



North Carolina Department of Public Instruction

INSTRUCTIONAL SUPPORT TOOLS

FOR ACHIEVING NEW STANDARDS

2nd Grade Mathematics • Unpacked Contents

For the new Standard Course of Study that will be effective in all North Carolina schools in the 2018-19 School Year.

This document is designed to help North Carolina educators teach the 2nd Grade Mathematics Standard Course of Study. NCDPI staff are continually updating and improving these tools to better serve teachers and districts.

What is the purpose of this document?

The purpose of this document is to increase student achievement by ensuring educators understand the expectations of the new standards. This document may also be used to facilitate discussion among teachers and curriculum staff and to encourage coherence in the sequence, pacing, and units of study for grade-level curricula. This document, along with on-going professional development, is one of many resources used to understand and teach the NC SCOS.

What is in the document?

This document includes a detailed clarification of each standard in the grade level along with a *sample* of questions or directions that may be used during the instructional sequence to determine whether students are meeting the learning objective outlined by the standard. These items are included to support classroom instruction and are not intended to reflect summative assessment items. The examples included may not fully address the scope of the standard. The document also includes a table of contents of the standards organized by domain with hyperlinks to assist in navigating the electronic version of this instructional support tool.

How do I send Feedback?

Please send feedback to us at feedback@dpi.state.nc.us and we will use your input to refine our unpacking of the standards. Thank You!

Just want the standards alone?

You can find the standards alone at <http://www.ncpublicschools.org/curriculum/mathematics/scos/>.

Standards for Mathematical Practice

Practice	Explanation and Example
1. Make sense of problems and persevere in solving them.	Mathematically proficient students in Second Grade examine problems and tasks, can make sense of the meaning of the task and find an entry point or a way to start the task. Second Grade students also develop a foundation for problem solving strategies and become independently proficient on using those strategies to solve new tasks. In Second Grade, students' work continues to use concrete manipulatives and pictorial representations as well as mental mathematics. Second Grade students also are expected to persevere while solving tasks; that is, if students reach a point in which they are stuck, they can reexamine the task in a different way and continue to solve the task. Lastly, mathematically proficient students complete a task by asking themselves the question, "Does my answer make sense?"
2. Reason abstractly and quantitatively.	Mathematically proficient students in Second Grade make sense of quantities and relationships while solving tasks. This involves two processes- decontextualizing and contextualizing. In Second Grade, students represent situations by decontextualizing tasks into numbers and symbols. For example, in the task, "There are 25 children in the cafeteria and they are joined by 17 more children. How many students are in the cafeteria? " Second Grade students translate that situation into an equation, such as: $25 + 17 = \underline{\quad}$ and then solve the problem. Students also contextualize situations during the problem solving process. For example, while solving the task above, students can refer to the context of the task to determine that they need to subtract 19 since 19 children leave. The processes of reasoning also other areas of mathematics such as determining the length of quantities when measuring with standard units.
3. Construct viable arguments and critique the reasoning of others.	Mathematically proficient students in Second Grade accurately use definitions and previously established solutions to construct viable arguments about mathematics. During discussions about problem solving strategies, students constructively critique the strategies and reasoning of their classmates. For example, while solving $74 - 18$, students may use a variety of strategies, and after working on the task, can discuss and critique each others' reasoning and strategies, citing similarities and differences between strategies.
4. Model with mathematics.	Mathematically proficient students in Second Grade model real-life mathematical situations with a number sentence or an equation, and check to make sure that their equation accurately matches the problem context. Second Grade students use concrete manipulatives and pictorial representations to provide further explanation of the equation. Likewise, Second Grade students are able to create an appropriate problem situation from an equation. For example, students are expected to create a story problem for the equation $43 + 17 = \underline{\quad}$ such as "There were 43 gumballs in the machine. Tom poured in 17 more gumballs. How many gumballs are now in the machine?"
5. Use appropriate tools strategically.	Mathematically proficient students in Second Grade have access to and use tools appropriately. These tools may include snap cubes, place value (base ten) blocks, hundreds number boards, number lines, rulers, and concrete geometric shapes (e.g., pattern blocks, 3-d solids). Students also have experiences with educational technologies, such as calculators and virtual manipulatives, which support conceptual understanding and higher-order thinking skills. During classroom instruction, students have access to various mathematical tools as well as paper, and determine which tools are the most appropriate to use. For example, while measuring the length of the hallway, students can explain why a yardstick is more appropriate to use than a ruler.
6. Attend to precision.	Mathematically proficient students in Second Grade are precise in their communication, calculations, and measurements. In all mathematical tasks, students in Second Grade communicate clearly, using grade-level appropriate vocabulary accurately as well as giving precise explanations and reasoning regarding their process of finding solutions. For example, while measuring an object, care is taken to line up the tool correctly in order to get an accurate measurement. During tasks involving number sense, students consider if their answer is reasonable and check their work to ensure the accuracy of solutions.
7. Look for and make use of structure.	Mathematically proficient students in Second Grade carefully look for patterns and structures in the number system and other areas of mathematics. For example, students notice number patterns within the tens place as they connect skip count by 10s off the decade to the corresponding numbers on a 100s chart. While working in the Numbers in Base Ten domain, students work with the idea that 10 ones equals a ten, and 10 tens equals 1 hundred. In addition, Second Grade students also make use of structure when they work with subtraction as missing addend problems, such as $50 - 33 = \underline{\quad}$ can be written as $33 + \underline{\quad} = 50$ and can be thought of as, "How much more do I need to add to 33 to get to 50?"

8. Look for and express regularity in repeated reasoning.	Mathematically proficient students in Second Grade begin to look for regularity in problem structures when solving mathematical tasks. For example, after solving two digit addition problems by decomposing numbers ($33 + 25 = 30 + 20 + 3 + 5$), students may begin to generalize and frequently apply that strategy independently on future tasks. Further, students begin to look for strategies to be more efficient in computations, including doubles strategies and making a ten. Lastly, while solving all tasks, Second Grade students accurately check for the reasonableness of their solutions during and after completing the task.
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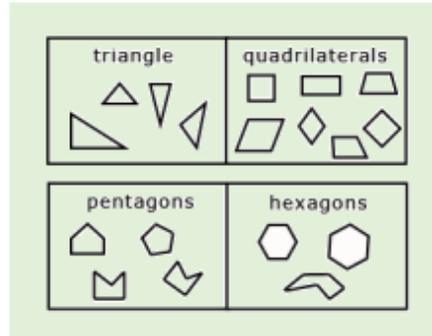
Geometry

Reason with shapes and their attributes.

NC.2.G.1 Recognize and draw triangles, quadrilaterals, pentagons, and hexagons, having specified attributes; recognize and describe attributes of rectangular prisms and cubes.

Clarification

In this standard, students identify, describe, and draw shapes based on a given set of defining attributes. Students should use the word angle in place of corner, but do not need to name angle types. Triangles, pentagons, and hexagons should appear as both regular and irregular, and students should recognize all four-sided shapes as quadrilaterals.

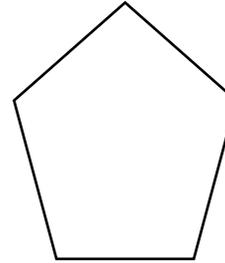


Students should identify two-dimensional shapes used to construct rectangular prisms and cubes and should also be able to identify and describe attributes of rectangular prisms and cubes. Students are not expected to draw three-dimensional objects.

Note: North Carolina has adopted the exclusive definition for a trapezoid. **A trapezoid is a quadrilateral with exactly one pair of parallel sides.**

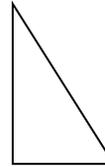
Checking for Understanding

Draw a closed shape that has five sides. What is the name of the shape?



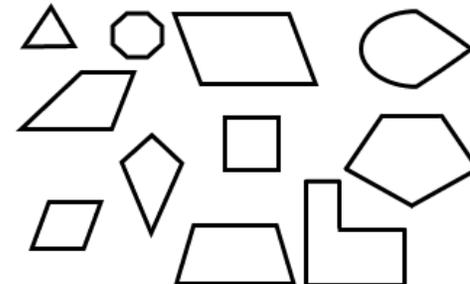
*I drew a shape with 5 sides.
It is called a pentagon.*

I am a shape that has 3 sides and 3 angles. What am I?



*A triangle.
See, 3 sides, 3 angles.*

Circle all of quadrilaterals among these geometric figures.



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Reason with shapes and their attributes.

NC.2.G.3 Partition circles and rectangles into two, three, or four equal shares.

- Describe the shares using the words halves, thirds, half of, a third of, fourths, fourth of, quarter of.
- Describe the whole as two halves, three thirds, four fourths.
- Explain that equal shares of identical wholes need not have the same shape

Clarification

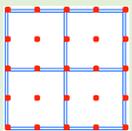
In this standard, students will be able to partition rectangles and circles of various sizes into two, three, or four equal shares. Through experiences with multiple representations, students should use the words, *halves*, *thirds* and *fourths*, and the phrases *half of*, *third of* and *fourth of (or quarter of)* to describe their thinking and solutions. Working with the “the whole”, students understand that “the whole” is composed of two halves, three thirds, or four fourths.

Students should recognize that when a circle is cut into three equal pieces, each piece will equal one-third of its original whole. Students should describe the whole as three thirds. If a circle is cut into four equal pieces, each piece will equal one-fourth of its original whole and the whole is described as four fourths.

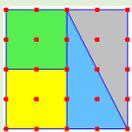


This standard also addresses the idea that equal shares of identical wholes may not have the same shape. Students should understand that fractional parts may not be symmetrical. The only criteria for equivalent fractions is that the area is equal. Students should partition circles and rectangles in multiple ways, so they learn to recognize that equal shares can be different shapes within the same whole.

For example:



When partitioning this geoboard into fourths, the student divided the square into four equal sized squares to show that each piece is a fourth.

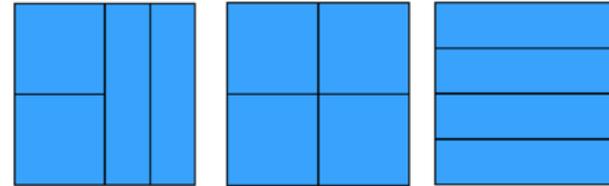


When partitioning this geoboard into fourths, the student partitioned the geoboard in half down the middle. Then, he divided the section on the left into two equal sized squares, and the section on the right into two equal sized triangles. The student explains that each section of the geoboard is half of a half, which is the same as a fourth.

Checking for Understanding

Partition each rectangle into fourths a different way. Explain how you know that each part is a fourth.

Possible response:



I partitioned this rectangle 3 different ways. I folded or cut the paper to make sure that all of the parts were the same size. There are four equal parts. So, each part is one-fourth of the whole rectangle.

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