



5th Grade Mathematics Map/Pacing Guide 2019-2020

Topics & Standards

Quarter 1

Time Frame Weeks 1-7

UNIT 1

NUMBER AND OPERATIONS IN BASE TEN

Understand the place value system.

- **5.NBT.1** Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and $1/10$ of what it represents in the place to its left.
- **5.NBT.2** Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10.

Use whole-number exponents to denote powers of 10.

- **5.NBT.3** Read, write, and compare decimals to thousandths.
 - a. Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., $347.392 = 3 \times 100 + 4 \times 10 + 7 \times 1 + 3 \times (1/10) + 9 \times (1/100) + 2 \times (1/1000)$.
 - b. Compare two decimals to thousandths based on meanings of the digits in each place, using $>$, $=$, and $<$ symbols to record the results of comparisons.
- **5.NBT.4** Use place value understanding to round decimals to any place, millions through hundredths

Perform operations with multi-digit whole numbers and with decimals to hundredths.

- **5.NBT.5** Fluently multiply multi-digit whole numbers using the standard algorithm.
- **5.NBT.6** Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.
- **5.NBT.7** Solve real-world problems by adding, subtracting, multiplying, and dividing decimals using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction, or multiplication and division; relate the strategy to a written method and explain the reasoning used.
 - a. Add and subtract decimals, including decimals with whole numbers, (whole numbers through the hundreds place and decimals through the hundredths place).
 - b. Multiply whole numbers by decimals (whole numbers through the hundreds place and decimals through the hundredths place).
 - c. Divide whole numbers by decimals and decimals by whole numbers (whole numbers through the tens place and decimals less than one through the hundredths place using numbers whose division can be readily modeled). For example, 0.75 divided by 5, 18 divided by 0.6, or 0.9 divided by 3.

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UNIT 2

NUMBER AND OPERATIONS—FRACTIONS

Use equivalent fractions as a strategy to add and subtract fractions. (Fractions need not be simplified.)

- **5NF.1** Add and subtract fractions with unlike denominators (including mixed numbers and fractions greater than 1) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. For example, use visual models and properties of operations to show $\frac{2}{3} + \frac{5}{4} = \frac{8}{12} + \frac{15}{12} = \frac{23}{12}$. In general, $\frac{a}{b} + \frac{c}{d} = \frac{a/b \times d/d}{d} + \frac{c/d \times b/b}{b} = \frac{ad + bc}{bd}$.
- **5NF.2** Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. *For example, recognize an incorrect result $\frac{2}{5} + \frac{1}{2} = \frac{3}{7}$, by observing that $\frac{3}{7} < \frac{1}{2}$.*

Apply and extend previous understandings of multiplication and division to multiply and divide fractions. (Fractions need not be simplified.)

- **5NF.3** Interpret a fraction as division of the numerator by the denominator ($\frac{a}{b} = a \div b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. *For example, interpret $\frac{3}{4}$ as the result of dividing 3 by 4, noting that $\frac{3}{4}$ multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size $\frac{3}{4}$. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?*

MATH PRACTICE STANDARDS

- Make sense of problems and persevere in solving them.
- Reason abstractly and quantitatively.
- Construct viable arguments and critique the reasoning of others.
- Model with mathematics.
- Use appropriate tools strategically.
- Attend to precision.
- Look for and make use of structure.
- Look for and express regularity in repeated reasoning.

MAJOR **SUPPORTING** **ADDITIONAL**

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Students should spend the majority of learning on the major work of the grade level; which should account for at least 65% of the academic year (Achieve the core, n.d.). **Major content should be emphasized via a greater number of days of instruction, depth and mastery.**

Spiral Review to include but not limited to: 4.NBT.4, 4.NBT.5, 4.NBT.6, 4.NBT.7, 4.OA.3, 4.N.F.1, 4.N.F.2, 4.N.F.3, 4.MD.1, 4.MD.2

<i>Assessment (Evidence)</i>	<i>Key Concepts and Skills</i>	<i>Curriculum & Textbook Resources</i>	<i>Key Concept tools & practices</i>
<p>Ready Ohio Math Assessment Resources</p> <ul style="list-style-type: none"> ● Lesson Quiz ● i-Ready Diagnostic (fall, winter, spring) ● Unit Interim Assessment or i-Ready Standards Mastery ● Unit Self-check <p>Performance Assessment</p> <p>Unit 1: Math in Action: Use Whole Numbers and Decimals</p>	<ul style="list-style-type: none"> ➤ Explain how the value of digits increase/decreases from ones, tens hundreds, etc. ➤ Explain the concept of “powers of ten” ➤ Explain multiplication and division patterns with powers of 10 ➤ Explain how the placement of a decimal point changes the value of a number. ➤ Read, write and compare decimals ➤ Round decimals ➤ Multiply using the standard algorithm (partial products first) ➤ Solve word problems involving all operations, whole numbers and decimals ➤ Represent strategies and calculations with illustrations, models, and/or equations ➤ Relate the strategies and tools to a written method (Explain the processes accurately; repeated reasoning). 	<p>Ready Ohio</p> <p>Unit 1 Number and Operations in Base 10</p> <ul style="list-style-type: none"> ● Lesson 0: Lessons for the first 5 days ● Lesson 1: Understand Powers of Ten (NBT.1) ● Lesson 2: Understand Powers of Ten (NBT.2) ● Lesson 3: Read and Write Decimals (NBT.3, NBT.3a) ● Lesson 4: Compare and Round Decimals (NBT.3, NBT.3a, NBT.4) ● Lesson 5: Multiply Decimals (NBT.5) ● Lesson 6: Divide Whole Numbers (NBT.6) ● Lesson 7: Add and Subtract 	<p>Available on Teacher Toolbox:</p> <ul style="list-style-type: none"> ● Interactive Tutorials ● Prerequisite Ready Lessons ● Tools for Instruction ● Math Center Activities ● Think-Share-Compare Routine (under Program Implementation) ● Ready-Central (Instructional Best Practices Videos) ● http://readycentral.com/ ● Journals / Provisional Writing ● Math Models ● Discourse Cards ● Non-linguistic

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		<ul style="list-style-type: none"> ➤ Justify the use of methods. ➤ Add and subtract fractions using strategies of equivalence ➤ Solve word problems involving the adding/subtracting of fractions with visual models OR equations to represent thinking ➤ Know unit fractions and relative quantity of fractions from visualizing the unit fraction (use knowledge of $\frac{1}{3}$ to estimate the amount of $\frac{2}{3}$, etc.). ➤ Estimate and evaluate the reasonableness of answers ➤ Understand the concept of a fraction as a form of division ➤ Solve problems involving the division of whole numbers where the answer could be a fractional amount (including mixed numbers) 	<p>Decimals (NBT.7, NBT.7a)</p> <ul style="list-style-type: none"> ● Lesson 8: Multiply Decimals (NBT.7, NBT.7b) ● Lesson 9: Divide Decimals (NBT.7, NBT.7c) <p>Unit 2 Number and Operations - Fractions</p> <p>Lesson 10: Add and Subtract Fractions (NF.1)</p> <p>Lesson 11: Add and Subtract Fractions in Word Problems (NF.2)</p> <p>Lesson 12: Fractions as Division (NF.3)</p> <p>Other Resources:</p> <ul style="list-style-type: none"> ● Achieve the Core https://achievethecore.org/category/854/mathematics-lessons ● ODE Model Curriculum Resources https://education.ohio.gov/Topics/Learning-in- 	<p>representations</p> <ul style="list-style-type: none"> ● Resource Selector Tool (under Program Implementation)
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			Ohio/Mathematics	
<p style="text-align: center;"><i>Topic & Standard</i></p> <p style="text-align: center;"><i>Quarter 2</i></p> <p style="text-align: center;"><i>Time Frame</i> <i>Weeks 1-8</i></p>	<p><u>UNIT 2 CONTINUED</u> Apply and extend previous understandings of multiplication and division to multiply and divide fractions.</p> <ul style="list-style-type: none"> • 5.NF.4 Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. <ul style="list-style-type: none"> a. Interpret the product $(a/b) \times q$ as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$. <i>For example, use a visual fraction model to show $(2/3) \times 4 = 8/3$, and create a story context for this equation. Do the same with $(2/3) \times (4/5) = 8/15$. (In general, $(a/b) \times (c/d) = ac/bd$.)</i> b. Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas. • 5.NF.5 Interpret multiplication as scaling (resizing), by: <ul style="list-style-type: none"> a. Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication. b. Explain why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence $a/b = (n \times a)/(n \times b)$ to the effect of multiplying a/b by 1. • 5.NF.6 Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem. 			

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- **5.NF.7** Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. (Fractions need not be simplified.)
 - a. Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. *For example, create a story context for $(1/3) \div 4$, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that $(1/3) \div 4 = 1/12$ because $(1/12) \times 4 = 1/3$.*
 - b. Interpret division of a whole number by a unit fraction, and compute such quotients. *For example, create a story context for $4 \div (1/5)$, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that $4 \div (1/5) = 20$ because $20 \times (1/5) = 4$.*
 - c. Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. *For example, how much chocolate will each person get if 3 people share $\frac{1}{2}$ lb of chocolate equally? How many $1/3$ -cup servings are in 2 cups of raisins?*

UNIT 3

OPERATIONS AND ALGEBRAIC THINKING

Write and interpret numerical expressions.

- **5.OA.1** Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols. Formal use of algebraic order of operations is not necessary.
- **5.OA.2** Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. *For example, express the calculation “add 8 and 7, then multiply by 2” as $2 \times (8 + 7)$. Recognize that $3 \times (18932 + 921)$ is three times as large as $18932 + 921$, without having to calculate the indicated sum or product.*

Analyze patterns and relationships.

- **5.OA.3** Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. *For example, given the rule “Add 3” and the starting number 0, and given the rule “Add 6” and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so.*

NUMBER AND OPERATIONS—FRACTIONS

Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

- **5.NF.6** Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.

Perform operations with multi-digit whole numbers and with decimals to hundredths.

- **5.NBT.7** Solve real-world problems by adding, subtracting, multiplying, and dividing decimals using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction, or multiplication and division; relate the strategy to a written method and explain the reasoning used.

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- a. Add and subtract decimals, including decimals with whole numbers, (whole numbers through the hundreds place and decimals through the hundredths place).
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Spiral Review to include but not limited to 5.NBT.1, 5.NBT.2, 5.NBT.3, 5.NBT.5, 5.NBT.6, 5.NBT.7, 5.NF.1, 5.NF.2, 5.NF.3

<i>Assessment (Evidence)</i>	<i>Key Concepts and Skills</i>	<i>Curriculum & Textbook Resources</i>	<i>Key Concept tools & practices</i>
<p>Ready Ohio Math Assessment Resources</p> <ul style="list-style-type: none"> ● Lesson Quiz ● i-Ready Diagnostic (fall, winter, spring) ● Unit Interim Assessment or i-Ready Standards Mastery ● Unit Self-check 	<ul style="list-style-type: none"> ➤ Use fraction models or equations to represent thinking when solving problems. ➤ Understand that scaling is a form of multiplication – resizing of an object or amount. ➤ Use models to find products ➤ Use a rectangle with fractional side lengths. ➤ Find the area of the rectangles with fractions as lengths. ➤ Solve word problems involving mixed numbers. 	<p>Ready Ohio</p> <p>Unit 2 Continued</p> <p>Lesson 13: Understand Products of Fractions (NF.4, NF.4a)</p> <p>Lesson 14: Multiply Fractions Using an Area Model (NF.4, NF.4b)</p> <p>Lesson 15: <i>Understand Multiplication as Scaling</i> (NF.5, NF.5a-b)</p>	<p>Available on Teacher Toolbox:</p> <ul style="list-style-type: none"> ● Interactive Tutorials ● Prerequisite Ready Lessons ● Tools for Instruction ● Math Center Activities ● Think-Share-Compare Routine (under Program Implementation) ● Ready-Central

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	<p>Performance Assessments</p> <p>Unit 2: Math in Action: Use Fractions</p> <p>Unit 3: Math in Action: Expressions, Patterns, and Relationships</p>	<ul style="list-style-type: none"> ➤ Write the mixed numbers as improper fractions. ➤ Solve word problems by writing an equation with mixed numbers. ➤ Use models to find quotients like ➤ Divide a whole number by a unit fraction. 	<p>Lesson 16: Multiply Fractions in Word Problems (NF.6)</p> <p>Lesson 17: Understand Division with Unit Fractions (NF.7, NF.7a-b)</p> <p>Lesson 18: Divide Unit Fractions in Word Problems (NF.7, NF.7c)</p> <p>Unit 3 Operations and Algebraic Thinking</p> <p>Lesson 19: Evaluate and Write Expressions (OA.1, OA.2)</p> <p>Lesson 20: Analyze Patterns and Relationships (OA.3)</p> <p>Other Resources:</p> <ul style="list-style-type: none"> ● Achieve the Core https://achievethecore.org/category/854/mathematics-lessons ● ODE Model Curriculum Resources https://education.ohio.gov/Topics/Learning-in-Ohio/Mathematics 	<p>(Instructional Best Practices Videos)</p> <ul style="list-style-type: none"> ● http://readycentral.com/ ● Journals / Provisional Writing ● Math Models ● Discourse Cards ● Non-linguistic representations ● Resource Selector Tool (under Program Implementation)
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<p style="text-align: center;"><i>Topic & Standard</i></p> <p style="text-align: center;"><i>Quarter 3</i></p> <p style="text-align: center;"><i>Time Frame Weeks 1-7</i></p>	<p><u>UNIT 4</u> <u>MEASUREMENT AND DATA</u></p> <p>Convert like measurement units within a given measurement system.</p> <ul style="list-style-type: none"> • 5.MD.1 Know relative sizes of these U.S. customary measurement units: pounds, ounces, miles, yards, feet, inches, gallons, quarts, pints, cups, fluid ounces, hours, minutes, and seconds. Convert between pounds and ounces; miles and feet; yards, feet, and inches; gallons, quarts, pints, cups, and fluid ounces; hours, minutes, and seconds in solving multi-step, real world problems. <p>Represent and interpret data.</p> <ul style="list-style-type: none"> • 5.MD.2 Display and interpret data in graphs (picture graphs, bar graphs, and line plots) to solve problems using numbers and operations for this grade, e.g., including U.S. customary units in fractions $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$, or decimals. <p>Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.</p> <ul style="list-style-type: none"> • 5.MD.3 Recognize volume as an attribute of solid figures and understand concepts of volume measurement. <ol style="list-style-type: none"> a. A cube with side length 1 unit, called a “unit cube,” is said to have “one cubic unit” of volume, and can be used to measure volume. b. A solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units. • 5.MD.4 Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units. • 5.MD.5 Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume. <ol style="list-style-type: none"> a. Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole number products as volumes, e.g., to represent the associative property of multiplication. b. Apply the formulas $V = l \times w \times h$ and $V = b \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real world and mathematical problems. c. Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems.
	<p><u>MATH PRACTICE STANDARDS</u></p> <ul style="list-style-type: none"> • Make sense of problems and persevere in solving them. • Reason abstractly and quantitatively. • Construct viable arguments and critique the reasoning of others. • Model with mathematics. • Use appropriate tools strategically.

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- Attend to precision.
- Look for and make use of structure.
- Look for and express regularity in repeated reasoning.

MAJOR SUPPORTING ADDITIONAL

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Assessment (Evidence)

Key Concepts and Skills

Curriculum & Textbook Resources

Key Concept tools & practices

**Ready Ohio Math
Assessment Resources**

- Lesson Quiz
- i-Ready Diagnostic (fall, winter, spring)
- Unit Interim Assessment or i-Ready Standards Mastery
- Unit Self-check

Performance Assessment

Unit 4: Math in Action:

- Convert between various standard units of measurement.
- Solve problems involving line plots showing data from measurements; including fractions.
- Know the basic attributes of figures
- Understand that two dimensional figures have attributes, some in common and some not.
- Use the attributes of figures to classify into categories and subcategories
- Understand the concept of volume.

Ready Ohio

Unit 4 Measurement and Data

- Lesson 21: Convert Measurement Days (MD.1)
- Lesson 22: Solve Word Problems Involving Conversions (MD.1)
- Lesson 23: Make Line Plots and Interpret Data
- Lesson 23A: Make Picture Graphs and Interpret Data (MD.2)
- Lesson 23B: Make Bar Graphs and Interpret Data (MD.2)
- Lesson 24: Understand Volume

Available on Teacher Toolbox:

- Interactive Tutorials
- Prerequisite Ready Lessons
- Tools for Instruction
- Math Center Activities
- Think-Share-Compare Routine (under Program Implementation)
- Ready-Central (Instructional Best Practices Videos)

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	<p>Work with Measurement and Data</p>	<ul style="list-style-type: none"> ➤ Understand “units” as a method to name a set amount ➤ Know “cubed units” as solid cubes used to measure volume when packed together without overlapping ➤ Know symbols for representing units involving volume ➤ Measure volume of given figures ➤ Understand associate ➤ Use a formula to find volume with rectangular prisms 	<p>(MD.3, MD.3a-b)</p> <p>Lesson 25: Find Volume Using Unit Cubes (MD.4)</p> <p>Lesson 26: Subtract to compare in word problems (Find Volume Using Formulas (MD.5, MD.5a-b)</p> <p>Lesson 27: Find Volume of Composite Figures (MD.5, MD.5c)</p> <p>Other Resources:</p> <ul style="list-style-type: none"> ● Achieve the Core https://achievethecore.org/category/854/mathematics-lessons ● ODE Model Curriculum Resources https://education.ohio.gov/Topics/Learning-in-Ohio/Mathematics 	<ul style="list-style-type: none"> ● http://readycentral.com/ ● Journals / Provisional Writing ● Math Models ● Discourse Cards ● Non-linguistic representations ● Resource Selector Tool (under Program Implementation)
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	<p><u>MATH PRACTICE STANDARDS</u></p> <ul style="list-style-type: none"> • Make sense of problems and persevere in solving them. • Reason abstractly and quantitatively. • Construct viable arguments and critique the reasoning of others. • Model with mathematics. • Use appropriate tools strategically. • Attend to precision. • Look for and make use of structure. • Look for and express regularity in repeated reasoning.
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<i>Assessment (Evidence)</i>	<i>Key Concepts and Skills</i>	<i>Curriculum & Textbook Resources</i>	<i>Key Concept tools & practices</i>
<p>Ready Ohio Math Assessment Resources</p> <ul style="list-style-type: none"> ● Lesson Quiz ● i-Ready Diagnostic (fall, winter, spring) ● Unit Interim Assessment or i-Ready Standards Mastery ● Unit Self-check <p>Performance Assessment Unit 5: Math in Action: Work with Geometry and Coordinates</p>	<ul style="list-style-type: none"> ➤ Understand the purpose of a coordinate plane ➤ Know what components are needed to create a coordinate plane: two perpendicular lines that intersect – called axis; y and x ➤ Create scales for each axis ➤ Represent real world problems with graphed points on a coordinate plane ➤ Interpret the location of points/locations on the coordinate plane in real world contexts ➤ Understand that two dimensional figures have attributes, some in common and some not. ➤ Use the attributes of figures to classify into categories and subcategories 	<p>Ready Ohio Unit 5 Geometry</p> <p>Lesson 28: Understand the Coordinate Plane (G.1)</p> <p>Lesson 29: Graph Points in the Coordinate Plane (G.2)</p> <p>Lesson 30: Classify Quadrilaterals (G.4)</p> <p>Lesson 31: Classify Triangles (G.3)</p> <p>Other Resources:</p> <ul style="list-style-type: none"> ● Achieve the Core https://achievethecore.org/category/854/mathematics-lessons ● ODE Model Curriculum Resources https://education.ohio.gov/Topics/Learning-in-Ohio/Mathematics 	<p>Available on Teacher Toolbox:</p> <ul style="list-style-type: none"> ● Interactive Tutorials ● Prerequisite Ready Lessons ● Tools for Instruction ● Math Center Activities ● Think-Share-Compare Routine (under Program Implementation) ● Ready-Central (Instructional Best Practices Videos) ● http://readycentral.com/ ● Journals / Provisional Writing ● Math Models ● Discourse Cards ● Non-linguistic representations ● Resource Selector Tool (under Program

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				Implementation)
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