MA.2.GR.2.2

Overarching Standard: ***MA.2.GR.2*** *Describe perimeter and find the perimeter of polygons.*

Benchmark of Focus

MA.2.GR.2.2: Find the perimeter of a polygon with whole-number side lengths. Polygons are limited to triangles, rectangles, squares, and pentagons.

Benchmark Clarifications

Clarification 1: Instruction includes the connection to the associative and commutative properties of addition.

Clarification 2: Within this benchmark, the expectation is not to use a formula to find perimeter.

Clarification 3: Instruction includes cases where the side lengths are given or measured to the nearest unit.

Clarification 4: Perimeter cannot exceed 100 units and responses include the appropriate units.

Related Benchmark/Horizontal Alignment

- MA.2.NSO.2.3
- MA.2.M.1.1
- MA.2.GR.1.2

Vertical Alignment

Previous Benchmarks	Next Benchmarks
Perimeter is a new concept in 2nd grade	MA.3.GR.2.3

Terms from the K-12 Glossary

- Polygon
- Pentagon
- Rectangle
- Square
- Triangle

Purpose and Instructional Strategies

The purpose of this benchmark is for students to use the attribute of side length to find the perimeter in the context of familiar two-dimensional figures.

- Instruction includes the use of properties of addition to help students think and solve flexibly.
- Instruction includes the use of a number of sides as a defining attribute of triangles, rectangles, squares and pentagons to help them solve problems.

Common Misconceptions or Errors

- Students may misalign the ruler with the object and measure an object from 1 instead of 0.
- Students may count all tick marks, not just the whole-unit marks, when reading a ruler.
- Students may leave gaps when measuring objects.

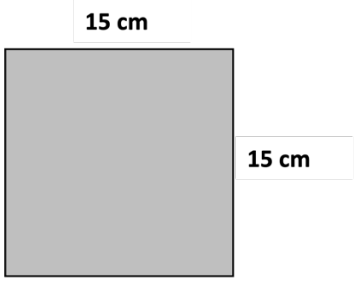
Strategies to Support Tiered Instruction

- Teacher models how to measure starting at the zero point on a ruler or meter stick demonstrating how measuring an object starting at one instead of zero will give an incorrect measurement. Students can then demonstrate how to measure other objects using a meter stick.
- Teacher has students write '0' at the appropriate location on a ruler and provides instruction on using a ruler to measure length.
- Instruction provides opportunities to measure lengths of segments and objects to the nearest whole number using a ruler scaled in centimeters and inches. Teacher provides feedback as needed.
- Instruction includes opportunities to compare a regular ruler to a ruler that only has tick marks for the whole numbers on it. Teacher demonstrates how to measure using the modified ruler and then the regular ruler on the same object. Students compare the two rulers.
    - For example, teacher prepares a whole unit ruler by using a regular ruler to make a line that is 12 inches long and marking only the whole number units along the way (same for centimeters).
- Teacher provides color tiles to transition to measuring with rulers. Students measure the lengths of a line segment using one-inch color tiles, first with gaps and record the answer. Then, they measure with tiles again without the gaps and record the answer. The teacher discusses why they are different measurements when the line didn't change? Finally, the students measure the lengths of the line segment again using a ruler and discuss which tile measurement was correct and why.

Questions to ask students:

- **How could you use a ruler to measure the perimeter of a triangle?**
    - Sample answer that indicates understanding: *I can line up the ruler to measure each side, then I can add up all the measurements.*

- **What is the perimeter of the square below?**



    - Sample answer that indicates understanding: *I know a square has 4 equal sides, so each side has a length of 15cm. The perimeter is 15 + 15 + 15 + 15 which is 60cm.*

- **When measuring the perimeter of a pentagon, how many side lengths will you need to measure? How would you find the perimeter of a pentagon?**

- Sample answer that indicates understanding: *I know a pentagon has 5 sides, so I will need to measure 5 side lengths then add them together to find the perimeter.*

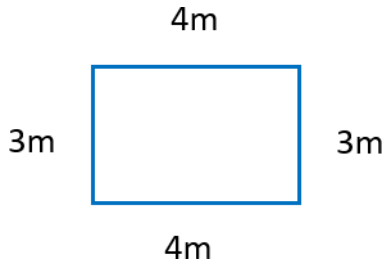
Instructional Tasks
Instructional Task 1

Provide pre-cut straws of varying lengths.

- Part A: Construct polygons according to their defining attributes.
- Part B: Use a ruler to measure and determine the perimeter of each figure.

Instructional Items
Instructional Item 1

Bill wanted to plant a small garden with the measurements shown below. He wants to buy a fence to go around the perimeter of the garden. How much fence should Bill buy?



Additional Resources:

CPALMS Resources

Resources/Tasks to Support Your Child at Home:

Give your child a ruler to measure and find the perimeter of various shapes around the house. Have your child describe the side lengths measures they found and how they can use those to find the perimeter.

Describe a shape and its side lengths. Have your child draw the shape, label the lengths, and identify the perimeter. Example: *"I'm thinking of a triangle that has one side length of 12m, another side length of 10m, and another side length of 12m. What is the perimeter?"*

Find the Perimeter of Polygons – online game that asks students to find the perimeter of polygons.