



Ohio

Ohio's Model Curriculum | Mathematics with Instructional Supports

Kindergarten

Mathematics Model Curriculum

with Instructional Supports

Kindergarten

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Introduction

PURPOSE OF THE MODEL CURRICULUM

Just as the standards are required by Ohio Revised Code, so is the development of the model curriculum for those standards. Throughout the development of the standards (2016-17) and the model curriculum (2017-18), the Ohio Department of Education (ODE) has involved educators from around the state at all levels, Pre-K–16. The model curriculum reflects best practices and the expertise of Ohio educators, but it is not a complete a curriculum nor is it mandated for use. The purpose of Ohio's model curriculum is to provide clarity to the standards, a foundation for aligned assessments, and guidelines to assist educators in implementing the standards.

COMPONENTS OF THE MODEL CURRICULUM

The model curriculum contains two sections: Expectations for Learning and Content Elaborations.

Expectations for Learning: This section begins with an introductory paragraph describing the cluster's position in the respective learning progression, including previous learning and future learning. Following are three subsections: Essential Understandings, Mathematical Thinking, and Instructional Focus.

- **Essential Understandings** are the important concepts students should develop. When students have internalized these conceptual understandings, application and transfer of learning results.
- **Mathematical Thinking** statements describe the mental processes and practices important to the cluster.
- **Instructional Focus** statements are key skills and procedures students should know and demonstrate.

Together these three subsections guide the choice of lessons and formative assessments and ultimately set the parameters for aligned state assessments.

Content Elaborations: This section provides further clarification of the standards, links the critical areas of focus, and connects related standards within a grade or course.

COMPONENTS OF INSTRUCTIONAL SUPPORTS

The Instructional Supports section contains the **Instructional Strategies** and **Instructional Tools/Resources** sections which are designed to be fluid and improving over time, through additional research and input from the field. The **Instructional Strategies** are descriptions of effective and promising strategies for engaging students in observation, exploration, and problem solving targeted to the concepts and skills in the cluster of standards. Descriptions of common misconceptions as well as strategies for avoiding or overcoming them and ideas for adapting instructions to meet the needs of all students are threaded throughout. The **Instruction Tools/Resources** are links to relevant research, tools, and technology. In our effort to make sure that our Instructional Supports reflect best practices, this section is under revision.

Standards for Mathematical Practice—Kindergarten

The Standards for Mathematical Practice describe the skills that mathematics educators should seek to develop in their students. The descriptions of the mathematical practices in this document provide examples of how student performance will change and grow as students engage with and master new and more advanced mathematical ideas across the grade levels.

MP.1 Make sense of problems and persevere in solving them.

In Kindergarten, students begin to build the understanding that doing mathematics involves solving problems and discussing how they solved them. Students explain to themselves the meaning of a problem and look for ways to solve it. Real-life experiences should be used to support students' ability to connect mathematics to the world. To help students connect the language of mathematics to everyday life, ask students questions such as "How many students are absent?" or have them gather enough blocks for the students at their table. Younger students may use concrete objects or pictures to help them conceptualize and solve problems. They may check their thinking by asking themselves, "Does this make sense?" or they may try another strategy.

MP.2 Reason abstractly and quantitatively.

Younger students begin to recognize that a number represents a specific quantity. Then, they connect the quantity to written symbols. Quantitative reasoning entails creating a representation of a problem while attending to the meanings of the quantities. For example, a student may write the numeral 11 to represent an amount of objects counted, select the correct number card 17 to follow 16 on a calendar, or build two piles of counters to compare the numbers 5 and 8. In addition, kindergarten students begin to draw pictures, manipulate objects, or use diagrams or charts to express quantitative ideas. Students need to be encouraged to answer questions such as "How do you know?", which reinforces their reasoning and understanding and helps student develop mathematical language.

MP.3 Construct viable arguments and critique the reasoning of others.

Younger students construct arguments using concrete referents, such as objects, pictures, drawings, and actions. They also begin to develop their mathematical communication skills as they participate in mathematical discussions involving questions like "How did you get that?" and "Why is that true?" They explain their thinking to others and respond to others' thinking. They begin to develop the ability to reason and analyze situations as they consider questions such as "Are you sure that ___?", "Do you think that would happen all the time?", and "I wonder why ___?"

Continued on next page

MP.4 Model with mathematics.

In early grades, students experiment with representing problem situations in multiple ways including numbers, words (mathematical language), drawing pictures, using objects, acting out, making a chart or list, creating equations, etc. Students need opportunities to connect the different representations and explain the connections. They should be able to use all of these representations as needed. For example, a student may use cubes or tiles to show the different number pairs for 5, or place three objects on a 10-frame and then determine how many more are needed to “make a ten.” Students rely on manipulatives (or other visual and concrete representations) while solving tasks and record an answer with a drawing or equation.

MP.5 Use appropriate tools strategically.

Younger students begin to consider the available tools (including estimation) when solving a mathematical problem and decide when certain tools might be helpful. For instance, kindergarteners may decide that it might be advantageous to use linking cubes to represent two quantities and then compare the two representations side-by-side or later, make math drawings of the quantities. Students decide which tools may be helpful to use depending on the problem or task and explain why they use particular mathematical tools.

MP.6 Attend to precision.

Kindergarten students begin to develop precise communication skills, calculations, and measurements. Students describe their own actions, strategies, and reasoning using grade-level appropriate vocabulary. Opportunities to work with pictorial representations and concrete objects can help students develop understanding and descriptive vocabulary. For example, students analyze and compare two- and three-dimensional shapes and sort objects based on appearance. While measuring objects iteratively (repetitively), students check to make sure that there are no gaps or overlaps. During tasks involving number sense, students check their work to ensure the accuracy and reasonableness of solutions. Students should be encouraged to answer questions such as, “How do you know your answer is reasonable?”

MP.7 Look for and make use of structure.

Younger students begin to discern a pattern or structure in the number system. For instance, students recognize that $3 + 2 = 5$ and $2 + 3 = 5$. Students use counting strategies, such as counting on, counting all, or taking away, to build fluency with facts to 5. Students notice the written pattern in the “teen” numbers—that the numbers start with 1 (representing 1 ten) and end with the number of additional ones. Teachers might ask, “What do you notice when ___?”

MP.8 Look for and express regularity in repeated reasoning.

In the early grades, students notice repetitive actions in counting, computations, and mathematical tasks. For example, the next number in a counting sequence is 1 more when counting by ones and 10 more when counting by tens (or 1 more group of 10). Students should be encouraged to answer questions such as, “What would happen if ___?” and “There are 8 crayons in the box. Some are red and some are blue. How many of each could there be?” Kindergarten students realize 8 crayons could include 4 of each color ($8 = 4 + 4$), 5 of one color and 3 of another ($8 = 5 + 3$), and so on. For each solution, students repeatedly engage in the process of finding two numbers to join together to equal 8.

Mathematics Model Curriculum

with Instructional Supports

Kindergarten

STANDARDS	MODEL CURRICULUM
<p>COUNTING AND CARDINALITY Know number names and the count sequence. K.CC.1 Count to 100 by ones and by tens. K.CC.2 Count forward within 100 beginning from any given number other than 1. K.CC.3 Write numerals from 0 to 20. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects).</p>	<p>Expectations for Learning In Kindergarten, students rote count from any given number to 100. The repetitive pattern of rote counting and writing numerals 0–20, builds the basis for place value concepts used in later grades.</p> <p>ESSENTIAL UNDERSTANDINGS</p> <ul style="list-style-type: none"> • There is a standard order to counting. • Counting can begin at any given number. • Counting tells how many things there are in a set. • A numerical symbol represents a quantity (including zero). <p>MATHEMATICAL THINKING</p> <ul style="list-style-type: none"> • Recognize and use a pattern or structure. • Use grade-level appropriate mathematical language to explain reasoning. <p>INSTRUCTIONAL FOCUS</p> <ul style="list-style-type: none"> • Use and verbalize the successive number names pattern for counting by ones and decades (by tens) sequence. • Count forward by ones (within 100), beginning from a given number. • Count by tens, starting at 10. • Identify numerals and their names (from 0 to 20). • Write numerals (from 0 to 20). • Write a numeral (from 0 to 20) to represent a quantity. • Create a set of objects based on the number represented (from 0 to 20).

Content Elaborations

- [Ohio's K-8 Critical Areas of Focus, Kindergarten, Number 1, pages 4-5](#)
- [Ohio's K-8 Learning Progressions, Counting and Cardinality, page 3](#)

CONNECTIONS ACROSS STANDARDS

- Apply counting to addition and subtraction (K.OA.1-2, 5).
- Apply to counting coins (pennies) (K.MD.3).
- Apply to the teen numbers (K.NBT.1).

INSTRUCTIONAL SUPPORTS FOR THE MODEL CURRICULUM

Instructional Strategies

This section is under revision.

Instructional Tools/Resources

This section is under revision.

STANDARDS	MODEL CURRICULUM
<p>COUNTING AND CARDINALITY Count to tell the number of objects. K.CC.4 Understand the relationship between numbers and quantities; connect counting to cardinality using a variety of objects including pennies.</p> <ol style="list-style-type: none"> When counting objects, establish a one-to-one relationship by saying the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object. Understand that the last number name said tells the number of objects counted and that the number of objects is the same regardless of their arrangement or the order in which they were counted. Understand that each successive number name refers to a quantity that is one larger. <p>K.CC.5 Count to answer “how many?” questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1-20, count out that many objects.</p>	<p>Expectations for Learning</p> <p>In this cluster, students use the rote counting sequence paired with objects and materials to conceptualize that each number counted represents a quantity. As the number sequence increases, the quantity increases. The final number stated represents the total quantity of a set. Students use their understanding of quantity to know that sets of objects do not change based on physical arrangement (conservation). In future learning, students will use this knowledge to compare quantities and numbers.</p> <p>ESSENTIAL UNDERSTANDINGS</p> <ul style="list-style-type: none"> A one-to-one relationship connects one object with one number name and one numeral. Each counted number stated includes all of the previous numbers in a counted set. The last number stated identifies the quantity in a set. When counting by ones, the next number in the sequence increases the quantity by one. The quantity of a set does not change based on the arrangement, size, or type of object (conservation). <p>MATHEMATICAL THINKING</p> <ul style="list-style-type: none"> Pay attention to and make sense of quantities. Attend to the conservation of a quantity of objects. Explain using informal mathematical reasoning. Use mathematical language appropriate to the grade level. <p>INSTRUCTIONAL FOCUS</p> <ul style="list-style-type: none"> Use a strategy to count and tell how many objects are in a set regardless of arrangement, size, or type. Count a set of objects (up to 20) in an organized arrangement (line, rectangular array, or circle). Count a set of objects (up to 10) in a scattered arrangement. Produce a set of objects (not to exceed 20), using one-to-one correspondence Make a set that is one more than a given number.

Content Elaborations

- [Ohio's K-8 Critical Areas of Focus, Kindergarten, Number 1, pages 4-5](#)
- [Ohio's K-8 Learning Progressions, Counting and Cardinality, page 3](#)

CONNECTIONS ACROSS STANDARDS

- Count a collection by ones (K.CC.1).
- Count a collection of pennies (K.MD.3).

INSTRUCTIONAL SUPPORTS FOR THE MODEL CURRICULUM**Instructional Strategies**

This section is under revision.

Instructional Tools/Resources

This section is under revision.

STANDARDS	MODEL CURRICULUM
<p>COUNTING AND CARDINALITY Compare numbers. K.CC.6 Orally identify (without using inequality symbols) whether the number of objects in one group is greater/more than, less/fewer than, or the same as the number of objects in another group, not to exceed 10 objects in each group.</p> <p>K.CC.7 Compare (without using inequality symbols) two numbers between 0 and 10 when presented as written numerals.</p>	<p>Expectations for Learning</p> <p>Students extend their knowledge of counting and cardinality to compare two separate collections of objects and numerals, not to exceed 10 in each group. They use their understanding of quantity to know that sets of objects do not change based on physical arrangement (conservation). Students apply this understanding to compare two sets of objects and two written numerals. Comparing groups is an extension of conservation of number and cardinality. In Grade 1, students transition to the use the equal and inequality symbols.</p> <p>ESSENTIAL UNDERSTANDINGS</p> <ul style="list-style-type: none"> • The terms <i>greater/more than</i>, <i>less/fewer than</i>, and <i>same as</i> can be used when comparing objects and numerals. • The quantity of a set does not change based on the arrangement, size, or type of object (conservation). <p>MATHEMATICAL THINKING</p> <ul style="list-style-type: none"> • Pay attention to and make sense of quantities. • Explain using informal mathematical reasoning. • Use mathematical language appropriate to the grade level. • Attend to the conservation of a quantity of objects. <p>INSTRUCTIONAL FOCUS</p> <ul style="list-style-type: none"> • Identify and compare quantities using objects and numerals. • Use strategies such as matching or counting to determine which group is <i>more</i>, <i>less</i>, or the <i>same as</i> another group. • Compare two numbers from 0 to 10 when presented as written numerals. <p><i>Continued on next page</i></p>

Content Elaborations

- [Ohio's K-8 Critical Areas of Focus, Kindergarten, Number 1, pages 4-5](#)
- [Ohio's K-8 Learning Progressions, Counting and Cardinality, page 3](#)

CONNECTIONS ACROSS STANDARDS

- Count to determine the number of objects (K.CC.4-5).
- Count the number in each category (K.MD.3).
- Compare two objects to see which object has “more of” or “less of” a unit (K.MD.2).

INSTRUCTIONAL SUPPORTS FOR THE MODEL CURRICULUM

Instructional Strategies

This section is under revision.

Instructional Tools/Resources

This section is under revision.

STANDARDS	MODEL CURRICULUM
<p>OPERATIONS AND ALGEBRAIC THINKING</p> <p>Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.</p> <p>K.OA.1 Represent addition and subtraction with objects, fingers, mental images, drawings, sounds such as claps, acting out situations, verbal explanations, expressions, or equations. Drawings need not show details, but should show the mathematics in the problem. (This applies wherever drawings are mentioned in the Standards.)</p> <p>K.OA.2 Solve addition and subtraction problems (written or oral), and add and subtract within 10 by using objects or drawings to represent the problem.</p> <p>K.OA.3 Decompose numbers and record compositions for numbers less than or equal to 10 into pairs in more than one way by using objects and, when appropriate, drawings or equations.</p> <p>K.OA.4 For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or, when appropriate, an equation.</p> <p>K.OA.5 Fluently⁶ add and subtract within 5.</p>	<p>Expectations for Learning</p> <p>In this cluster, students apply their knowledge of counting and cardinality to addition and subtraction situations. Students use strategies including objects, drawings, and numbers (equations when developmentally appropriate) to solve problems within 10. The focus is on understanding the meaning and the relationship between addition and subtraction. Students develop fluency focusing on the structure of 5. (<i>Fluency is the ability to use efficient, accurate, and flexible methods for computing. Fluency does not imply timed tests</i>). Students compose and decompose numbers less than or equal to 10. In Grade 1, students will add and subtract up to 20 using objects, strategies, and equations to develop fluency focusing on the structure of 10.</p> <p>ESSENTIAL UNDERSTANDINGS</p> <ul style="list-style-type: none"> • There is a relationship between addition and subtraction. • Adding 1 results in the next number in a counting sequence. • Subtracting 1 results in the previous number in a counting sequence. • Adding or subtracting 0 results in the same number. • 0 is the number of items left when all the objects in a set are taken away. • Addition is putting together. • Subtraction is taking apart, taking from, or comparing two quantities. • There is more than one way to compose or decompose a number. • A smaller set of objects exists within a larger set. • There are different problem types: add to (result unknown); take from (result unknown); and put together/take apart (total unknown and both addends unknown). (See Glossary Table 1; page 95). <p>MATHEMATICAL THINKING</p> <ul style="list-style-type: none"> • Represent and solve real-world problems. • Use grade-level appropriate mathematical language to explain reasoning. • Explore and generalize concepts based on patterns and structures. <p><i>Continued on next page</i></p>

Expectations for Learning, continued

INSTRUCTIONAL FOCUS

- Use objects, drawings, and strategies to do the following:
 - Add and subtract within 10 ([See Table 1; page 95](#));
 - Fluently add and subtract within 5;
 - Explain mathematical thinking;
 - Compose and decompose numbers less than or equal to 10; and
 - Make 10.

Content Elaborations

- [Ohio's K-8 Critical Areas of Focus, Kindergarten, Number 1, pages 4-5](#)
- [Ohio's K-8 Learning Progressions, Operations and Algebraic Thinking, pages 8-10](#)
- [Glossary Term: Fluency, page 92](#)

CONNECTIONS ACROSS STANDARDS

- Write numerals in mathematical representations (K.CC.3).
- Use counting and cardinality to represent addition and subtraction (K.CC.4-5).
- Count the number of objects in each category (K.MD.3).

INSTRUCTIONAL SUPPORTS FOR THE MODEL CURRICULUM

Instructional Strategies

This section is under revision.

Instructional Tools/Resources

This section is under revision.

STANDARDS	MODEL CURRICULUM
<p>NUMBER AND OPERATIONS IN BASE TEN</p> <p>Work with numbers 11–19 to gain foundations for place value.</p> <p>K.NBT.1 Compose and decompose numbers from 11 to 19 into a group of ten ones and some further ones by using objects and, when appropriate, drawings or equations; understand that these numbers are composed of a group of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.</p>	<p>Expectations for Learning</p> <p>This standard provides the foundation for base-ten understanding. For example, students explore 16 as a group of 10 ones and 6 more. In Grade 1, students will be introduced to the formal use of place value. This work with teen numbers in Kindergarten allows students to gain an understanding for viewing 10 ones as a new unit called a “ten” in Grade 1.</p> <p>ESSENTIAL UNDERSTANDINGS</p> <ul style="list-style-type: none"> • The basic unit of the base-ten system is a one. • A group of ten consists of ten “ones.” • Teen numbers are composed of a group of ten ones and more ones. <p>MATHEMATICAL THINKING</p> <ul style="list-style-type: none"> • Explore and generalize concepts based on patterns or structures. <p>INSTRUCTIONAL FOCUS</p> <ul style="list-style-type: none"> • Use strategies including objects, drawings, and numbers (equations when developmentally appropriate) to compose and decompose numbers from 11 to 19. • Use ten objects to represent ten. • Explore the structure of teen numbers to recognize a pattern. <p>Content Elaborations</p> <ul style="list-style-type: none"> • Ohio's K-8 Critical Areas of Focus, Kindergarten, Number 1, pages 4-5 • Ohio's K-8 Learning Progressions, Numbers and Operations in Base Ten, pages 4-5 <p>CONNECTIONS ACROSS STANDARDS</p> <ul style="list-style-type: none"> • Decompose numbers (K.OA.3). • Know and write numerals to 20 and count on from any given number (K.CC.2-3).

INSTRUCTIONAL SUPPORTS FOR THE MODEL CURRICULUM

Instructional Strategies

This section is under revision.

Instructional Tools/Resources

This section is under revision.

STANDARDS	MODEL CURRICULUM
<p>MEASUREMENT AND DATA Identify, describe, and compare measurable attributes.</p> <p>K.MD.1 Identify and describe measurable attributes (length, weight, and height) of a single object using vocabulary terms such as long/short, heavy/light, or tall/short.</p> <p>K.MD.2 Directly compare two objects with a measurable attribute in common to see which object has “more of” or “less of” the attribute, and describe the difference. <i>For example, directly compare the heights of two children, and describe one child as taller/shorter.</i></p>	<p>Expectations for Learning</p> <p>This cluster of standards provides a foundational experience for measurement by allowing students to explore and identify measurable attributes. Students use observation to compare two objects. They use vocabulary such as <i>taller/shorter</i>, <i>longer/shorter</i>, <i>heavier/lighter</i> to describe differences. In Grade 1, linear measurement will be introduced using nonstandard units, but mass and liquid volume do not appear again until Grade 3.</p> <p>ESSENTIAL UNDERSTANDINGS</p> <ul style="list-style-type: none"> • Objects have multiple attributes that can be identified and described. • Objects have common attributes that can be compared. <p>MATHEMATICAL THINKING</p> <ul style="list-style-type: none"> • Explain using informal mathematical reasoning. • Use mathematical language appropriate to the grade level. <p>INSTRUCTIONAL FOCUS</p> <ul style="list-style-type: none"> • Identify and describe measurable attribute(s) of objects. • Use grade-level appropriate vocabulary, e.g., longer, shorter, taller, heavier, lighter, to describe the differences between two objects. • Explore the alignment of objects when comparing. <p>Content Elaborations</p> <ul style="list-style-type: none"> • Ohio's K-8 Critical Areas of Focus, Kindergarten, Number 1, pages 4-5 • Ohio's K-8 Critical Areas of Focus, Kindergarten, Number 2, page 6 • Ohio's K-8 Learning Progressions, Measurement and Data, pages 12-14 <p>CONNECTIONS ACROSS STANDARDS</p> <ul style="list-style-type: none"> • Classify objects into given categories (K.MD.3). • Compare quantities of objects (K.CC.6).

INSTRUCTIONAL SUPPORTS FOR THE MODEL CURRICULUM**Instructional Strategies**

This section is under revision.

Instructional Tools/Resources

This section is under revision.

STANDARDS	MODEL CURRICULUM
<p>MEASUREMENT AND DATA Classify objects and count the number of objects in each category. K.MD.3 Classify objects into given categories; count the numbers of objects in each category and sort the categories by count. The number of objects in each category should be less than or equal to ten. Counting and sorting coins should be limited to pennies.</p>	<p>Expectations for Learning In this cluster, students build a conceptual understanding of classifying objects into given categories. After sorting, they count the number of objects within each category (within 10) and sort the categories by count. Kindergarten students are not expected to organize data into visual representations. This standard is the foundation for the Grade 1 standards for data where students will organize, represent, and interpret data with up to three categories.</p> <p>ESSENTIAL UNDERSTANDINGS</p> <ul style="list-style-type: none"> • Groups of objects can be classified in multiple ways and counted. • Classifying objects is the process of sorting objects into categories and naming those categories. • Pennies can be used as a manipulative to count and sort. <p>MATHEMATICAL THINKING</p> <ul style="list-style-type: none"> • Accurately count a group of objects. • Use grade-level appropriate mathematical language to explain reasoning. <p>INSTRUCTIONAL FOCUS</p> <ul style="list-style-type: none"> • Sort objects into categories based on a given attribute. • Sort objects and explain the reasoning used. • Accurately use one-to-one correspondence to find the number of objects (within 10) in each category. • Classify objects into at least two groups. • Gather and sort real-world information. <p><i>Continued on next page</i></p>

Content Elaborations

- [Ohio's K-8 Critical Areas of Focus, Kindergarten, Number 1, pages 4-5](#)
- [Ohio's K-8 Learning Progressions, Measurement and Data, pages 12-14](#)

CONNECTIONS ACROSS STANDARDS

- Count to answer “how many?” questions (K.CC.5).
- Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group (K.CC.6).
- Compare two numbers between 1 and 10 represented as written numerals (K.CC.7).

INSTRUCTIONAL SUPPORTS FOR THE MODEL CURRICULUM

Instructional Strategies

This section is under revision.

Instructional Tools/Resources

This section is under revision.

STANDARDS	MODEL CURRICULUM
<p>GEOMETRY Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres).</p> <p>K.G.1 Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as <i>above</i>, <i>below</i>, <i>beside</i>, <i>in front of</i>, <i>behind</i>, and <i>next to</i>.</p> <p>K.G.2 Correctly name shapes regardless of their orientations or overall size.</p> <p>K.G.3 Identify shapes as two-dimensional (lying in a plane, “flat”) or three-dimensional (“solid”).</p>	<p>Expectations for Learning</p> <p>Kindergarten students explore geometric shapes in the environment. Students describe and name squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres, regardless of their orientation or overall size. Students explore and identify the geometric shapes as two-dimensional (flat) or three-dimensional (solid) shapes. Students use positional words such as <i>above</i>, <i>below</i>, <i>beside</i>, <i>in front of</i>, <i>behind</i>, and <i>next to</i> when describing the location of objects in the environment. In Grade 1, students will begin to reason with shapes and their defining attributes.</p> <p>The student understanding of this cluster aligns with a van Hiele Level 0 (Visualization).</p> <p>ESSENTIAL UNDERSTANDINGS</p> <ul style="list-style-type: none"> • Shapes exist in the environment. • Shapes can be identified regardless of size or orientation. • Shapes can be described by position and location. • Shapes can be categorized as two-dimensional (flat) or three-dimensional (solid). <p>MATHEMATICAL THINKING</p> <ul style="list-style-type: none"> • Explain using informal mathematical reasoning. • Use mathematical language appropriate to the grade level. • Use spatial reasoning. <p>INSTRUCTIONAL FOCUS</p> <ul style="list-style-type: none"> • Explore and recognize attributes of shapes. • Identify and describe shapes in the environment using a variety of visual representations. • Describe the location of shapes in the environment using positional terms such as <i>above</i>, <i>below</i>, <i>beside</i>, etc. • Name shapes regardless of their orientation or overall size. • Identify shapes as flat or solid. <p><i>Continued on next page</i></p>

Content Elaborations

- [Ohio's K-8 Critical Areas of Focus, Kindergarten, Number 2, page 6](#)
- [Ohio's K-8 Learning Progressions, K-5 Geometry, page 11](#)

CONNECTIONS ACROSS STANDARDS

- Identify and describe measurable attributes (K.MD.1).
- Directly compare two objects with a measurable attribute (K.MD.2).
- Classify objects into given categories (K.MD.3).

INSTRUCTIONAL SUPPORTS FOR THE MODEL CURRICULUM

Instructional Strategies

This section is under revision.

Instructional Tools/Resources

This section is under revision.

STANDARDS	MODEL CURRICULUM
<p>GEOMETRY Describe, compare, create, and compose shapes. K.G.4 Describe and compare two- or three-dimensional shapes, in different sizes and orientations, using informal language to describe their commonalities, differences, parts, and other attributes. K.G.5 Model shapes in the world by building shapes from components, e.g., sticks and clay balls, and drawing shapes. K.G.6 Combine simple shapes to form larger shapes.</p>	<p>Expectations for Learning Kindergarten students explore and describe the commonalities and differences between two-dimensional and three-dimensional shapes using informal language regardless of size and orientation. Students create models and combine simple shapes to build larger shapes. In Grade 1, students will reason with shapes and their defining attributes.</p> <p>The student understanding of this cluster aligns with a van Hiele Level 0 (Visualization).</p> <p>ESSENTIAL UNDERSTANDINGS</p> <ul style="list-style-type: none"> • Shapes can be described by their attributes. • Shapes can be compared by their attributes • Shapes can be combined to form larger shapes. • Shapes in the environment can be represented with models. <p>MATHEMATICAL THINKING</p> <ul style="list-style-type: none"> • Use spatial reasoning. • Explain using informal mathematical reasoning. • Use mathematical language appropriate to the grade level. • Create models and drawings to represent shapes. <p>INSTRUCTIONAL FOCUS</p> <ul style="list-style-type: none"> • Explore and recognize attributes of shapes. • Describe commonalities and differences of shapes using informal language. • Describe parts and attributes of shapes using informal language. • Model shapes in the environment using a variety of components. • Explore ways to combine simple shapes to form larger shapes. <p><i>Continued on next page</i></p>

Content Elaborations

- [Ohio's K-8 Critical Areas of Focus, Kindergarten, Number 2, page 6](#)
- [Ohio's K-8 Learning Progressions, K-5 Geometry, page 11](#)

CONNECTIONS ACROSS STANDARDS

- Identify and describe shapes (K.G.1-3).
- Identify and describe measurable attributes (K.MD.1).
- Directly compare two objects with a measurable attribute (K.MD.2).
- Classify objects into given categories (K.MD.3).

INSTRUCTIONAL SUPPORTS FOR THE MODEL CURRICULUM

Instructional Strategies

This section is under revision.

Instructional Tools/Resources

This section is under revision.

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