Mini-Map for M.EE.8.G.9

Subject: Mathematics
Geometry (G)
Grade: 8

Learning Outcome

DLM Essential Element	Grade-Level Standard
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).	**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.

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.	Recognize attributes or characteristics of an object that are measurable (e.g., length, weight, time).	Communicate understanding that length is the distance between the two points that define a line segment, perimeter is the distance that surrounds a plane area, area is the amount of space contained within the outline or boundary of a two-dimensional object or figure, and volume is the space enclosed by a shape or an object.	Calculate area of a rectangle using the area formula (area = length x width), perimeter of a parallelogram using the perimeter formula (perimeter = $2a + 2b$), and volume of a prism using the volume formula (volume = height x length x width).	Solve word problems where the unknown quantity is obtained using the volume of a rectangular prism, area of a rectangle, or perimeter of a polygon.

Initial Precursor and Distal Precursor Linkage Level Relationships to the Target

How is the Initial Precursor related to the Target?

In order to calculate volume, area, and perimeter with formulas, students begin by learning to notice what is new. The educator draws the students' attention to new objects or stimuli, labels them (e.g., “this is a circle, which has no corners, so we can go all the way around without stopping,” “this is a rectangle, which has four corners, two long sides, and two short sides”) and the student observes, feels, or otherwise interacts with the shapes. Students also work on counting small units, recognizing that two or more sets or groups of items exist. Work on this skill using a variety of sets. Help students recognize when items are grouped together into a set or separated out. As educators present sets, they label them (e.g., two balls, one bear, three blocks), count the items, label them again, and encourage students to use numbers to label and count the separate sets.

How is the Distal Precursor related to the Target?

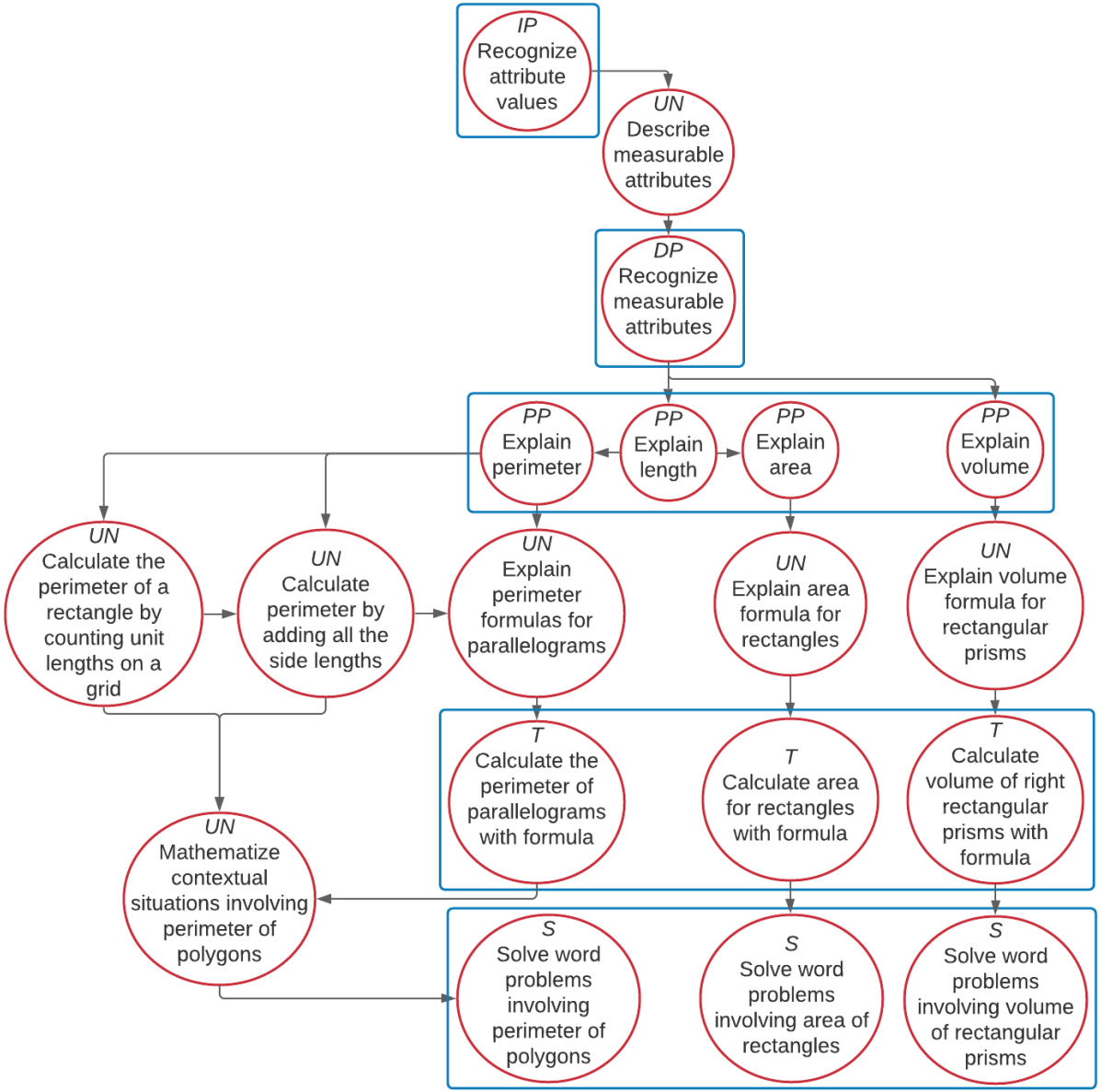
As students develop their attention to objects and notice the difference between objects, they will begin working on recognizing measurable attributes. Students need lots of experience making direct comparisons between objects. Educators should take care to use attribute words like “big”/”small,” “tall”/”short,” “longer”/”shorter” while defining and demonstrating their meaning. While students do not need to say these words, they do need to learn the meanings.

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.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).



Map Key

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

Boxes indicate tested nodes