North Carolina Home Support Resource

6th Grade Math

Purpose:

This document is intended to support parents/guardians in understanding the major concepts in the NC Standard Course of Study (SCOS) for 6th grade mathematics and provide possible ways to partner with their student's teacher, school, or district at home.

What is the NC Standard Course of Study?

North Carolina's Standard Course of Study (SCOS) defines content standards for each grade level and high school course to provide a consistent set of learning standards for every public school in North Carolina. These standards define what students know and should be able to do by the end of a specified year or course. The SCOS provides expectations with the end goal of preparing all students to successfully do mathematics in ways that lead them to become ready for careers and/or college.

Who determines how the standards are taught?

Local school districts have autonomy to choose the curriculum (materials and resources) to help students meet the expectations of the SCOS. Mathematics learning is facilitated by the classroom teacher and should be aligned to the local school and district curriculum, as well as the North Carolina Standard Course of Study.

The Content:

Middle School mathematics connects and applies previous elementary mathematical understanding to current learning while building more efficient processes and skills to prepare students for future mathematical learning. Students extend their number sense to the system of rational numbers, which includes negative numbers and radicals. Students develop and apply an understanding of ratio and proportional reasoning. Students reason about expressions and create and solve equations and systems of equations. Students begin grasping and using the concept of a function to describe quantitative relationships. Students solve problems involving scale drawings and informal geometric constructions, and analyze two- and three-dimensional space and figures, as well as understanding and applying the Pythagorean Theorem. Students develop an understanding of statistical thinking, inferencing, and investigating patterns of association. Students will apply what they learn in middle school mathematics to future academic and real-life experiences.

What's new in Grade 6 Math?

The table below summarizes the content for 6th grade mathematics, along with content from the previous grade level and the next grade level.

Grade Five Mathematics	Grade Six Mathematics	Grade Seven Mathematics
● Analyze numerical patterns and relationships ● Explain place value up to 1,000,000 ● Solve problems with multi-digit whole numbers, decimals, and fractions ● Find the volume of rectangular prisms and composite shapes ● Write and interpret numerical expressions ● Solve measurement problems that include conversions using multiplicative reasoning ● Graph points and 2-D shapes in the coordinate plane ● Ratios and ratio reasoning ●	Common factors and multiples ● Fluency* using and applying rational numbers (whole numbers and decimals) ● Building on fraction knowledge ● Reasoning with expressions and equations ● Area of triangles and quadrilaterals ● Surface area and volume of prisms and pyramids ● Statistical questions and univariate numerical data ● Rates, ratios, and proportional relationships	● Fluency* using positive and negative rational numbers ● Problem solving with expressions, equations, and inequalities ● Area and circumference of circles ● Area and perimeter of polygons ● Geometric properties of triangles and angles ● Comparing distributions of one-variable data ● Probability

Support Mathematics Learning Outside of School

There are a variety of ways that parents/guardians can support students at home. Here are a few suggestions for supporting student learning outside of school.

1. **Encourage perseverance.** Problem solving requires students to make conjectures and inferences, and test and modify their strategies. It is important to encourage students to persevere through challenging problems. Avoid providing answers and promote perseverance by asking, “What is the problem asking you to find?” and "What did you do in class that might help you figure it out?"
2. **Ask about what they are learning in school.** Notes from class or print/digital materials can be used as resources when students are studying or doing math work at home. They provide insight into the strategies and methods students are expected to use when solving problems.
3. **Transform mistakes into opportunities for growth.** Discuss and ask questions about students’ work to help them reflect on their work and opportunities for growth. Provide a safe space to talk about mistakes and opportunities to practice. Doing this regularly will assist in knowing students’ progress and minimizing surprises in the gradebook or on report cards.
4. **Look for opportunities to practice math in the real world.** Encourage your student to use mental mathematics when making purchases. For example: Say to your student, "How much would this 20% discount be, or how much money will we save on this sale item?"
5. **Practice computational skills to build fluency*.** Fluency progresses learning strategies beyond basic facts and memorization. Students should be fluent with operations with whole numbers and decimals by the end of 6th grade. Regular practice using sense-making strategies rather than memorization helps build student fluency. Partner with your student’s teacher to understand learned strategies.
6. **Support student responsibility.** Help your student take ownership of their own learning. Ask them to assess their own strengths and weaknesses and how they can monitor their own learning.

Partnering with the School

A healthy home-student-school relationship is a vital component to the success of students. Asking questions can help parents/guardians understand what their student is learning so they can support their student and teacher.

1. **Classroom instruction.** Ask questions to help you understand what and how your student will be learning, such as: What concepts will they learn this year? How will I know the expectations throughout the year? What skills should my student already have mastered? How will I know if more practice is needed? How much and what kind of work will they be expected to complete at home? How often will students be assessed? What are some ways that I can help my student prepare at home?
2. **District Curriculum.** Find out what curriculum resources/materials the school or district uses to implement the SCOS. Are there parent resources? What type of calculator will my student be expected to use and when will it be used? What manipulatives will my student use? Will my student have a printed workbook/textbook or access to digital materials? If so, will they bring any of these items home?
3. **District and State Assessments.** Get information about the assessment schedule for the year. Find out what assessments are required by the district and the state. How often throughout the year will students be assessed? How and when will testing information and results be shared?
4. **Parent-teacher communication.** Keep an open line of communication with the teacher and the school so that you can stay updated on your student’s progress. Ask questions, such as: How is my student progressing? What are some things my student does well? What gaps in understanding do you see?

**Fluency is defined as the ability to apply procedures accurately, efficiently, and flexibly; to transfer procedures to different problems and contexts; to build or modify procedures from other procedures; and to recognize when one strategy or procedure is more appropriate to apply than another. NCTM Position Paper, Procedural Fluency in Mathematics, Retrieved from https://www.nctm.org/Standards-and-Positions/Position-Statements/Procedural-Fluency-in-Mathematics/*

NC Home Support Resource

7th Grade Math

Purpose:

This document is intended to support parents/guardians with understanding the major concepts in the NC Standard Course of Study (SCOS) for 7th grade mathematics, and provide possible ways to partner with their student's teacher, school, or district at home.

What is the NC Standard Course of Study?

North Carolina's Standard Course of Study (SCOS) defines content standards for each grade level and high school course to provide a consistent set of learning standards for every public school in North Carolina. These standards define what students know and should be able to do by the end of a specified year or course. The SCOS provides expectations with the end goal of preparing all students to successfully do mathematics in ways that lead them to become ready for careers and/or college.

Who determines how the standards are taught?

Local school districts have autonomy to choose the curriculum (materials and resources) to help students meet the expectations of the SCOS. Mathematics learning is facilitated by the classroom teacher and should be aligned to the local school and district curriculum, as well as the North Carolina Standard Course of Study.

The Content:

Middle School mathematics connects and applies previous elementary mathematical understanding to current learning while building more efficient processes and skills to prepare students for future mathematical learning. Students extend their number sense to the system of rational numbers, which includes negative numbers and radicals. Students develop and apply an understanding of ratio and proportional reasoning. Students reason about expressions and create and solve equations and systems of equations. Students begin grasping and using the concept of a function to describe quantitative relationships. Students solve problems involving scale drawings and informal geometric constructions, and analyze two- and three-dimensional space and figures, as well as understanding and applying the Pythagorean Theorem. Students develop an understanding of statistical thinking, inferencing, and investigating patterns of association. Students will apply what they learn in middle school mathematics to future academic and real-life experiences.

What's new in Grade 7 Math?

The table below summarizes the content for 7th grade mathematics, along with content from the previous grade level and the next grade level.

Grade Six Mathematics	Grade Seven Mathematics	Grade Eight Mathematics
● Ratios and ratio reasoning ● Common factors and multiples ● Fluency* using and applying rational numbers (whole numbers and decimals) ● Building on fraction knowledge ● Reasoning with expressions and equations ● Area of triangles and quadrilaterals ● Surface area and volume of prisms and pyramids ● Statistical questions and univariate numerical data	● Rates, ratios, and proportional relationships ● Fluency* using positive and negative rational numbers ● Problem solving with expressions, equations, and inequalities ● Area and circumference of circles ● Area and perimeter of polygons ● Geometric properties of triangles and angles ● Comparing distributions of one-variable data ● Probability	● Solving linear equations and inequalities ● Radicals and integer exponents ● Identifying, analyzing, and comparing functions ● Developing understanding of similarity and congruency using transformations and coordinate geometry ● Pythagorean Theorem ● Volume of cylinders, cones, and spheres ● Patterns in two-variable data

Support Mathematics Learning Outside of School

There are a variety of ways that parents/guardians can support students at home. Here are a few suggestions for supporting student learning outside of school.

1. **Encourage perseverance.** Problem solving requires students to make conjectures and inferences, and test and modify their strategies. It is important to encourage students to persevere through challenging problems. Avoid providing answers and promote perseverance by asking, “What is the problem asking you to find?” and "What did you do in class that might help you figure it out?"
2. **Ask questions about what they are learning in school.** Notes from class or print/digital materials can be used as resources when students are studying or doing math work at home. They provide insight into the strategies and methods students are expected to use when solving problems.
3. **Transform mistakes into opportunities for growth.** Discuss students’ work and ask them questions to help them reflect on their work and opportunities for growth. Provide a safe space to talk about mistakes and opportunities to practice. Doing this regularly will assist in knowing students’ progress and minimizing surprises in the gradebook or on report cards.
4. **Look for opportunities to practice math in the real world.** Link mathematics with daily life: Include your student in situations that involve mathematics such as a budget, discounts, tipping, card playing, weather forecasting, sports and gaming strategies, etc.
5. **Practice computational skills to build fluency*.** Fluency progresses learning strategies beyond basic facts and memorization. Students should be fluent with operations using positive and negative rational numbers (integers, decimals, and fractions) by the end of 7th grade. Regular practice using sense-making strategies rather than memorization helps build student fluency. Partner with your student’s teacher to understand learned strategies.
6. **Support student responsibility.** Help your student take ownership of their own learning. Ask them to assess their own strengths and weaknesses and how they can monitor their own learning.

Partnering with the School

A healthy parent-student-school relationship is a vital component to the success of students. Asking questions can help parents/guardians to understand what their student is learning so that they can provide support to their student and teacher.

1. **Classroom instruction.** Ask questions to help you understand what and how your student will be learning, such as: What concepts will they learn this year? How will I know the expectations throughout the year? What skills should my student already have mastered? How will I know if more practice is needed? How much and what kind of work will they be expected to complete at home? How often will students be assessed? What are some ways that I can help my student prepare at home?
2. **District Curriculum.** Find out what curriculum resources/materials the school or district uses to implement the SCOS. Are there parent resources? What type of calculator will my student be expected to use and when will it be used? What manipulatives will my student use? Will my student have a printed workbook/textbook or access to digital materials? If so, will they bring any of these items home?
3. **District and State Assessments.** Get information about the assessment schedule for the year. Find out what assessments are required by the district and the state. How often throughout the year will students be assessed? How and when will testing information and results be shared?
4. **Parent-teacher communication.** Keep an open line of communication with the teacher and the school so that you can stay updated on your student’s progress. Ask questions, such as: How is my student progressing? What are some things my student does well? What gaps in understanding do you see?

**Fluency is defined as the ability to apply procedures accurately, efficiently, and flexibly; to transfer procedures to different problems and contexts; to build or modify procedures from other procedures; and to recognize when one strategy or procedure is more appropriate to apply than another. NCTM Position Paper, Procedural Fluency in Mathematics, Retrieved from https://www.nctm.org/Standards-and-Positions/Position-Statements/Procedural-Fluency-in-Mathematics/*

NC Home Support Resource

8th Grade Math

Purpose:

This document is intended to support parents/guardians with understanding the major concepts in the NC Standard Course of Study (SCOS) for 5th grade mathematics, and provide possible ways to partner with their student's teacher, school, or district at home.

What is the NC Standard Course of Study?

North Carolina's Standard Course of Study (SCOS) defines content standards for each grade level and high school course to provide a consistent set of learning standards for every public school in North Carolina. These standards define what students know and should be able to do by the end of a specified year or course. The SCOS provides expectations with the end goal of preparing all students to successfully do mathematics in ways that lead them to become ready for careers and/or college.

Who determines how the standards are taught?

Local school districts have autonomy to choose the curriculum (materials and resources) to help students meet the expectations of the SCOS. Mathematics learning is facilitated by the classroom teacher and should be aligned to the local school and district curriculum, as well as the North Carolina Standard Course of Study.

The Content:

Middle School mathematics connects and applies previous elementary mathematical understanding to current learning while building more efficient processes and skills to prepare students for future mathematical learning. Students extend their number sense to the system of rational numbers, which includes negative numbers and radicals. Students develop and apply an understanding of ratio and proportional reasoning. Students reason about expressions and create and solve equations and systems of equations. Students begin grasping and using the concept of a function to describe quantitative relationships. Students solve problems involving scale drawings and informal geometric constructions, and analyze two- and three-dimensional space and figures, as well as understanding and applying the Pythagorean Theorem. Students develop an understanding of statistical thinking, inferencing, and investigating patterns of association. Students will apply what they learn in middle school mathematics to future academic and real-life experiences.

What's new in Grade 8 Math?

The table below summarizes the content for 8th grade mathematics, along with content from the previous grade level and the next grade level.

Grade Seven Mathematics	Grade Eight Mathematics	NC Math 1
● Rates, ratios, and proportional relationships ● Fluency* using positive and negative rational numbers ● Problem solving with expressions, equations, and inequalities ● Area and circumference of circles ● Area and perimeter of polygons ● Geometric properties of triangles and angles ● Comparing distributions of one-variable data ● Probability	● Solving linear equations and inequalities ● Radicals and integer exponents ● Identifying, analyzing, and comparing functions ● Developing understanding of similarity and congruency using transformations and coordinate geometry ● Pythagorean Theorem ● Volume of cylinders, cones, and spheres ● Patterns in two-variable data	● Solving problems with linear, quadratic, and exponential functions ● Solving problems involving systems of equations ● Identifying, analyzing, and comparing multiple representations of linear, quadratic, and exponential functions ● Reasoning with lines, angles, and polygons in the coordinate plane ● Summarize, interpret, and analyze data

Support Mathematics Learning Outside of School

There are a variety of ways that parents/guardians can support students at home. Here are a few suggestions for supporting student learning outside of school.

1. **Encourage perseverance.** Problem solving requires students to make conjectures and inferences, and test and modify their strategies. It is important to encourage students to persevere through challenging problems. Avoid providing answers and promote perseverance by asking, “What is the problem asking you to find?” and "What did you do in class that might help you figure it out?"
2. **Ask questions about what they are learning in school.** Notes from class or print/digital materials can be used as resources when students are studying or doing math work at home. They provide insight into the strategies and methods students are expected to use when solving problems.
3. **Transform mistakes into opportunities for growth.** Discuss students’ work and ask them questions to help them reflect on their work and opportunities for growth. Provide a safe space to talk about mistakes and opportunities to practice. Doing this regularly will assist in knowing students’ progress and minimizing surprises in the gradebook or on report cards.
4. **Look for opportunities to practice math in the real world.** Link mathematics with daily life. Include your student in situations that involve mathematics such as estimating income over time, computing mileage rates, or predicting profit, etc.
5. **Practice computational skills to build fluency*.** Fluency progresses learning strategies beyond basic facts and memorization. Students should be fluent with solving one-variable linear equations by the end of 8th grade. Regular practice using sense-making strategies rather than memorization helps build student fluency. Partner with your student’s teacher to understand learned strategies.
6. **Support student responsibility.** Help your student take ownership of their own learning. Ask them to assess their own strengths and weaknesses and how they can monitor their own learning.

Partnering with the School

A healthy parent-student-school relationship is a vital component to the success of students. Asking questions can help parents and guardians to understand what their student is learning so that they can provide support to their student and teacher.

1. **Classroom instruction.** Ask questions to help you understand what and how your student will be learning, such as: What concepts will they learn this year? How will I know the expectations throughout the year? What skills should my student already have mastered? How will I know if more practice is needed? How much and what kind of work will they be expected to complete at home? How often will students be assessed? What are some ways that I can help my student prepare at home?
2. **District Curriculum.** Find out what curriculum resources/materials the school or district uses to implement the SCOS. Are there parent resources? What type of calculator will my student be expected to use and when will it be used? What manipulatives will my student use? Will my student have a printed workbook/textbook or access to digital materials? If so, will they bring any of these items home?
3. **District and State Assessments.** Get information about the assessment schedule for the year. Find out what assessments are required by the district and the state. How often throughout the year will students be assessed? How and when will testing information and results be shared?
4. **Parent-teacher communication.** Keep an open line of communication with the teacher and the school so that you can stay updated on your student’s progress. By asking questions, such as: How is my student progressing? What are some things my student does well? What gaps in understanding do you see?

**Fluency is defined as the ability to apply procedures accurately, efficiently, and flexibly; to transfer procedures to different problems and contexts; to build or modify procedures from other procedures; and to recognize when one strategy or procedure is more appropriate to apply than another. NCTM Position Paper, Procedural Fluency in Mathematics, Retrieved from https://www.nctm.org/Standards-and-Positions/Position-Statements/Procedural-Fluency-in-Mathematics/*