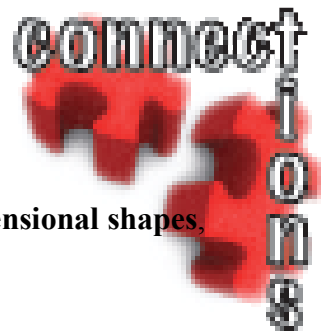


These connections are to be used as a resource to integrate and connect related concepts and skills that support and enrich the content standards



Core Standard

3.3 Geometry and Measurement: Describe and analyze properties of **two-dimensional shapes**, including perimeters.

Content Standards

- 3.3.1 Identify right angles in two-dimensional shapes and determine if angles are greater than or less than a right angle (obtuse and acute).
- 3.3.2 Identify, describe, compare, analyze, and informally classify triangles by their sides and angles.
- 3.3.3 Identify, describe, compare, analyze, and classify quadrilaterals (square, rectangle, parallelogram, rhombus, and trapezoid) by their sides and angles.
- 3.3.4 Identify, describe, and compare pentagons, hexagons, and octagons by the number of sides or angles.
- 3.3.5 Investigate and describe the results of decomposing, combining, and transforming polygons to make other polygons.
- 3.3.6 Build, draw, and analyze two-dimensional shapes to understand attributes and properties of two-dimensional space.
- 3.3.7 Determine an appropriate unit, tool, or strategy to find the perimeter of polygons.
- 3.3.8 Use attributes and properties of two-dimensional shapes to solve problems including applications involving parallel and perpendicular lines, congruence, symmetry, and perimeter.

Connections to the Standard

Key Connections to Prior Math Knowledge:

- In first grade, students described and sorted shapes laying a foundation for later in third grade to identify, compare and analyze triangles, quadrilaterals and other polygons. (1.3.1)
- Students in first explore congruency and symmetry of shapes. This knowledge is then applied at third grade where students solve problems involving parallel and perpendicular lines, congruence, symmetry, and perimeter of two-dimensional shapes. (1.3.2)
- The introduction of composing and decomposing shapes in first grade leads to an investigation of decomposing, combining, and transforming polygon to make other polygons in third grade. (1.3.3)

Key Connection(s) to Future Math Knowledge:

- The work with finding perimeter is expanded to the fourth grade with students applying their knowledge by solving problems involving perimeters and areas of rectangles and squares. (4.3.7)
- The foundation built with perimeter of shapes is stretched in fourth grade to have students recognize that rectangles with the same area can have different perimeters and that rectangles with the same perimeter can have different areas. (4.3.8)

Key Connection(s) to Current Grade Level Math Standards:

- Students' exploration with angles, right angles, acute angles, and obtuse angles guides students to then identify and analyze triangles. From this development, students subsequently apply their learning to quadrilaterals and other polygons. (3.3.1, 3.3.2, 3.3.3, 3.3.4)
- The focus on two-dimensional space allows students to spend time building, drawing, and then analyzing the attributes and properties of two-dimensional shapes. (3.3.6)

Key Connection(s) to other Content Areas

- Science—classification of life forms/items by attributes such as shape, symmetry (bilateral and radial symmetry) and congruence
- Social Sciences—Totem Poles, Ethnic motifs
- Arts—symmetry, Congruent shapes, tessellations
- Language Arts—Diamante, shape poems (a poem about shape is written in that same shape)
- Literature connections

Key Connection(s) to Real World:

- Architecture
- Brick work
- Quilting
- Oragami

Vocabulary:

acute
angle right
congruent
obtuse
sides
rectangle
trapezoid
octagon
transforming
rotation (turn)
unit
parallel

perimeter
polygon
sides
similar
line segment
parallelogram
pentagon
decomposing
translation (slide)
attributes
tool
perpendicular

symmetry
three-dimensional
two-dimensional
angles
square
rhombus
hexagon
combining
reflection (flip)
properties
congruence

Language of Math:

- Comparing language, classifying language

Common Mistakes and Associated Misconceptions:

- Students may mix up two-dimensional space with three-dimensional space.
Possible misconception: Students see two-dimensional as three-dimensional or see three-dimensional as two-dimensional.
- Angle is a measure of the space in between.
Possible misconception: Students think the angle only applies to the two rays joined at the vertex or they think it is a different size depending on the length of the rays.
- Students add the two dimensions given to find the perimeter.
Possible misconception: Students don't include all side measures, only the ones given.