Mini-Map for M.EE.3.NBT.2

Subject: Mathematics
Number and Operations in Base Ten (NBT)
Grade: 3

Learning Outcome

DLM Essential Element	Grade-Level Standard
M.EE.3.NBT.2 Demonstrate understanding of place value to tens.	**M.3.NBT.2** Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.

Linkage Level Descriptions

Initial Precursor	Distal Precursor	Proximal Precursor	Target	Successor
Communicate understanding of "separateness" by recognizing objects that are not joined together. Communicate understanding of a set by recognizing a group of objects sharing an attribute.	Recognize ten as a group of 10 individual objects or 10 ones.	Recognize a group of 20 or more objects as multiple sets of 10 and remaining ones. Demonstrate understanding of tens and ones and use that understanding to represent a given number (e.g., count objects to assemble sets of 10 and a set of remaining ones to reach a given number).	Understand the value of each digit in a numeral. That is, the digit in the tens place is formed by grouping objects by tens, and the digit in the ones place is composed of individual objects.	Use place value understanding to round numbers to the nearest 10. The digit in the tens place is rounded up if the digit in the ones place equals five or more (e.g., 47 is rounded up to 50). If the digit in the ones place is less than five, the number is rounded down (e.g., 62 is rounded down to 60). Communicate understanding of the value of 100 as 100 ones, 10 tens, or 1 group of 100.

Initial Precursor and Distal Precursor Linkage Level Relationships to the Target

How is the Initial Precursor related to the Target?

Understanding place value starts with students working on early counting skills. Educators demonstrate and provide explicit lessons on the conceptual and procedural knowledge of number names, number sequence, one-to-one correspondence, cardinality, abstraction principle, and order irrelevance principle all within a context of counting concrete, pictorial, and numeral representations. Educators will support students by counting anything and everything, helping them to notice when things are grouped together and when they are separate.

How is the Distal Precursor related to the Target?

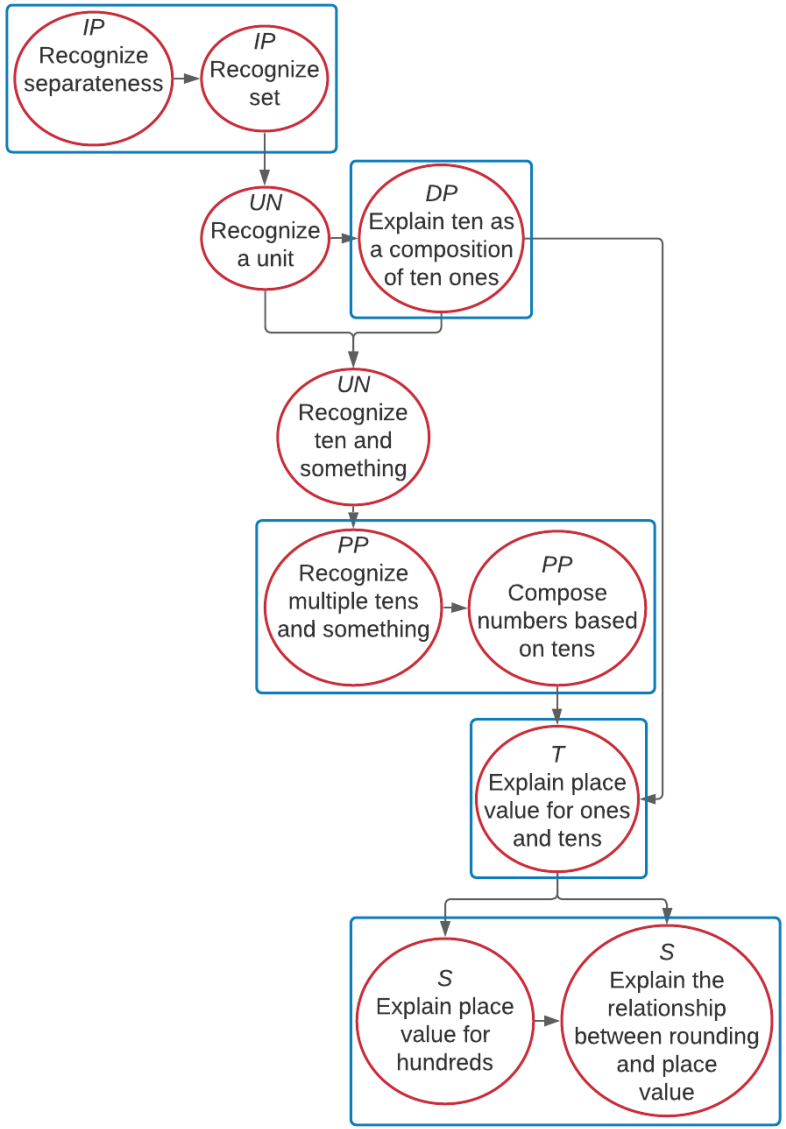
At this level, students are provided lessons on recognizing equivalence in sets with same items and then with different items. Educators will also have students compare sets and make basic ordinal judgments (e.g., a set has more and fewer disks than the comparison set) using models (e.g., ten-frame, number line, arrays) of ten as the benchmark for which these comparisons are made.

Instructional Resources

Released Testlets
See the Guide to Practice Activities and Released Testlets.
Using Untested (UN) Nodes
See the document Using Mini-Maps to Plan Instruction.

Link to Text-Only Map

M.EE.3.NBT.2 Demonstrate understanding of place value to tens.



Map Key	
IP	Initial Precursor
DP	Distal Precursor
PP	Proximal Precursor
T	Target
S	Successor
UN	Untested

Boxes indicate tested nodes

Mini-Map for M.EE.3.NBT.3

Subject: Mathematics
Number and Operations in Base Ten (NBT)
Grade: 3

Learning Outcome

DLM Essential Element	Grade-Level Standard
M.EE.3.NBT.3 Count by tens using models such as objects, base ten blocks, or money.	**M.3.NBT.3** Multiply one-digit whole numbers by multiples of 10 in the range 10– 90 (e.g., 9 × 80, 5 × 60) using strategies based on place value and properties of operations.

Linkage Level Descriptions

Initial Precursor	Distal Precursor	Proximal Precursor	Target	Successor
In a series of events, identify an event as occurring "before" or "after" another event.	Communicate understanding that numbers occur in a pattern. For example, the numbers 20 to 29, 30 to 39, or 50 to 59 follow a pattern, where each number is expressed by naming the decade number and then the digit number [i.e., 24 is expressed as twenty (decade number) four (digit number)].	Communicate number words 1 to 30 in numerical order verbally. Start at a number, one or otherwise, and count objects to 30 by assigning a single number word to each object. While counting objects up to 30, demonstrate an understanding that (i) it does not matter where you start or in what order you count, (ii) the number of objects in a set remains the same, and (iii) the last number	Demonstrate skip counting by multiples of 10 to count objects up to 40 [(e.g., arrange objects up to 40 in groups of 10 objects, and count the total number of objects using multiples of 10 (i.e., 10, 20, 30, 40)].	Demonstrate skip counting by tens, starting at a multiple of 10 (e.g., 30, 40, 50, 60). Use this understanding of counting by tens to count dimes and 10-dollar bills, and communicate the total value of a set (e.g., 10 + 10 + 10 dollar bills equal 30 dollars). Communicate an understanding of repeated addition as adding the same numeral a given number of times (e.g., 3 + 3 + 3 + 3 means adding 3 four times).

Initial Precursor	Distal Precursor	Proximal Precursor	Target	Successor
		counted equals the total number of objects.		

Initial Precursor and Distal Precursor Linkage Level Relationships to the Target

How is the Initial Precursor related to the Target?

In order to fully understand the number sequence and skip counting, students begin by counting objects in a one-to-one fashion. Then, students use small collections to make comparisons (e.g., 3 items is more than 2 items because you have to count further). Once students can count at least 3 items, educators begin introducing the positional words before and after. A powerful way to teach these concepts is to incorporate them into daily routines. For example, lining classmates up to go somewhere, lining up familiar items, following a schedule, and using the words “before” and “after” to describe the relative location of the people, objects, and events. During math, educators will describe the location and the characteristic of the item being discussed (e.g., the square comes before the circle; number 2 is after number 1; in this pattern, blue is before red).

How is the Distal Precursor related to the Target?

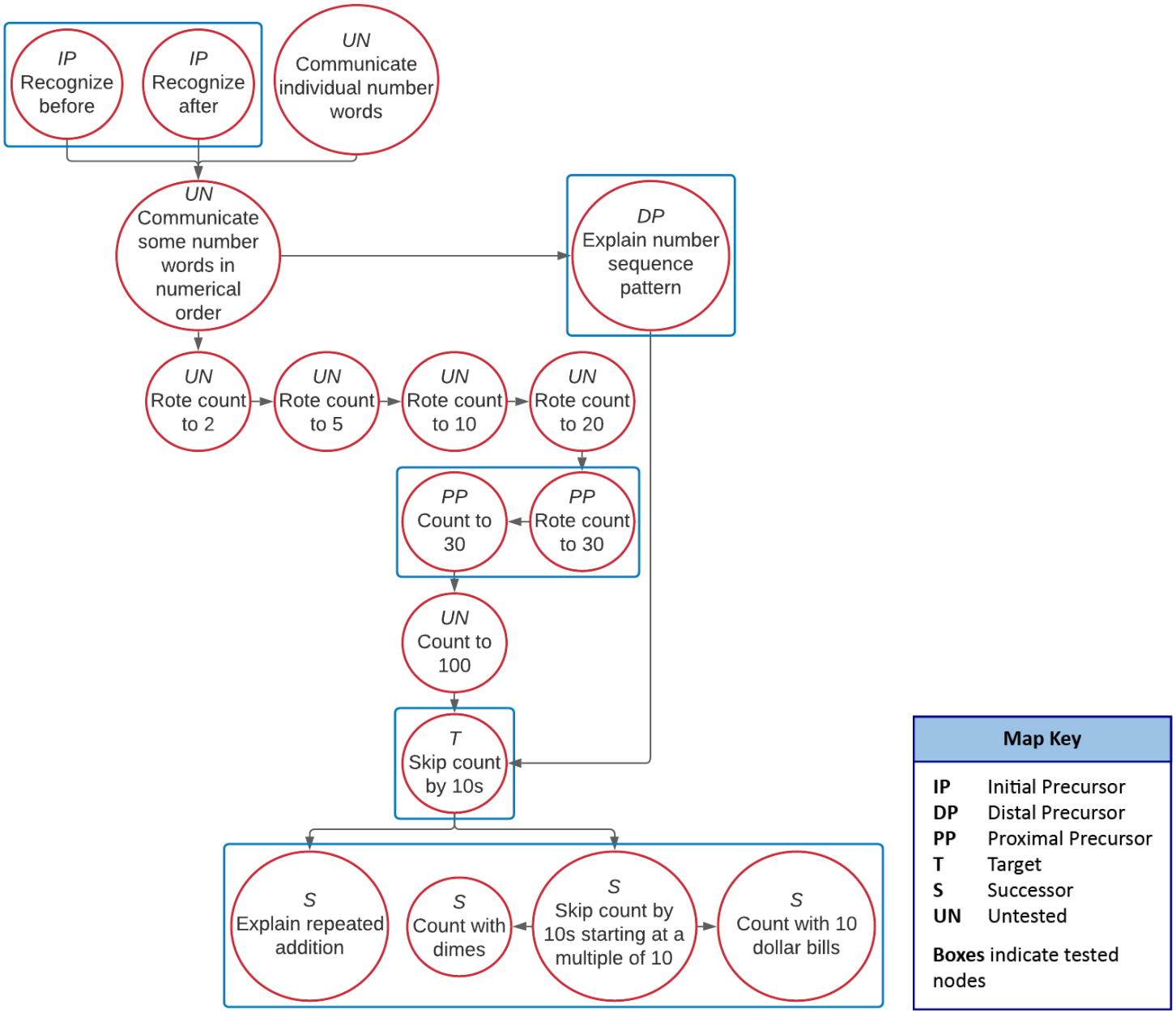
Students will continue to build their familiarity with the counting sequence enabling them to have number-before and number-after knowledge (e.g., when asked "What comes after 5?" the student is able to indicate 6 without having to count up from 1; however, they still may use the count sequence to get a running start: 4, 5, 6). Educators provide students with many opportunities to make close comparisons utilizing models (e.g., ten-frame, number line, sets) so they have a visual or tactual way to compare small collections (e.g., Which is more? 7 or 8; 3 or 4; 9 or 10). The models help students see that two is one more than one, and three is one more than two. This will help them build the concept that each number in the count sequence is one more than the previous number.

Instructional Resources

Released Testlets
See the Guide to Practice Activities and Released Testlets.
Using Untested (UN) Nodes
See the document Using Mini-Maps to Plan Instruction.

Link to Text-Only Map

M.EE.3.NBT.3 Count by tens using models such as objects, base ten blocks, or money.



Mini-Map for M.EE.3.NF.1-3

Subject: Mathematics
Number and Operations—Fractions (NF)
Grade: 3

Learning Outcome

DLM Essential Element	Grade-Level Standard
M.EE.3.NF.1-3 Differentiate a fractional part from a whole.	**M.3.NF.1** Understand a fraction 1/*b* as the quantity formed by 1 part when a whole is partitioned into *b* equal parts; understand a fraction *a*/*b* as the quantity formed by *a* parts of size 1/*b*. **M.3.NF.2** Understand a fraction as a number on the number line; represent fractions on a number line diagram. **M.3.NF.3** Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.

Linkage Level Descriptions

Initial Precursor	Distal Precursor	Proximal Precursor	Target	Successor
Communicate generic understanding of "some" as a certain amount or a number of people or things.	Recognize separateness as objects that are not joined together. Recognize wholeness as an object that has all the parts joined together.	Demonstrate understanding of partition by dividing a circle, square, or rectangle into two or more distinct parts. These parts may or may not be equal in area.	Recognize each object as the part of a whole/unit when shown a whole/unit containing a group of objects. Demonstrate understanding of a unit fraction (e.g., 1/4) as the quantity formed by one part when a whole is partitioned into *n* (e.g., 4) equal parts.	Recognize a fraction as a number expressed as a quotient of two integers in the form *a*/*b*, with *b* not equal to zero. Recognize the area model that represents a whole and the model that represents one half when shown different area models.

Initial Precursor and Distal Precursor Linkage Level Relationships to the Target

How is the Initial Precursor related to the Target?

Understanding fractions requires students to first recognize an amount of something. Before students begin to recognize items separately, they recognize sets visually or tactually as a whole (i.e., there is something there). Provide students with meaningful experiences and descriptions of items they can touch, hear, smell, and see. Help students make sense of the items by demonstrating the symbolic word, sign, or symbol (e.g., Here are/is some cubes, some pencils, some dirt). Look for fun and interesting opportunities across the day to use the word "some" within a natural context.

How is the Distal Precursor related to the Target?

When working toward an understanding of fractions, students need exposure to a wide variety of items that can be put together and taken apart (e.g., linking cubes, magnetic tiles, puzzles). Encourage students to interact with the objects. Educators should take care to use the words "whole" and "part" to describe them. While students do not need to say these words, they do need to learn the meanings. At the same time, students will be working on counting skills. The models used to teach counting (e.g., five-frame, ten-frame, sets, number line) can be used to support the concepts of whole and part.

Instructional Resources

Released Testlets
See the Guide to Practice Activities and Released Testlets.
Using Untested (UN) Nodes
See the document Using Mini-Maps to Plan Instruction.

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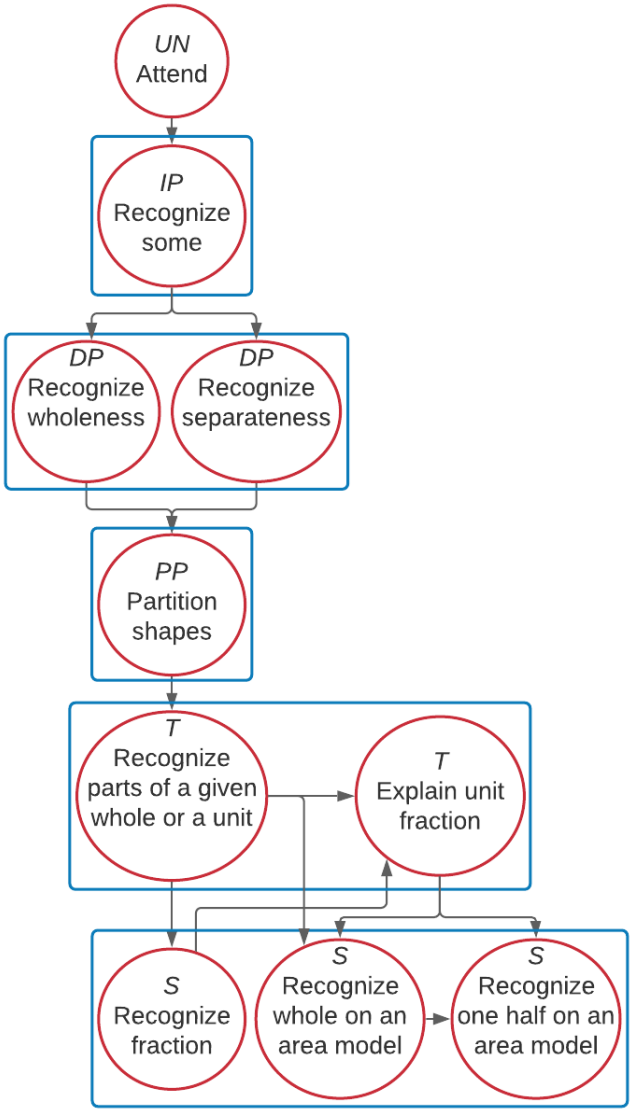
M.EE.3.NF.1-3 Differentiate a fractional part from a whole.



Map Key	
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T	Target
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UN	Untested

Boxes indicate tested nodes

Mini-Map for M.EE.3.OA.4

Subject: Mathematics
Operations and Algebraic Thinking (OA)
Grade: 3

Learning Outcome

DLM Essential Element	Grade-Level Standard
M.EE.3.OA.4 Solve addition and subtraction problems when result is unknown, limited to operands and results within 20.	**M.3.OA.4** Determine the unknown whole number in a multiplication or division equation relating three whole numbers.

Linkage Level Descriptions

Initial Precursor	Distal Precursor	Proximal Precursor	Target	Successor
Communicate understanding of "separateness" by recognizing objects that are not joined together. Communicate understanding of a set by recognizing a group of objects sharing an attribute.	Combine two or more sets of objects to create a new set. Divide a set of 10 or fewer objects into two or more distinct subsets. Demonstrate an understanding of addition by combining the objects of both the sets, and demonstrate an understanding of subtraction by removing some objects from a larger set.	Identify the addition, subtraction, and equal signs. Understand that the "+" sign indicates the numbers on either side of the sign should be added together, that the "-" sign indicates one number should be "taken away" from another number, and that the "=" sign indicates that quantities on either side represent the same value. Represent addition or subtraction word problems or models with equations (e.g., representing 6 marbles	Find the unknown sum (e.g., 5 + 8 = ?) or the missing addend (e.g., 6 + ? = 10) in an addition equation. Find the unknown difference in a subtraction equation (e.g., 12 - 7 = ?).	Determine the unknown quantity in join, part-part-whole, compare, or separate word problems.

Initial Precursor	Distal Precursor	Proximal Precursor	Target	Successor
		plus 2 marbles equal 8 marbles as 6 + 2 = 8 marbles).		

Initial Precursor and Distal Precursor Linkage Level Relationships to the Target

How is the Initial Precursor related to the Target?

Understanding how to add and subtract requires a student to be able to recognize a set or group of items (also see M.3.OA.1-2). Students need many opportunities to experience quantities and numerals in context across the school day. Educators provide lessons using a variety of sets to model early counting. Teach students to recognize when items are grouped together into a set or separated out. The educator presents a set, labels it (e.g., two balls, one bear, three blocks), counts the items, labels it again, and encourages students to use numerals to label and count the separate sets.

How is the Distal Precursor related to the Target?

As students begin to understand labeling and counting small sets, educators will highlight the differences between sets on the basis of overall area or discrete number using the words “more,” “less,” and “same.” Provide students with multiple opportunities to count and compare a wide variety of sets with an increasing number of items, label the set (e.g., eight ball, 12 bears, 15 blocks), and move items in and out of the sets, labeling and counting them again (e.g., "You just said this set has 11 cubes; if I take two cubes, how many will you have?").

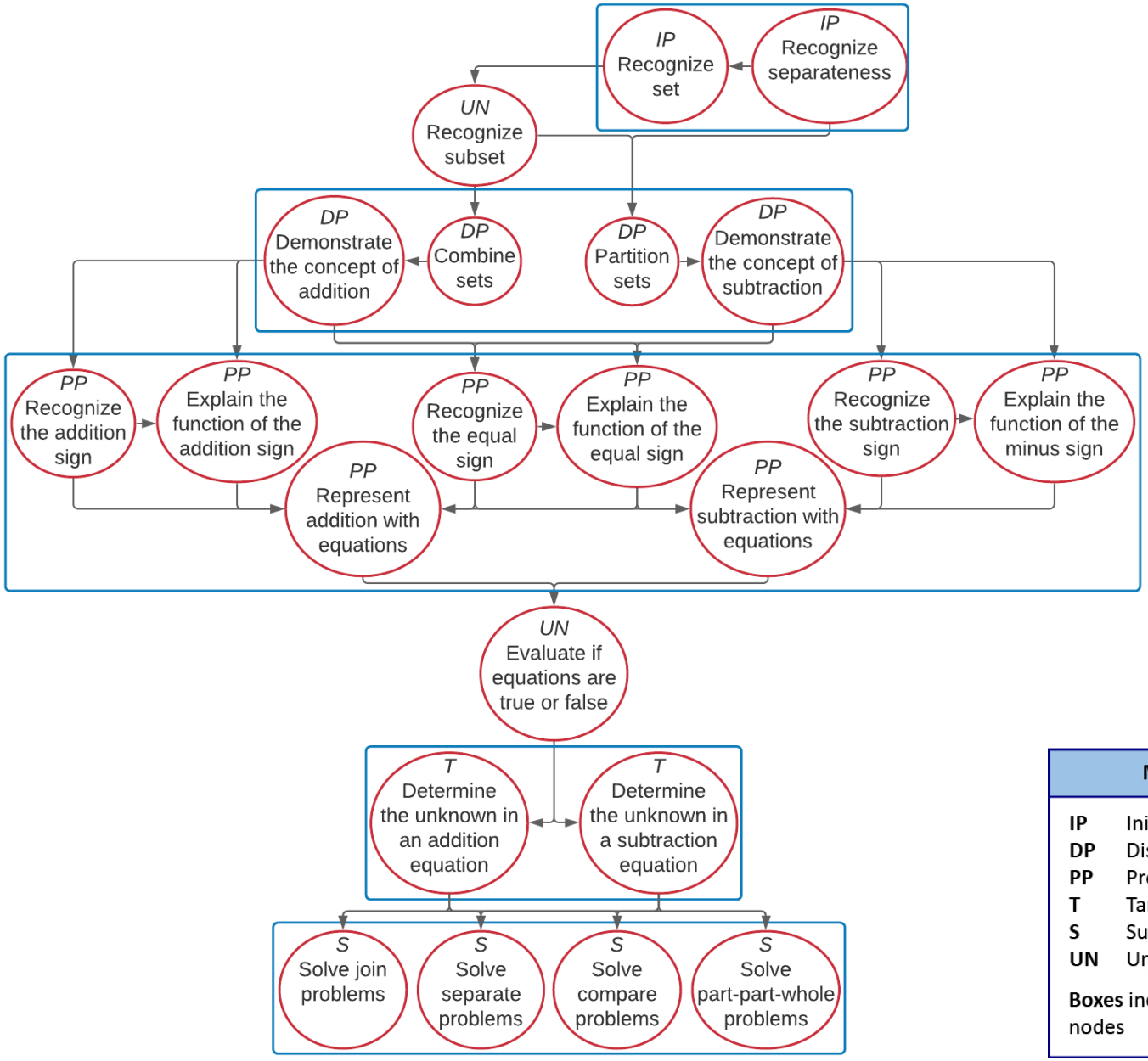
NOTE: Educator can work on the Distal Precursor level using the sets of numbers that students working at the Target level are adding and subtracting.

Instructional Resources

Released Testlets
See the Guide to Practice Activities and Released Testlets.
Using Untested (UN) Nodes
See the document Using Mini-Maps to Plan Instruction.

Link to Text-Only Map

M.EE.3.OA.4 Solve addition and subtraction problems when result is unknown, limited to operands and results within 20.



Map Key	
IP	Initial Precursor
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T	Target
S	Successor
UN	Untested

Boxes indicate tested nodes

Mini-Map for M.EE.3.G.2

Subject: Mathematics
Geometry (G)
Grade: 3

Learning Outcome

DLM Essential Element	Grade-Level Standard
M.EE.3.G.2 Recognize that shapes can be partitioned into equal areas.	**M.3.G.2** Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole.

Linkage Level Descriptions

Initial Precursor	Distal Precursor	Proximal Precursor	Target	Successor
Communicate understanding of a unit by recognizing a group of countable objects. Communicate understanding of "wholeness" by recognizing an object that has all the parts joined together. Recognize parts of an object and the whole object.	Divide familiar shapes, such as circles, triangles, squares, and/or rectangles, into two or more distinct parts. These parts may or may not be equal.	Recognize two glasses with an equal amount of liquid. Demonstrate an ability to partition a circle and rectangle into two, three, and four equal parts. Recognize that a rectangle divided into equal parts can have rows and columns.	Divide familiar shapes, such as circles, squares, and/or rectangles, into two or more equal parts.	Recognize an area model representing the fractions one half, one third, one fourth, or one tenth when presented with three different area models.

Initial Precursor and Distal Precursor Linkage Level Relationships to the Target

How is the Initial Precursor related to the Target?

Being able to partition shapes requires a student to recognize a unit and recognize when basic objects are in whole and part forms. Work on this understanding by giving students an opportunity to observe, feel, or otherwise interact with objects and shapes in their whole and part forms. The general goal is to explore the differences between whole units or objects and parts of units or objects. As students explore shapes, label them and describe them as whole or part.

NOTE: Educators can work on the Initial Precursor skills using everyday objects and/or using the shapes that students working at the Target level are partitioning into equal parts.

How is the Distal Precursor related to the Target?

As students begin to recognize whole objects or shapes and parts of objects or shapes, they can move toward building and taking apart shapes.

NOTE: Educators can work on the Distal Precursor skills using everyday objects and/or using the shapes that students working at the Target level are partitioning into equal parts.

Instructional Resources

Released Testlets
See the Guide to Practice Activities and Released Testlets.
Using Untested (UN) Nodes
See the document Using Mini-Maps to Plan Instruction.

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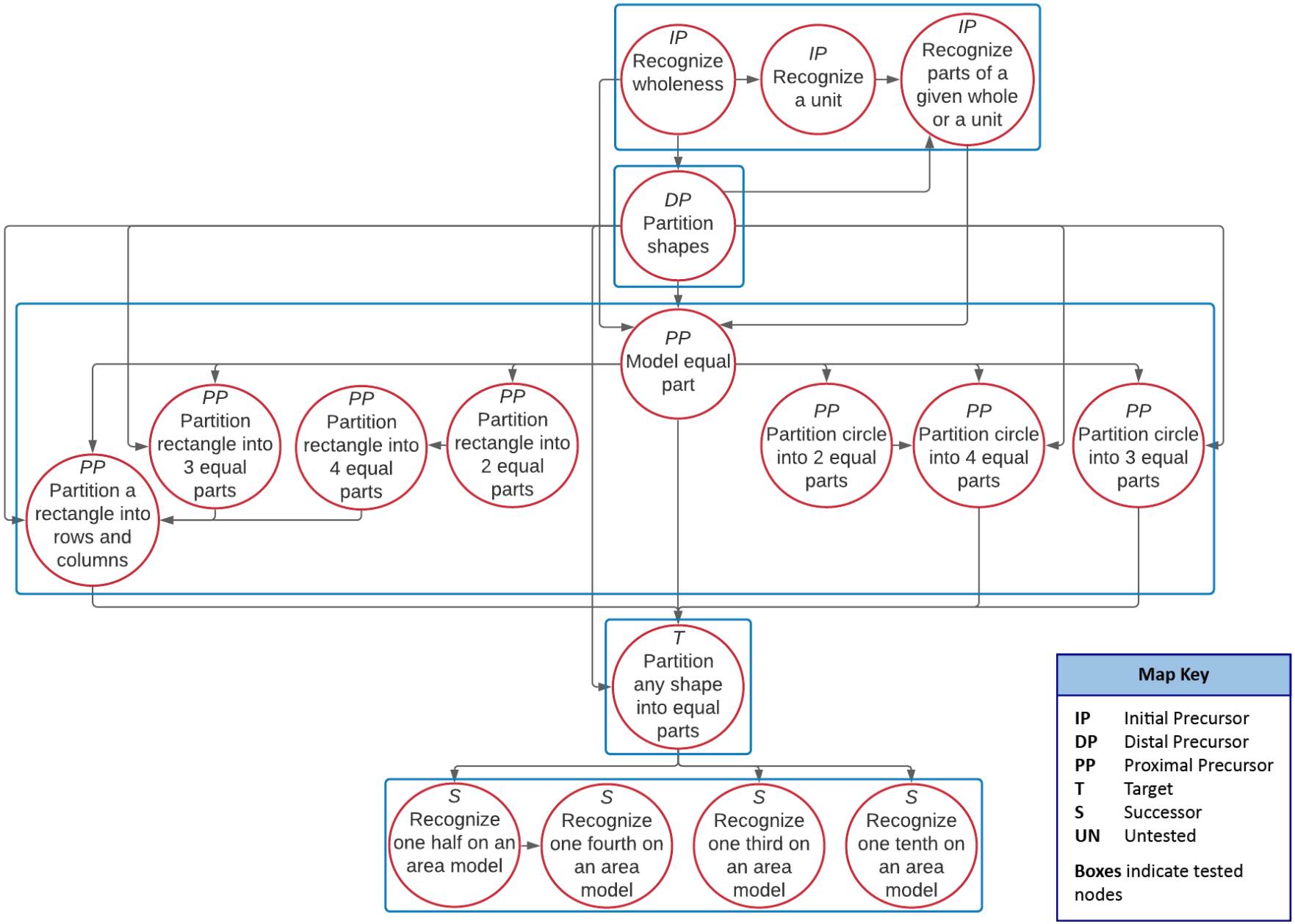
M.EE.3.G.2 Recognize that shapes can be partitioned into equal areas



Mini-Map for M.EE.3.MD.1

Subject: Mathematics
Measurement and Data (MD)
Grade: 3

Learning Outcome

DLM Essential Element	Grade-Level Standard
M.EE.3.MD.1 Tell time to the hour on a digital clock.	**M.3.MD.1** Tell and write time to the nearest minute, and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.

Linkage Level Descriptions

Initial Precursor	Distal Precursor	Proximal Precursor	Target	Successor
Show interest in and focused attention to a task, object, or any environment stimulus. Recognize that an object can share some or none of the attributes of other objects in a group, and recognize the object that does not share any attribute with other objects in a group as "different."	Recognize measurable attributes in a variety of contexts (e.g., understand that time is measurable using both a clock and a calendar).	Identify the hour as the numeral on the left side of the colon symbol (:) and the minutes as the numeral on the right side of the colon symbol (:) on a digital clock.	Communicate the time shown on a digital clock to the nearest hour (e.g., 3 o'clock, 7 o'clock).	Communicate the time shown on a digital clock to the nearest half hour (e.g., 4:30, 6:30) or quarter hour (e.g., 2:15, 3:45, 8:15).

Initial Precursor and Distal Precursor Linkage Level Relationships to the Target

How is the Initial Precursor related to the Target?

In order to understand the passage of time and ultimately to tell time and understand its relevance, students begin by learning to focus their attention and recognize when things in their environment change or are different. In the context of learning to tell time, educators can help students attend to what is happening and contrast it with what will happen next or what happened in the past. They can draw students' attention to changes and help them notice new and different things in the environment, especially when those new and different things are associated with the passage of time.

How is the Distal Precursor related to the Target?

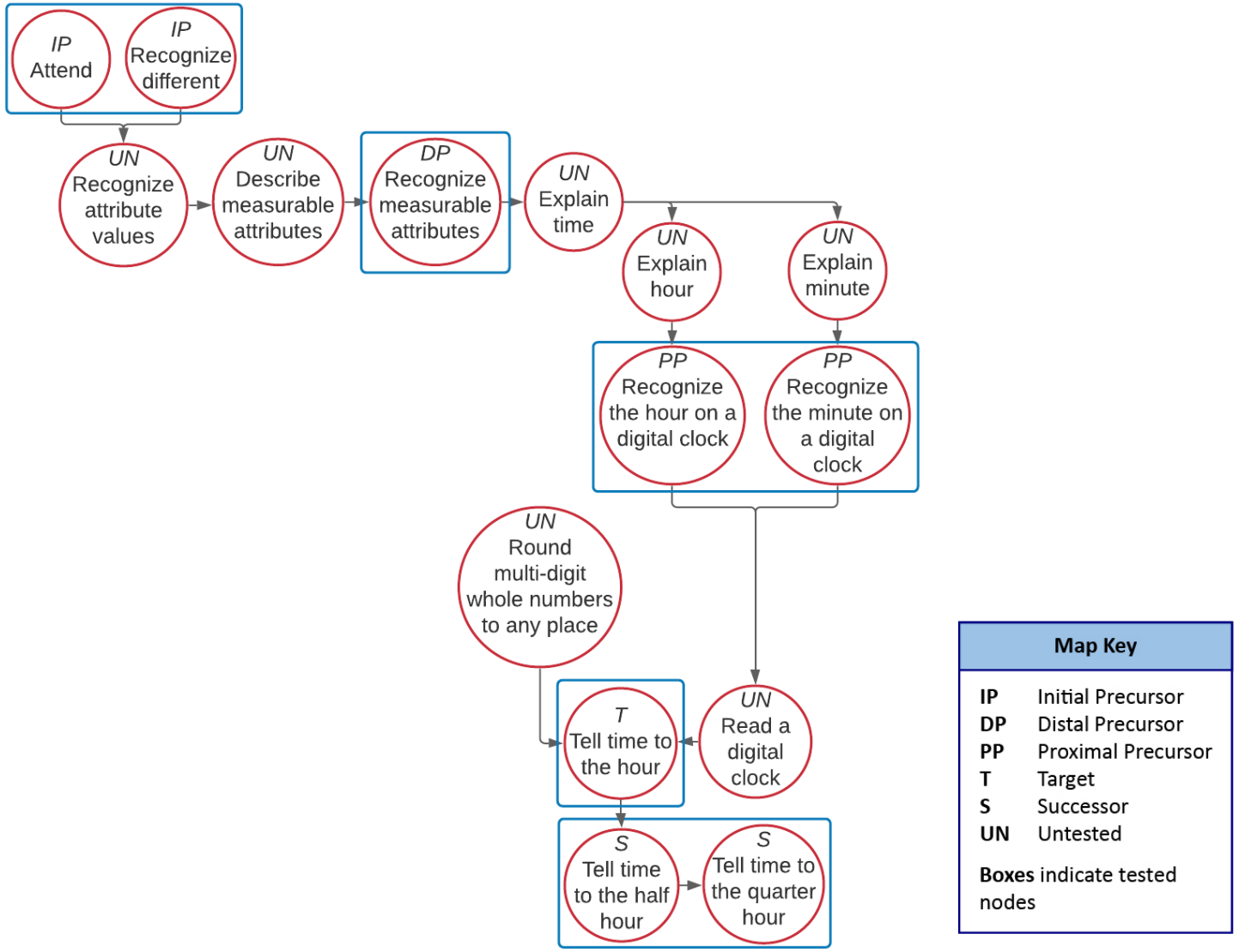
In the context of an Essential Element addressing the ability to tell time, recognizing measurable attributes refers to attributes that begin to mark time. For example, students recognize attributes such as the beginning and ending of an activity; things that are accomplished first then next; and specific time concepts such as day, night, today, tomorrow, and yesterday.

Instructional Resources

Released Testlets
See the Guide to Practice Activities and Released Testlets.
Using Untested (UN) Nodes
See the document Using Mini-Maps to Plan Instruction.

Link to Text-Only Map

M.EE.3.MD.1 Tell time to the hour on a digital clock.



Mini-Map for M.EE.3.MD.4

Subject: Mathematics
Measurement and Data (MD)
Grade: 3

Learning Outcome

DLM Essential Element	Grade-Level Standard
M.EE.3.MD.4 Measure length of objects using standard tools, such as rulers, yardsticks, and meter sticks.	**M.3.MD.4** Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters.

Linkage Level Descriptions

Initial Precursor	Distal Precursor	Proximal Precursor	Target	Successor
Recognize attributes or characteristics of an object, such as color, orientation, length, width, and weight.	Compare the length of two objects without using a measuring tool, and communicate whether the length of the object is longer than, shorter than, or equal to the length of the other object.	Demonstrate an ability to measure lengths and distances using informal units of measurement. (Informal measurement tools are not standard tools, such as a ruler or yardstick, but rather objects like shoes and blocks or body parts like hands and feet.)	Measure the length of an object in inches or feet, using an appropriate tool such as a ruler or yardstick.	Using standard forms of measurement, compare the lengths of two or more objects, and communicate whether the length of one object is longer than, shorter than, or equal to another object.

Initial Precursor and Distal Precursor Linkage Level Relationships to the Target

How is the Initial Precursor related to the Target?

In working toward learning to use tools to measure the length of objects, students begin by learning to notice the attributes of an object. The educator draws the students' attention to an object or stimulus, labels it, describes it, and the student observes, feels, or otherwise interacts with it.

How is the Distal Precursor related to the Target?

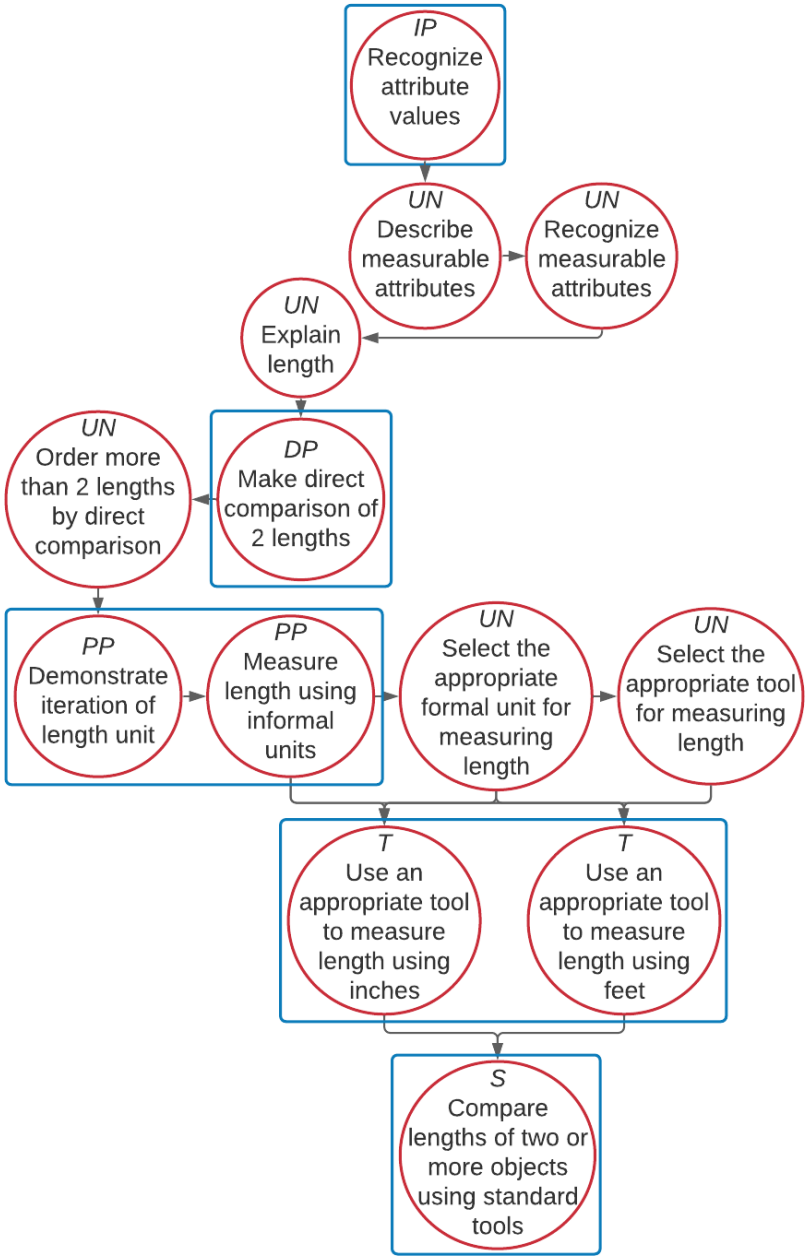
As students are engaging with objects, educators will continue to label and describe them, but they will also begin to incorporate lessons that have students directly comparing the lengths of two objects by matching one item against another (e.g., placing them side by side). This implies that they can distinguish length from other attributes such as color or shape. As students make direct comparisons, educators should demonstrate the describing words associated with length (e.g., short/long, length) and encourage students to begin using the words.

Instructional Resources

Released Testlets
See the Guide to Practice Activities and Released Testlets.
Using Untested (UN) Nodes
See the document Using Mini-Maps to Plan Instruction.

Link to Text-Only Map

M.EE.3.MD.4 Measure length of objects using standard tools, such as rulers, yardsticks, and meter sticks.



Map Key	
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T	Target
S	Successor
UN	Untested

Boxes indicate tested nodes

Mini-Map for M.EE.3.MD.3

Subject: Mathematics
Measurement and Data (MD)
Grade: 3

Learning Outcome

DLM Essential Element	Grade-Level Standard
M.EE.3.MD.3 Use picture or bar graph data to answer questions about data.	**M.3.MD.3** Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs.

Linkage Level Descriptions

Initial Precursor	Distal Precursor	Proximal Precursor	Target	Successor
Recognize attributes or characteristics of an object such as color, height, or weight. Form pairs of objects by matching two objects sharing a specified attribute.	Group together objects by attribute values such as shape or size (e.g., group together a square, a rectangle, and a rhombus, as they all have four sides). Order objects by following a specific rule (e.g., arrange three objects with different sizes from the smallest to largest).	Recognize the structure of bar and picture graphs such as the framework, specifiers, or labels for the *x*- and *y*-axes. Understand that bars are used to display data in bar graphs, where the height of the bar represents the number of observations for each category. Understand that pictures, symbols, or geometrical figures are used to display data in picture graphs, where the number of pictures or symbols represents	Using a bar or picture graph, answer explicit questions by interpreting information directly from the graph (e.g., in a bar/picture graph displaying students' favorite ice cream, how many students like strawberry ice cream?). Demonstrate an understanding of the information represented on the graph.	Using a bar or picture graph, answer questions that require interpretation and integration of information presented on the graphs (e.g., in a bar/picture graph displaying students' favorite ice cream, how many students like strawberry and chocolate ice creams? Or which is the favorite ice cream of all the students?). Demonstrate the ability to use information

Initial Precursor	Distal Precursor	Proximal Precursor	Target	Successor
		the number of observations for each category.		represented on the graph.

Initial Precursor and Distal Precursor Linkage Level Relationships to the Target

How is the Initial Precursor related to the Target?

In order to be able to understand data on a graph, students begin by learning to notice the attributes of an object. The educator draws the students' attention to new objects or stimuli, labels them, describes them, and the student observes, feels, or otherwise interacts with them. Educators encourage students to begin placing like objects together.

How is the Distal Precursor related to the Target?

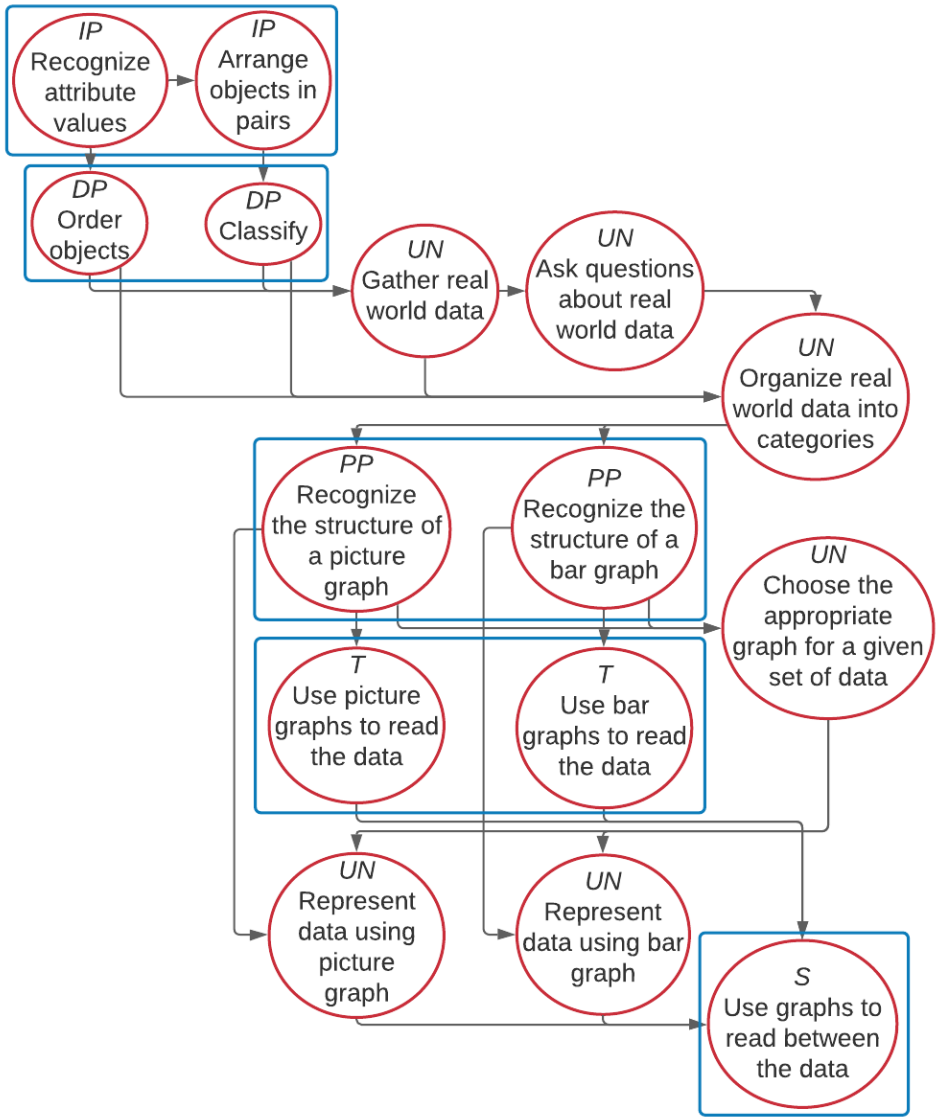
As the students' attention to objects increases, educators will begin to draw the students' attention to what is the same and different between familiar items: color, shape, quantity (1-4), size, texture, and pattern. Educators should take care to use attribute words while defining and demonstrating their meaning. While students do not need to say these words, they do need to learn the meanings. Students will also begin to group two items in the same set based on their attributes (e.g., two tigers, bumpy ball and bumpy gravel, red spoons).

Instructional Resources

Released Testlets
See the Guide to Practice Activities and Released Testlets.
Using Untested (UN) Nodes
See the document Using Mini-Maps to Plan Instruction.

Link to Text-Only Map

M.EE.3.MD.3 Use picture or bar graph data to answer questions about data.



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Mini-Map for M.EE.3.OA.1-2

Subject: Mathematics
Operations and Algebraic Thinking (OA)
Grade: 3

Learning Outcome

DLM Essential Element	Grade-Level Standard
M.EE.3.OA.1-2 Use repeated addition to find the total number of objects and determine the sum.	**M.3.OA.1** Interpret products of whole numbers, e.g., interpret 5 × 7 as the total number of objects in 5 groups of 7 objects each. For example, describe a context in which a total number of objects can be expressed as 5 × 7. **M.3.OA.2** Interpret whole-number quotients of whole numbers, e.g., interpret 56 ÷ 8 as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each.

Linkage Level Descriptions

Initial Precursor	Distal Precursor	Proximal Precursor	Target	Successor
Communicate understanding of "separateness" by recognizing objects that are not joined together. Communicate understanding of set by recognizing a group of objects sharing an attribute. Communicate understanding of a subset by recognizing a subset as a set or group of objects within a	Combine two or more sets, containing objects, to form a new set. Combine two parts (e.g., blocks, toys, or shapes) to form a new whole. Demonstrate addition by combining the objects belonging to two or more sets, and communicate that the total number of objects in the new set is called the sum.	Use models, such as mathematical equations (e.g., 5 + 5 + 5 = 15), sets of manipulatives, or number line diagrams to represent a repeated addition problem.	Solve repeated addition problems by representing the problem using an equation and finding the sum using an addition strategy, such as skip counting.	Demonstrate multiplication by combining multiple sets containing the same number of objects. Communicate understanding that the number of sets times the number of objects in each set equals the total number of objects.

Initial Precursor	Distal Precursor	Proximal Precursor	Target	Successor
larger set that share an attribute.				

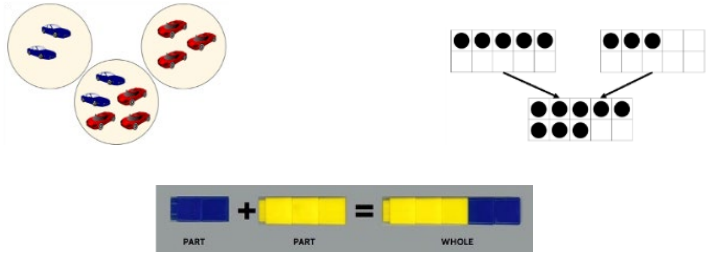
Initial Precursor and Distal Precursor Linkage Level Relationships to the Target

How is the Initial Precursor related to the Target?

In order to use repeated addition to solve problems, students must first learn to organize items into groups/sets based on a common characteristic such as size, color, shape, texture, or flavor. Students learn how to sort items by separating a group of items into two groups (e.g., vehicles and animals). As students gain comfort sorting items into sets, they are encouraged to use their language to convey their thought process by identifying and naming the characteristic that determines the set (e.g., wheels and legs). Activities that require students to engage actively with the items will foster the students' understanding of set, subsets, and separateness (e.g., the game "one of these things is not like the other"; highlighting one characteristic in a group of similar items [e.g., color] by which the items will be grouped; incorporating creating sets into everyday activities [e.g., during clean up time students place items into one of two bins based on a designated characteristic]).

How is the Distal Precursor related to the Target?

As students gain an understanding of how to group items into sets, educators will begin to help students connect their knowledge of sets with their knowledge of counting. Educators will provide multiple experiences counting sets and combining sets using multiple models. The following are examples of models.

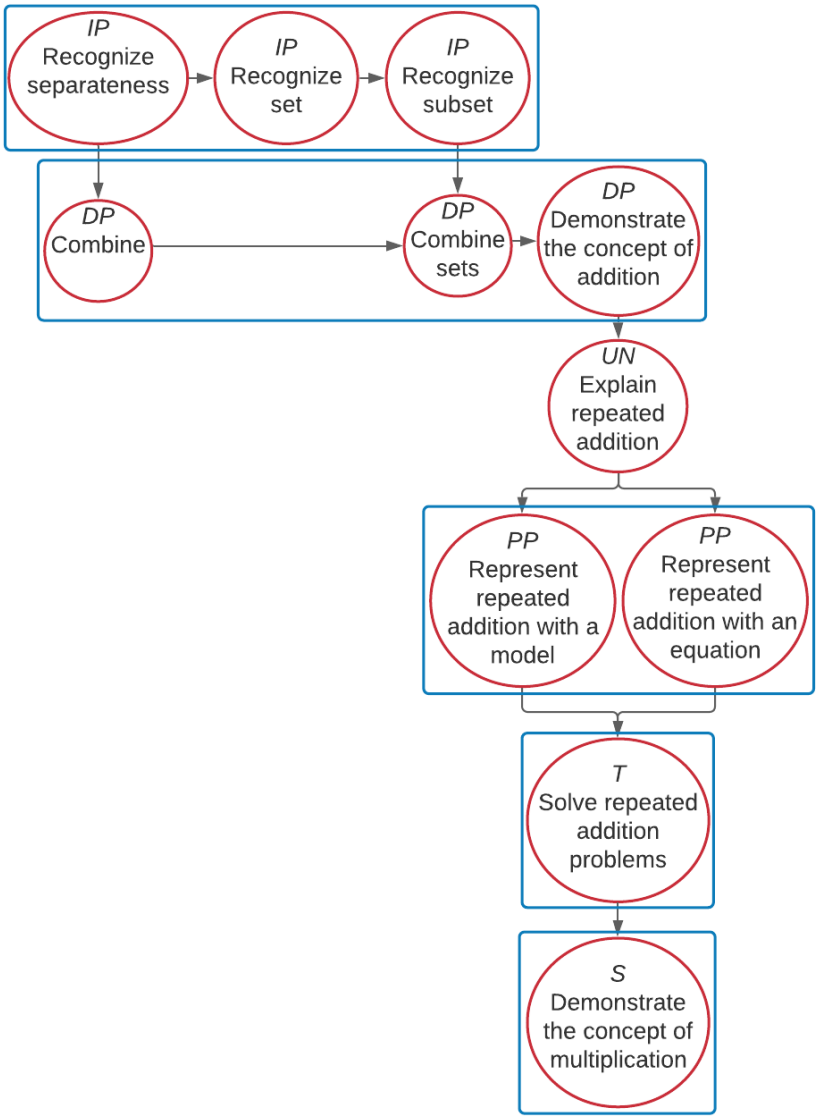


Instructional Resources

Released Testlets
See the Guide to Practice Activities and Released Testlets.
Using Untested (UN) Nodes
See the document Using Mini-Maps to Plan Instruction.

Link to Text-Only Map

M.EE.3.OA.1-2 Use repeated addition to find the total number of objects and determine the sum.



Map Key	
IP	Initial Precursor
DP	Distal Precursor
PP	Proximal Precursor
T	Target
S	Successor
UN	Untested

Boxes indicate tested nodes

Mini-Map for M.EE.3.OA.8

Subject: Mathematics
Operations and Algebraic Thinking (OA)
Grade: 3

Learning Outcome

DLM Essential Element	Grade-Level Standard
M.EE.3.OA.8 Solve one-step real-world problems using addition or subtraction within 20.	**M.3.OA.8** Solve two-step word problems using the four operations. 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.

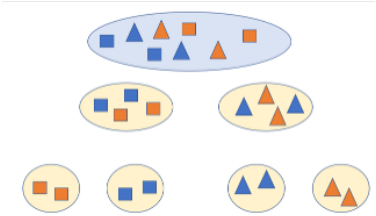
Linkage Level Descriptions

Initial Precursor	Distal Precursor	Proximal Precursor	Target	Successor
Combine two or more sets of objects or numbers to form a new set. Divide a set of 10 or fewer objects into two or more distinct subsets (e.g., dividing a set containing 10 objects into two subsets containing 4 and 6 objects).	Demonstrate understanding of addition by combining the objects of two or more sets and understanding of subtraction by removing some objects from a larger set.	Find the unknown sum (e.g., 5 + 8 = ?) or the missing addend (e.g., 6 + ? = 10) in an addition equation. Find the unknown difference in a subtraction equation (e.g., 12 - 7 = ?).	Solve addition and subtraction word problems within 20.	Use addition and subtraction to solve two-step word problems, including join, separate, part-part-whole, and compare problems.

Initial Precursor and Distal Precursor Linkage Level Relationships to the Target

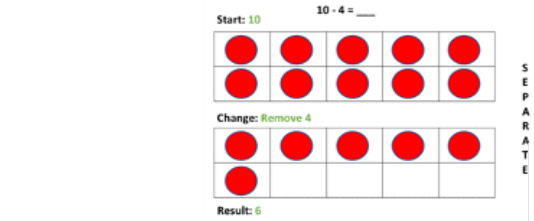
How is the Initial Precursor related to the Target?

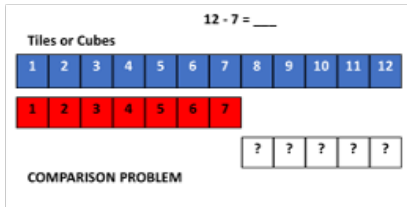
The knowledge needed to solve addition and subtraction word problems links back to an understanding of how to create sets (see M.3.OA.1-2), but it also requires learning to manipulate sets (i.e., combining and separating or partitioning). Provide students many opportunities to take a set of objects (e.g., tiles, linking cubes, buttons) and separate them based on a given characteristic (e.g., shape, color, size) into two distinct sets, separate them again based on another characteristic. Guide students to notice how the set size changes each time you combine or partition the sets.

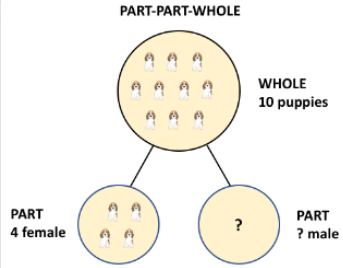


How is the Distal Precursor related to the Target?

As students gain an understanding of how to group and manipulate items into sets, educators will begin to help students connect their knowledge of sets and counting to addition and subtraction. Educators will provide multiple experiences using the various addition and subtraction problem types (e.g., joining, separating, part-part-whole, and comparison problems). Here are a few examples.







Instructional Resources

Released Testlets
See the Guide to Practice Activities and Released Testlets.
Using Untested (UN) Nodes
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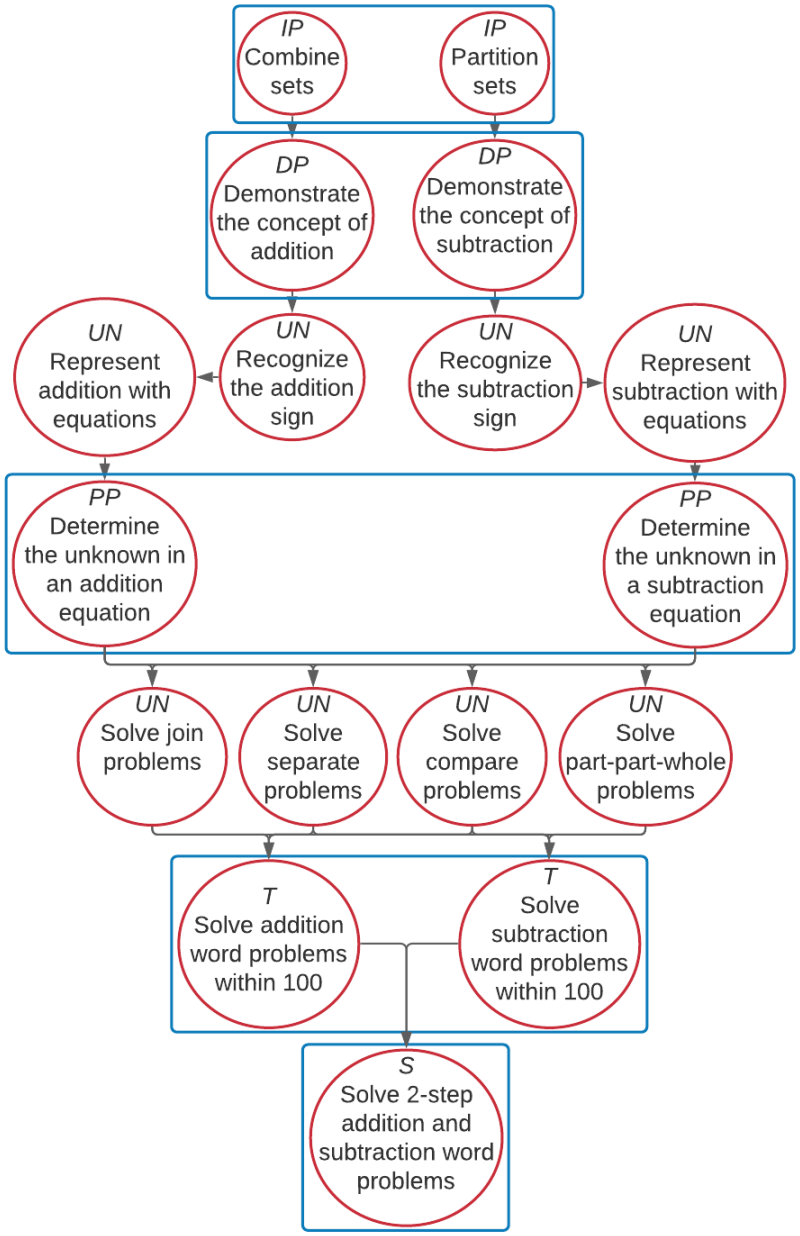
Link to Text-Only Map

M.EE.3.OA.8 Solve one-step real-world problems using addition or subtraction within 20.



Map Key	
IP	Initial Precursor
DP	Distal Precursor
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T	Target
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Boxes indicate tested nodes

Mini-Map for M.EE.3.OA.9

Subject: Mathematics
Operations and Algebraic Thinking (OA)
Grade: 3

Learning Outcome

DLM Essential Element	Grade-Level Standard
M.EE.3.OA.9 Identify arithmetic patterns.	**M.3.OA.9** Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.

Linkage Level Descriptions

Initial Precursor	Distal Precursor	Proximal Precursor	Target	Successor
Recognize "same" as the object that shares all of the same attributes as other objects in a group. Recognize "different" as the object that shares some or none of the attributes as other objects in a group.	Arrange objects in a specific order by following a specific rule (e.g., arrange objects from the largest to the smallest size). Group like items by attributes such as size, shape, and color. Contrast or distinguish objects based on attributes such as shape, size, texture, and numerical pattern.	Recognize that patterns (or cycles) exist in nature or in everyday life.	Recognize the pattern that either repeats or grows when shown different patterns involving numbers, letters, symbols, or shapes (e.g., 1, 1, 2, 1, 1, 2, 1, 1, 2…, or 2, 4, 6, 8...).	Determine the pattern rule in a repeating, growing, or shrinking pattern by finding how a term in the pattern is obtained from a previous term (e.g., in the pattern 1, 3, 5, 7..., each term is obtained from the previous term by adding 2, which implies that the pattern rule is "add 2"). Apply a given pattern rule to find the next term in a pattern.

Initial Precursor and Distal Precursor Linkage Level Relationships to the Target

How is the Initial Precursor related to the Target?

Recognizing patterns is an important building block to many mathematical concepts and skills such as skip counting, repeated addition, and multiplication. In order to build toward arithmetic patterns, students need to engage in activities that compare at least two items. Calling attention to both how they are the same and how they are different. This type of instruction should include but may not be limited to quantities, shapes, and attributes across the school day so students have many opportunities to experience same and different.

How is the Distal Precursor related to the Target?

Building on same and different, educators can use some of the other mathematical concepts like working with sets or recognizing a whole and parts to help students identify same and different. For instance, students may create a set and then create a second set that has the same amount. Then, they can change one of the sets to make it different. As students are learning to create and identify sets that are same and different, educators can draw student attention to the various attributes of an object to teach students to order, classify, and contrast the objects. These understandings will then lead to students having the attentional skills to begin recognizing patterns.

Instructional Resources

Released Testlets
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Using Untested (UN) Nodes
See the document Using Mini-Maps to Plan Instruction.

Link to Text-Only Map

M.EE.3.OA.9 Identify arithmetic patterns.