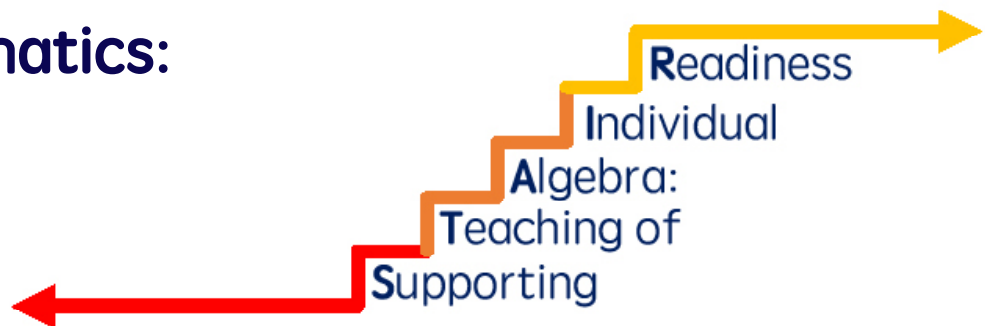


# Ideas in Mathematics:

## Area



## Key Concepts of Area

- Before teaching students to measure area, it is helpful to provide students with the opportunity to conceptually understand area.
- Many students confuse area and perimeter. After students conceptually understand area, explicitly teach perimeter and provide activities in which students must differentiate between the two concepts.

## Teaching Area

- Provide opportunities for students to compare shapes in which the area is rearranged or in which the shapes share one common dimension or property (e.g., two rectangles with the same width). This activity can be extended using tangrams.
- Provide students with physical models to cover the area of shapes. Objects can include tiles, sticky notes, shapes on geoboards, floor tiles on the ground,
- Practice activities that develop students' understanding of area, as seen in Activity 18.17.

### Activity 18.17

CCSS-M: 3.MD.C.5; 3.MD.C.6; 4.MD.A.3

#### Cover and Compare

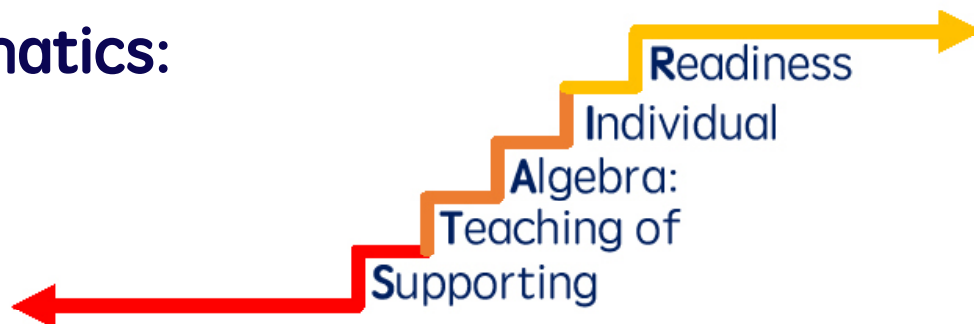
Give students the Two Rectangles, a Parallelogram, a Trapezoid and a Blob Activity Page where the areas are not the same but with no area that is clearly largest or smallest. Ask students to predict which shape has the smallest and the largest area and then use a strategy to compare the areas. Brainstorm strategies and create a list of options to support students with special needs. Students may trace or glue the same two-dimensional unit on the shapes, place tiles on them, or cut the shapes out and place them on grid paper.

**MyLab Education** Activity Page: Two Rectangles, a Parallelogram, a Trapezoid, and a Blob



# Ideas in Mathematics:

## Area



- Practice measuring area in square units, as seen in Activity 18.18.

**Activity 18.18**

CCSS-M: 3.MD.C.5; 3.MD.C.6;  
3.MD.C.7; 5.NF.B.4b

**Rectangle Comparison:  
Square Units**

Give students the Rectangle Comparison Activity Page that includes four rectangles with a similar area, a physical model of a single square unit and a ruler that measures the unit. Students are not permitted to cut out the rectangles, but they may draw on them if they wish. The task is to use their rulers to determine, in any way that they can, which rectangle is larger or whether they have the same area. They should use words, pictures, and numbers to explain their conclusions. Some suggested pairs are as follows:

$4 \times 10$  and  $5 \times 8$       $5 \times 10$  and  $7 \times 7$   
 $4 \times 6$  and  $5 \times 5$

Some students with disabilities may need to have modified worksheets of the figures on grid paper that matches the square units to be used.

**MyLab Education**     Activity Page:  
Rectangle Comparison

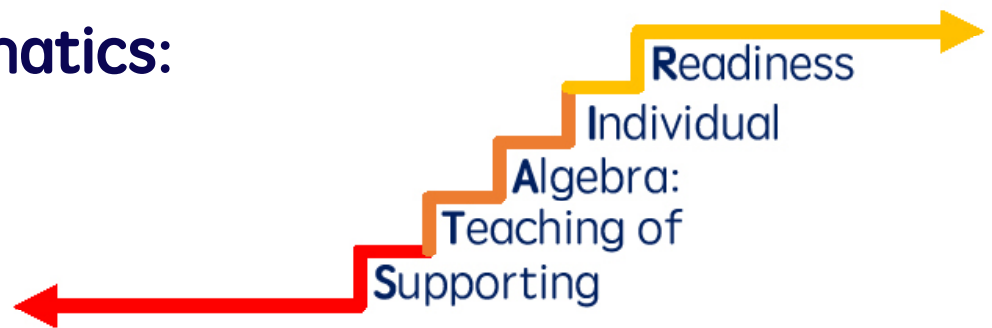
**STUDENTS  
with  
SPECIAL  
NEEDS**

(Van de Walle et al., 2019)

- Introduce or practice the concept of multiplication as arrays to find the area of rectangles.
- Have students develop formulas for area, based on their conceptual understanding. If students struggle with this task, remind students of the steps they take to solve multiplication problems using an area without counting every square.
- Once students are comfortable with the area of rectangles, move towards solving the area of a parallelogram, similar to that shown in Activity 18.23.

# Ideas in Mathematics:

Area



## Activity 18.23

CCSS-M: 6.G.A.1

### Area of a Parallelogram

Give students the Grid of Parallelograms Activity Page or, for a slightly harder challenge, drawn on plain paper with all dimensions—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, even if not drawn on a grid.

**MyLab Education** Activity Page: Grid of Parallelograms

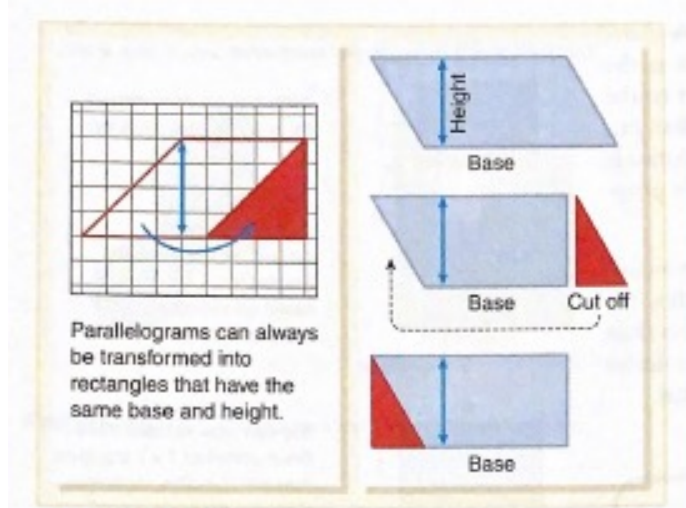
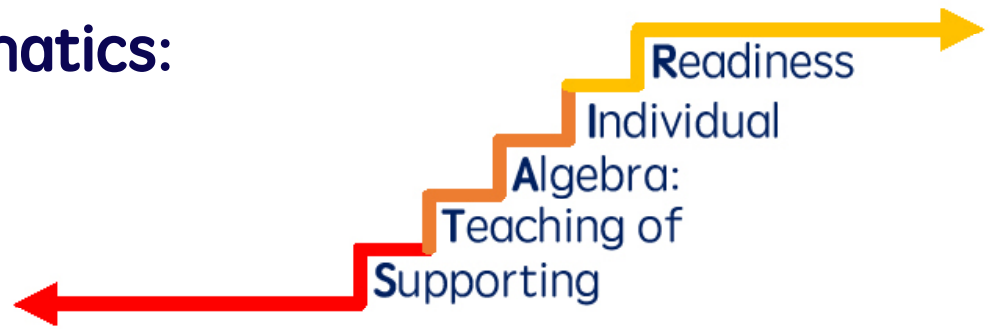
(Van de Walle et al., 2019)

- From parallelograms, students should be introduced to finding the area of triangles and trapezoids. Students can be supported by showing them ways that triangles and parallelograms form rectangles. In addition, trapezoids can be combined to make parallelograms, or trapezoids can be decomposed to rectangles and triangles. See Figure 18.14–18.16 for transforming shapes.

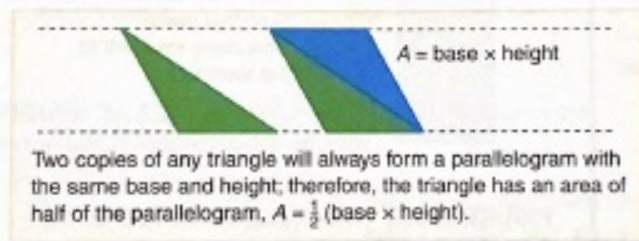


# Ideas in Mathematics:

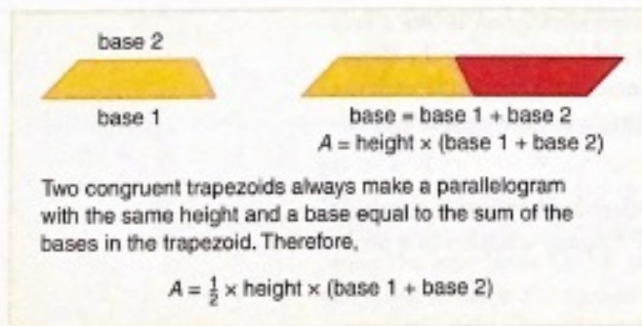
## Area



**FIGURE 18.14** Transforming a parallelogram into a rectangle.



**FIGURE 18.15** Two congruent triangles always form a parallelogram.



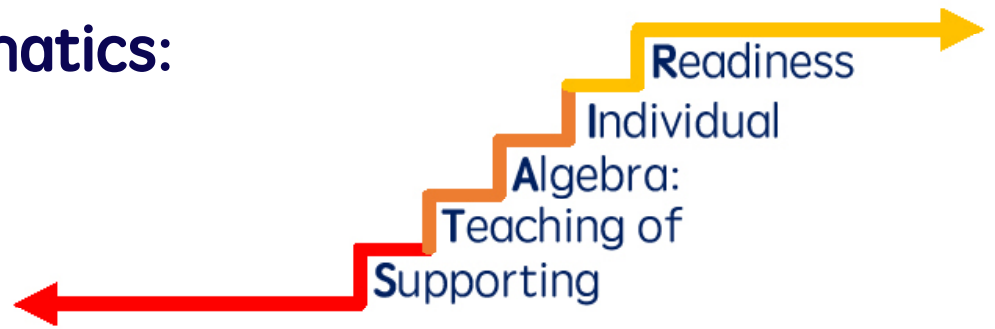
**FIGURE 18.16** Two congruent trapezoids always form a parallelogram.

(Van de Walle et al., 2019)

To teach surface area, it is beneficial for students to use nets as visualization tools.

# Ideas in Mathematics:

Area



## Resources for Teaching Area

- [Math Learning Center Digital Pattern Blocks and Geoboard](#)  
On this website, students can create various two-dimensional shapes using digital pattern blocks and the geoboard.
- [Toy Theater Pattern Blocks, Geoboard, and Area/Perimeter Explorer](#)  
Using the digital manipulatives, students can explore a variety of features related to two-dimensional shapes.