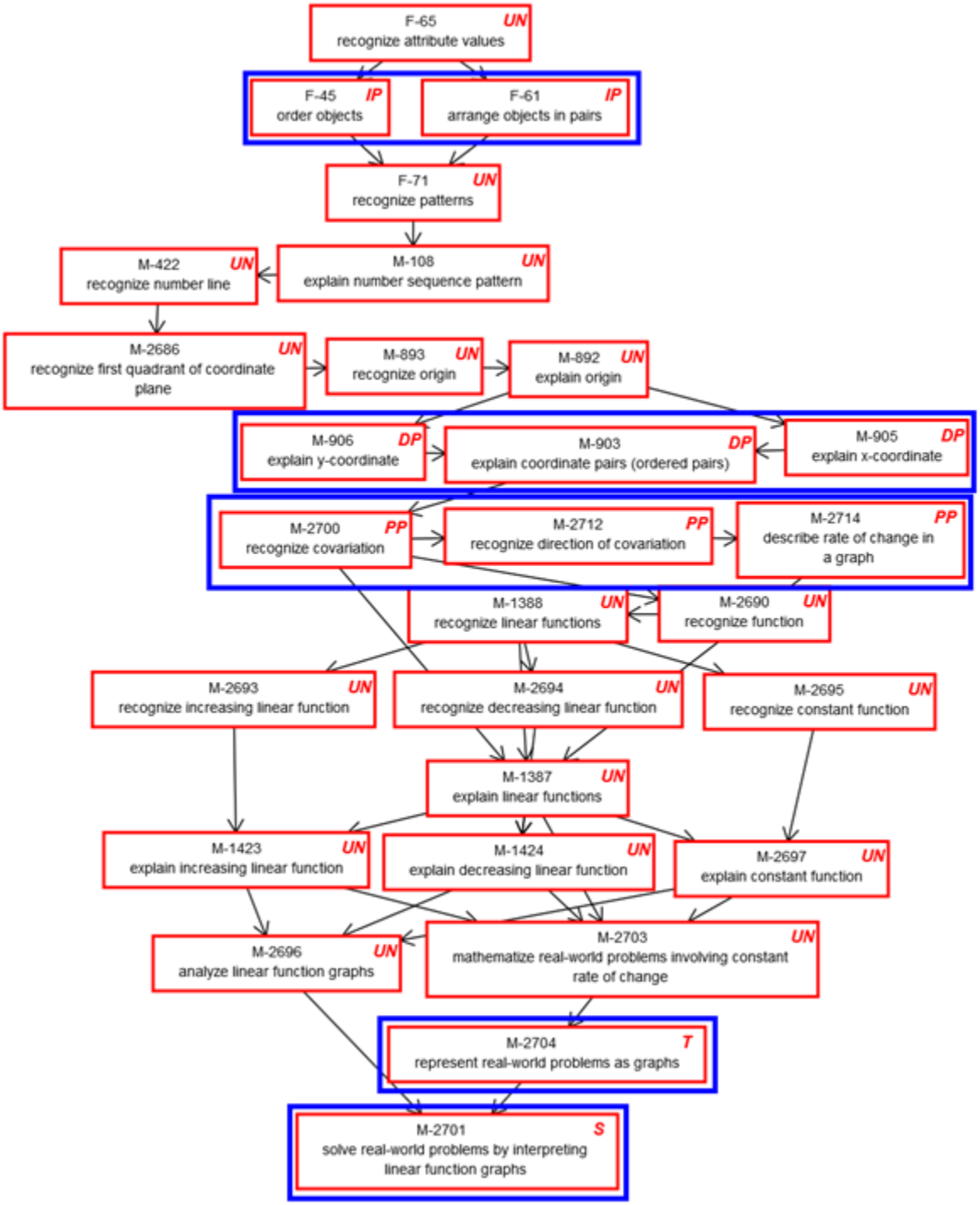
DP	Distal Precursor	S	Successor
PP	Proximal Precursor	UN	Untested
T	Target		

M.EE.F-BF.1 Select the appropriate graphical representation (first quadrant) given a situation involving constant rate of change



ESSENTIAL ELEMENT, LINKAGE LEVELS, AND MINI-MAP
MATH: HIGH SCHOOL
M.EE.F-BF.2

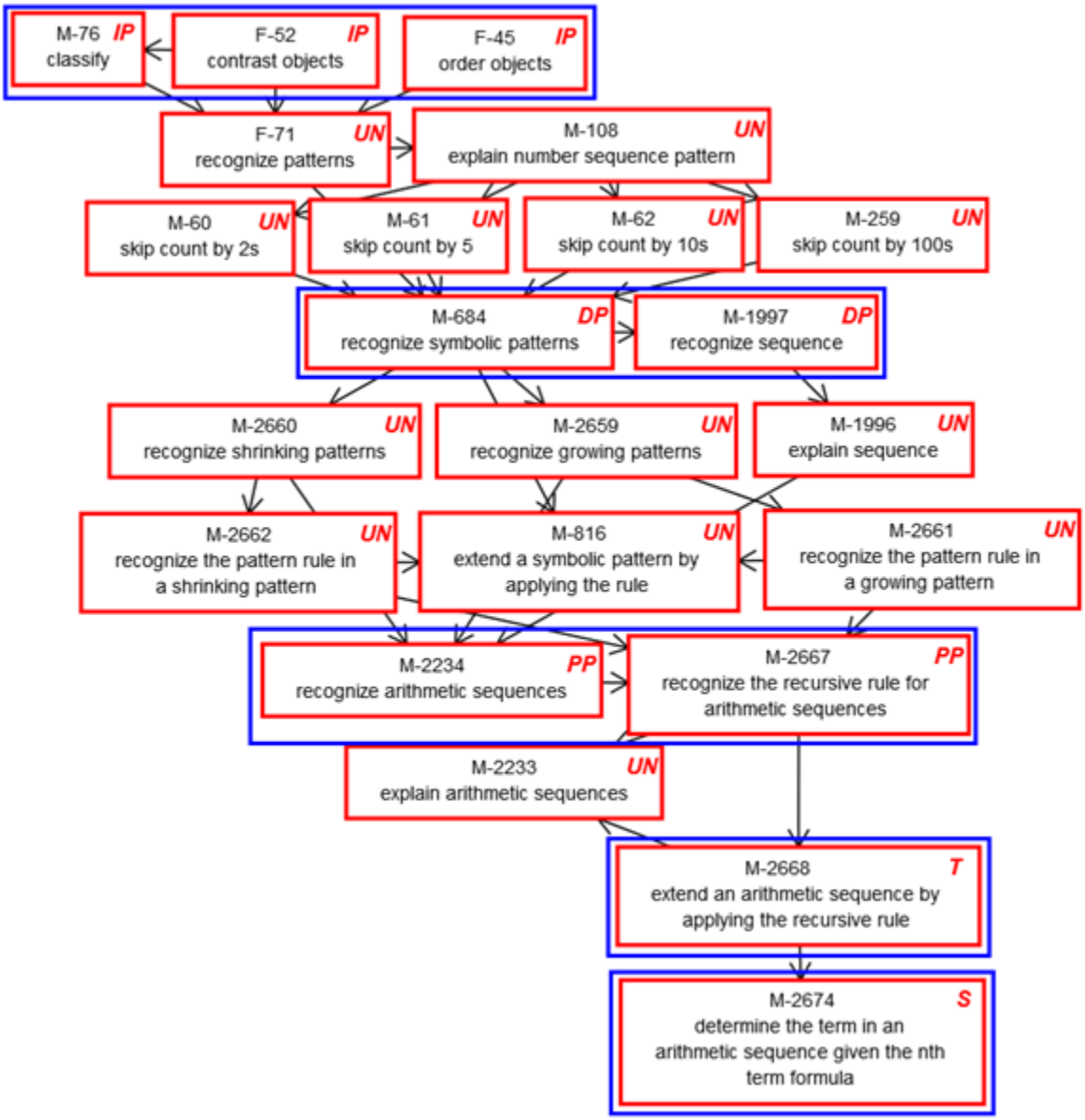
Grade-Level Standard	DLM Essential Element	Linkage Levels
M.F-BF.2 Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms	**M.EE.F-BF.2** Determine an arithmetic sequence with whole numbers when provided a recursive rule	**Initial Precursor:** • Classify • Contrast objects • Order objects **Distal Precursor:** • Recognize symbolic patterns • Recognize sequence **Proximal Precursor:** • Recognize arithmetic sequences • Recognize the recursive rule for arithmetic sequences **Target:** • Extend an arithmetic sequence by applying the recursive rule **Successor:** • Determine the term in an arithmetic sequence given the nth term formula

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.F-BF.2 Determine an arithmetic sequence with whole numbers when provided a recursive rule



ESSENTIAL ELEMENT, LINKAGE LEVELS, AND MINI-MAP
MATH: HIGH SCHOOL
M.EE.F-IF.1-3

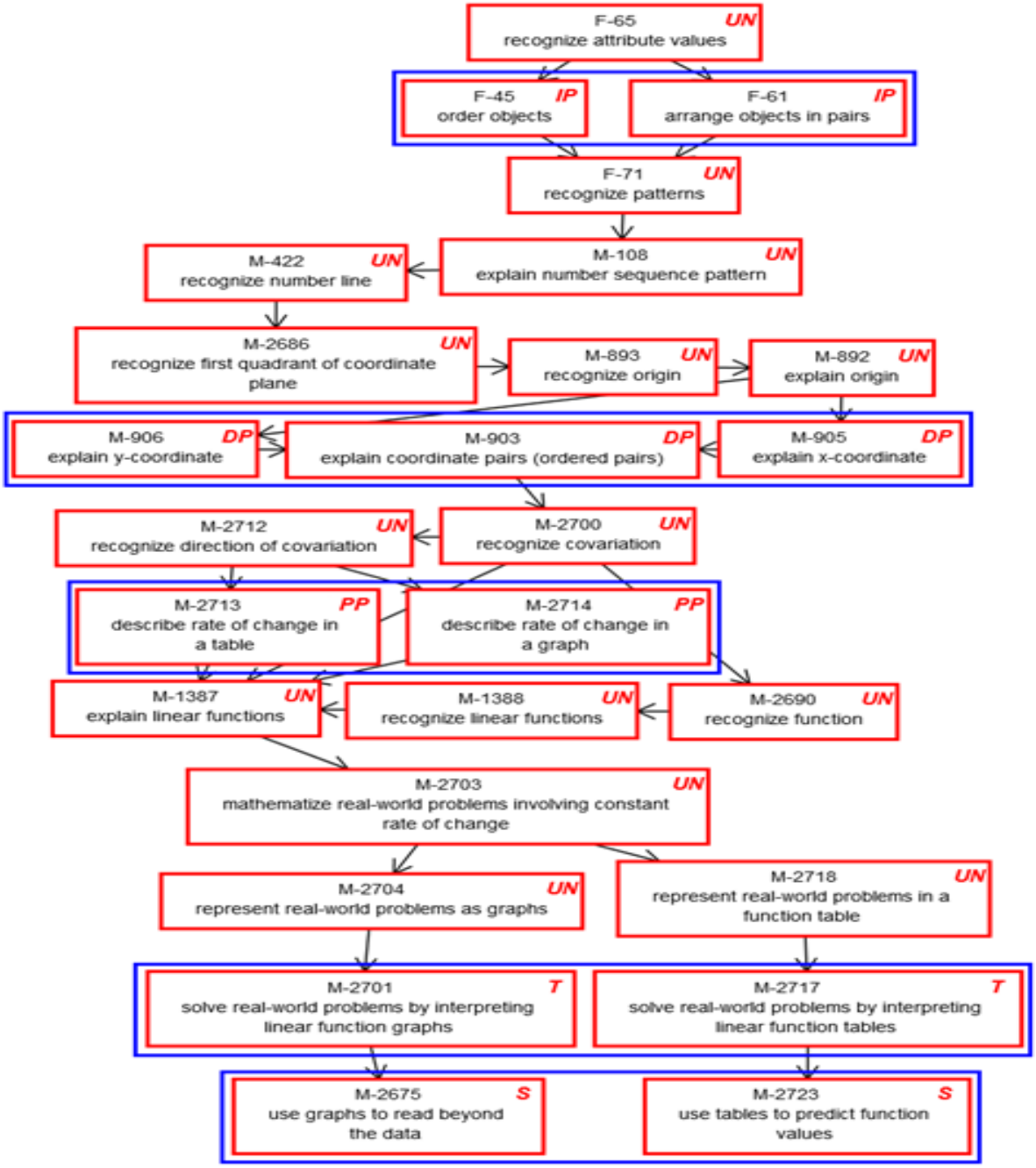
Grade-Level Standard	DLM Essential Element	Linkage Levels
M.F-IF.1 Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its domain, then f(x) denotes the output of f corresponding to the input x. The graph of f is the graph of the equation y = f(x)**;** **M.F-IF.2** Use function notation, evaluate functions for inputs in their domains, interpret statements that use function notation in terms of a context**; M.F-IF.3** Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. For example, the Fibonacci sequence is defined recursively by f(0) = f(1) = 1, f(n + 1) = f(n) + f(n – 1) for n ≥ 1	**M.EE.F-IF.1-3** Use the concept of function to solve problems	**Initial Precursor:** • Order objects • Arrange objects in pairs **Distal Precursor:** • Explain x-coordinate • Explain y-coordinate • Explain coordinate pairs (ordered pairs) **Proximal Precursor:** • Describe the rate of change in a table • Describe rate of change in a graph **Target:** • Solve real-world problems by interpreting linear function graphs • Solve real-world problems by interpreting linear function tables **Successor:** • Use graphs to read beyond the data • Use tables to predict function values

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.F-IF.1-3 Use the concept of function to solve problems



ESSENTIAL ELEMENT, LINKAGE LEVELS, AND MINI-MAP
MATH: HIGH SCHOOL
M.EE.F-IF.4-6

Grade-Level Standard	DLM Essential Element	Linkage Levels
M.F-IF.4 For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. Key features include intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity**; M.F-IF.5** Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. For example, if the function h(n) gives the number of person-hours it takes to assemble n engines in a factory, then the positive integers would be an appropriate domain for the function**; M.F-IF.6** Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph	**M.EE.F-IF.4-6** Construct graphs that represent linear functions with different rates of change and interpret which is faster/slower, higher/ lower, etc.	**Initial Precursor:** • Arrange objects in pairs • Order objects **Distal Precursor:** • Explain coordinate pairs (ordered pairs) • Explain x-coordinate • Explain y-coordinate **Proximal Precursor:** • Recognize covariation • Recognize direction of covariation • Describe rate of change in a graph **Target:** • Compare two functions with different rate of change • Analyze linear function graphs **Successor:** • Solve real-world problems by interpreting linear function graphs • Compare properties of 2 functions represented in the same way

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

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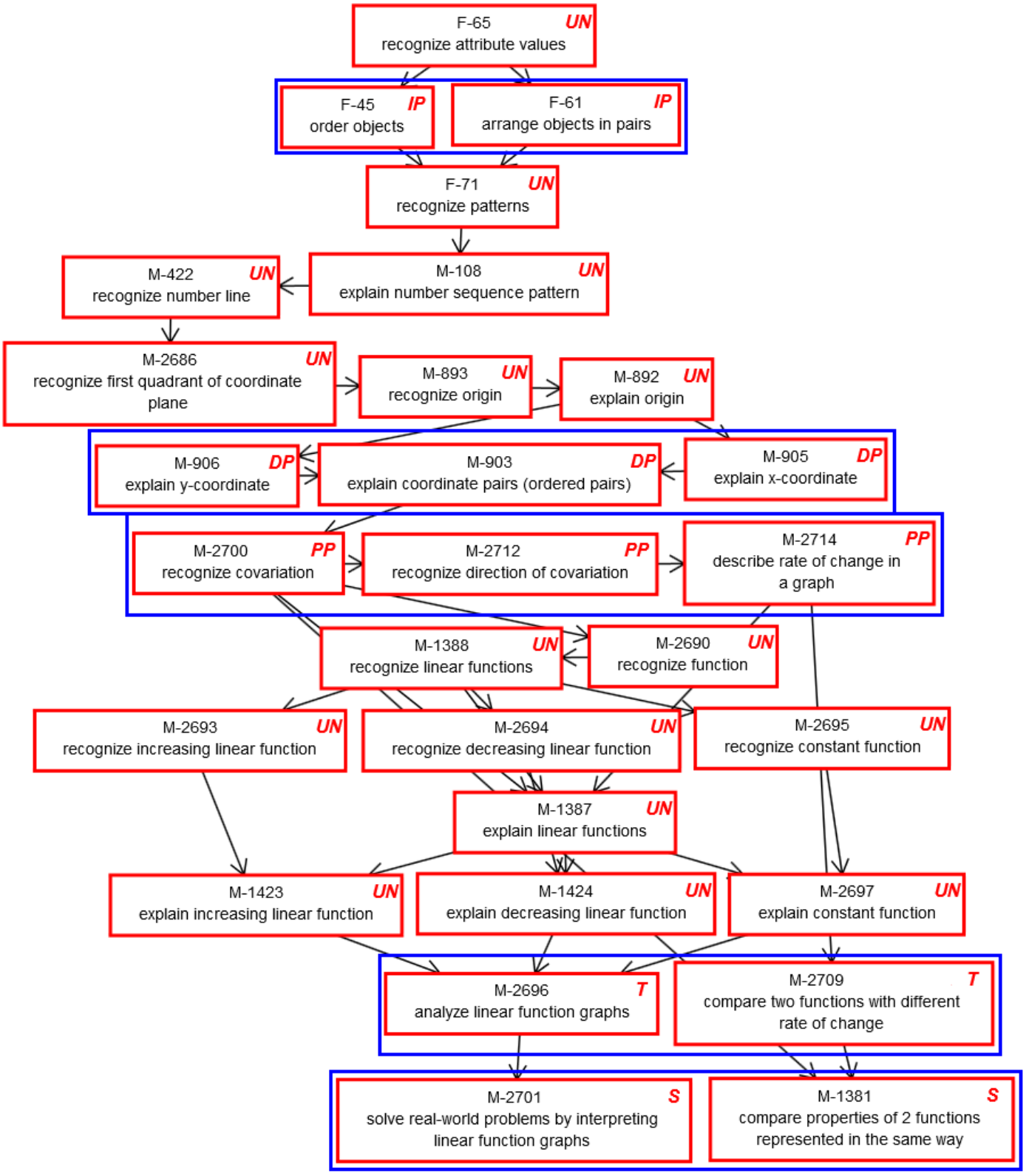
PP	Proximal Precursor	UN	Untested
T	Target		

M.EE.F-IF.4-6 Construct graphs that represent linear functions with different rates of change and interpret which is faster/slower, higher/ lower, etc.



ESSENTIAL ELEMENT, LINKAGE LEVELS, AND MINI-MAP
MATH: HIGH SCHOOL
M.EE.F-LE.1-3

Grade-Level Standard	DLM Essential Element	Linkage Levels
M.F-LE.1 Distinguish between situations that can be modeled with linear functions and with exponential functions**; M.F-LE.2** Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table)**;** **M.F-LE.3** Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function	**M.EE.F-LE.1-3** Model a simple linear function such as y=mx to show that these functions increase by equal amounts over equal intervals	**Initial Precursor:** • Arrange objects in pairs • Order objects **Distal Precursor:** • Explain x-coordinate • Explain y-coordinate • Explain coordinate pairs (ordered pairs) **Proximal Precursor:** • Recognize covariation • Recognize direction of covariation • Determine slope based on coordinate pairs **Target:** • Explain average rate of change • Determine rate of change of linear functions **Successor:** • Recognize intervals where function is increasing • Recognize intervals where function is decreasing • Estimate average rate of change given graph

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

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PP	Proximal Precursor	UN	Untested
T	Target		

EE.F-LE.1-3 Model a simple linear function such as y=mx to show that these functions increase by equal amounts over equal intervals