Ideas in Mathematics:
Geometric Measurement

Readiness
Individual
Algebra:
Teaching of
Supporting
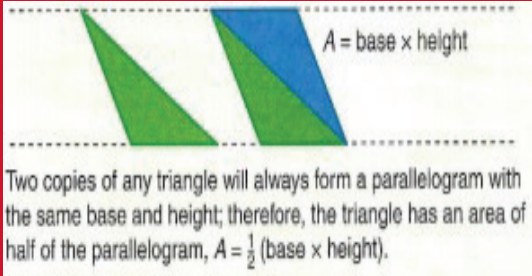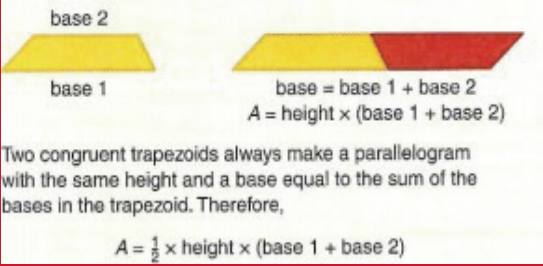
Misconception	Explanation	Example
Confusing linear and square units	One major misconception students have with area measurement is thinking about area as the length of two lines, rather than the measure of a surface	
Difficulty in conceptualizing the meaning of height and base	Students tend to confuse a slanted side and the height. Any side of the figure can be considered the base and for each base there is a corresponding height. The confusion may be because students have a lot of early experiences with the L X W formula (where the height is the same as the length)	

Activity	Explanation	Example
Area of a Parallelogram Activity	Give students a grid with parallelograms or draw on plain paper with the lengths of all four sides and the height. Ask students to use what they have learned about the area of rectangles to determine the areas of these parallelograms. Students should find a method that will work for any parallelogram.	

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Activity	Explanation	Example
Area of Triangle Activity	Provide students with a grid with triangles. Challenge students to find the area of each of the triangles. They should confirm that their method works for the triangles. For more structure, ask "Can you find a parallelogram that is related to your triangle?" Suggest that they fold a piece of paper in half, draw a triangle, and cut it out, make two identical copies. Use the triangles together to make a parallelogram. This provides a visual of how a triangle is related to a parallelogram.	 $A = base \times height$ Two copies of any triangle will always form a parallelogram with the same base and height; therefore, the triangle has an area of half of the parallelogram, $A = \frac{1}{2}$ (base × height). *Van De Walle et al., 2019*
Area Trapezoids Activity	Provide students with a grid with trapezoids. There are multiple ways to arrive at an area of a trapezoid by decomposing the trapezoid into a simpler shape or combining shapes. Make a parallelogram inside the given trapezoid using three of the sides Draw a diagonal forming two triangles. Draw a rectangle inside the trapezoid, leaving two triangles, then put those two triangles together.	 base 2 base 1 base = base 1 + base 2 $A = height \times (base\ 1 + base\ 2)$ Two congruent trapezoids always make a parallelogram with the same height and a base equal to the sum of the bases in the trapezoid. Therefore, $A = \frac{1}{2} \times height \times (base\ 1 + base\ 2)$ *Van De Walle et al., 2019*

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Activity	Explanation	Example
Prism Volume Activity	Provide students with a pair of small boxes made from card stock. Use unit dimensions that match the cubes that you have for units. Students are given two boxes, one cube, and a corresponding ruler (If you use 2-cm cubes, make a ruler with 2-cm units). Ask students to decide which box has the greater volume or if they have the same volume.	6 x 3 x 4 5 x 4 x 4 ¼ ft x 3 ft x 2 ½ ft 4 ft x ¾ ft x ½ ft

Van De Walle et al., 2019

Geometry Virtual Manipulatives

cube builder
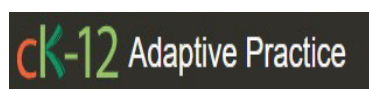**Cube Builder**
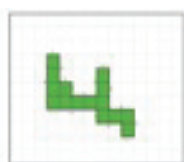
perimeter/area
Perimeter

geoboard
Geoboard
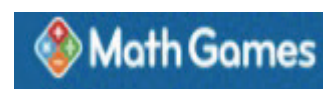
geometric solids
Geometric Solids

tangram
Tangram

Geometry Virtual Practice

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