MA.K.GR.1.5

Overarching Standard: MA.K.GR.1 *Identify, compare, and compose two- and three-dimensional figures.*

Benchmark of Focus

MA.K.GR.1.5: Combine two-dimensional figures to form a given composite figure. Figures used to form a composite shape are limited to triangles, rectangles, and squares.

Example: Two triangles can be used to form a given rectangle.

Benchmark Clarifications
Clarification 1: This benchmark is intended to develop the understanding of spatial relationships.

Related Benchmark/Horizontal Alignment

- There are no direct connections outside of this standard; however,teachers are encouraged to find possible indirect connections.

Vertical Alignment

Previous Benchmarks	**Next Benchmarks**
VPK	MA.1.GR.1.3

Terms from the K-12 Glossary

- Composite Figures
- Rectangles
- Squares
- Triangle

Purpose and Instructional Strategies

The purpose of this benchmark is to allow students opportunities to discover further connectionsand patterns with two-dimensional figures. Students should have an opportunity to investigate combining figures in a variety of sizes and orientations. *(MTR.2.1, MTR.5.1)*

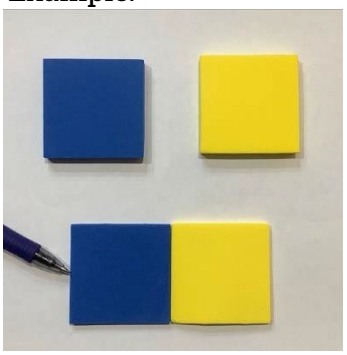
- Instruction includes composite figures that may be named based on previous benchmarks,as well as those not included in previous benchmarks, though there is no expectation of a formal name for new composite shapes outside of previously named figures.
    - o For example: a triangle and square forming a pentagon, may not need to be formally identified as a pentagon. Two triangles that form a rectangle can beformally identified as a rectangle.
- Exploring with figures of different sizes and orientations allows students to continue todevelop an understanding of spatial reasoning (MTR.2.1).

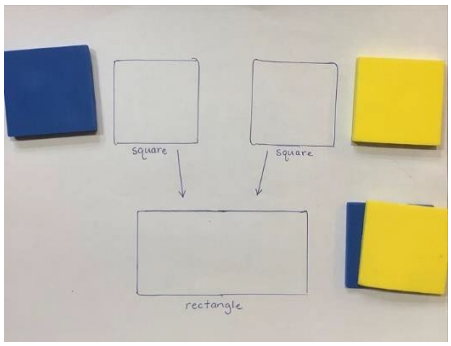
Common Misconceptions or Errors

- Students may attempt to compose figures without regard to aligning sides or vertices. The overlap may cause difficulty in naming or describing the new composite figures.
- Students may avoid lining the edges of two figures if the sides aren't the same length.
    - For example, it could be appropriate to join several rectangles of various sizes to make a figure that looks like a building with towers.

Strategies to Support Tiered Instruction:

- Instruction includes providing opportunities to compose shapes using pattern blocks. Begin by having students compose rectangles using squares.
    - Example:

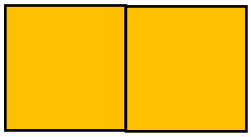




- Teacher provides pattern block fill-in puzzles and has students join shapes together to compose new shapes using triangles, rectangles and squares.

Questions to ask students:

- Choose two pattern blocks and make a new shape for me. What shapes did you use to make this new shape?
    - Sample answer that indicates understanding: *I used two squares to make a rectangle. (See below)*



- *How do you know it is a rectangle?*
    - Sample answer that indicates understanding: *It has four sides and four corners.*

Instructional Tasks

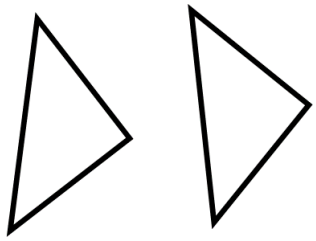
Instructional Task 1 (MTR.2.1, MTR.4.1, MTR.5.1, MTR.7.1)

Provide each student in a group or whole class with a plethora of rectangles, squares, and triangles in a variety of shapes and sizes (be intentional in assuring that various sides are congruent for the purpose of composing new figures). Ask students, "can you make a new figure using two of the figures I have given you?" Give students time to explore, then opportunities to share. Record the findings, focusing on what may be considered "key" compositions (two squares making a rectangle, two triangles making a rectangle, a "house"from a rectangle and triangle, or an octagon from triangles).

Instructional Items

Instructional Item 1

Jamie says that you cannot make a rectangle using the 2 triangles below. Is she correct? Justify your answer.



Additional Resources:

CPALMS: MA.K.GR.1.5

Article: Composing 2-D Shapes

Online Video: Composing 2D Shapes (focus only shapes composed to rectangles, triangle and squares)

Khan Academy Video: Composing Shapes

Resources/Tasks to Support Your Child at Home:

Have your child work to create new composite shapes using triangles, rectangles, and squares. Have them draw and identify the new shape composed.

Khan Academy Practice: Compose Shapes