Bridging for Math Strength Resources

Standards of Learning Curriculum Framework (SOL)

Bridging Standards of Learning (SOL) for Grade 8

Bridging Standard of Learning (SOL) 8.10 Solve area and perimeter problems, including practical problems, involving composite plane figures.

Student Strengths	Bridging Concepts	Standard of Learning
Students can derive an approximation for pi (3.14 or 22/7) by gathering data and comparing the circumference to the diameter of various circles, using concrete materials or computer models. They can solve problems involving circumference and area of a circle when given the length of the diameter or radius. They can solve problems involving area and perimeter of triangles and rectangles.	Students can solve practical problems involving circumference and area of a circle when given the length of the diameter or radius. They can solve practical problems involving area and perimeter of triangles and rectangles.	Students can solve area and perimeter problems, including practical problems, involving composite plane figures.

Understanding the Learning Trajectory

Big Ideas:

- Polygons can be described uniquely by their sides and angles. (Charles, 2005)
- Polygons can be constructed from or decomposed into other polygons. (Charles, 2005)
- Behind every measurement formula lies a geometric result.

Formative Assessment:

- Just in Time Mathematics Quick Check 8.10 Word

- Just in Time Mathematics Quick Check 8.10 PDF
- Just in Time Mathematics Quick Check 8.10 Desmos

Important Assessment Look Fors:

- The student can calculate the area and perimeter of triangles, rectangles, squares, trapezoids, parallelograms, and semicircles.
- The student can use composition and/or decomposition to find the area or perimeter of a composite plane figure.
- The student applies vocabulary associated with each shape (ie. parts of a circle, what makes a trapezoid, etc.) to correctly calculate the perimeter or area of the parts of the composite plane figures using the appropriate formulas.

Purposeful Questions:

- How do we find the lengths of the unknown sides? Can we find the area or perimeter without finding these missing side lengths first?
- Can we assume two side lengths are congruent if they look the same? Why or why not?
- What is the formula for finding the area of this shape? Why does that formula make sense?
- How did you arrive at your final area? Explain the process you used. Could you have found it a different way?

Bridging Activity to Support Standard	Instructional Tips
Routine Would You Rather	Be sure to ask students to justify their choice.
Rich Tasks Choose Your Room Project	Students will select a bedroom blueprint, determine both area and perimeter, and calculate the cost of new floor covering and baseboard trim.
Games/Tech Composite Figures Putt Putt Golf, Henrico County	Students calculate the area or perimeter of nine composite figures (putt putt golf holes). Use golf scoring to make it a competition!
Desmos 8.10 - Area and Perimeter Review Sort	Students review area, perimeter, and common 2-dimensional shapes, then build to the concept of decomposition of composite figures.
Desmos 8.10 Area on the Grid: Reasoning to Find Area	Students use a grid background to build conceptual knowledge of composite figure area.
Desmos 8.10 Composite Figures Against a Grid	Students will work through examples of composite figures to determine area and perimeter. The figures are set against a grid background to aid in understanding the values of missing side lengths.
Desmos 8.10 Practice Areas of Composite Shapes	Desmos activity that requires students to show work and calculate areas of composite figures.

Other Resources:

- VDOE Mathematics Instructional Plans (MIPS)
  - 8.10 - Composite Figures: Area and Perimeter (Word) / PDF Version
- VDOE Word Wall Cards: Grade 8 (Word) | (PDF)
  - Composite figures

- Other VDOE Resources
  - Geometry Basics: Angle Relationships Lesson 6 [eMediaVA]

Learning Trajectory Resources:

Charles, R. (2005). Big ideas and understandings as the foundation for elementary and middle school mathematics. *Journal of Mathematics Education Leadership*, *7*(3), NCSM.

Common Core Standards Writing Team. (2019). Progressions for the Common Core State Standards for Mathematics. Tucson, AZ: Institute for Mathematics and Education, University of Arizona.

Van De Walle, J., Karp, K. S., & Bay-Williams, J. M. (2018). *Elementary and Middle School Mathematics: Teaching Developmentally.* (10th edition) New York: Pearson (2019:9780134802084)

VDOE Curriculum Framework for All Grades - Standard of Learning Curriculum Framework (SOL)