Unit 7: Divide Decimals and Convert Metric Units

Content Area: **Template**
Course(s):
Time Period: **Full Year**
Length: **Full Year**
Status: **Published**

UNIT RATIONALE

In this unit, students will explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. They will use whole-number exponents to denote powers of 10.

Students will also convert among different-sized standard measurement systems (e.g., convert 5 cm to 0.05) and use these conversions in solving multi-step, real-world problems.

MA.5.NBT.A.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.
MA.5.NBT.A.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.
MA.5.NBT.A.3	Read, write, and compare decimals to thousandths.
MA.5.NBT.B	Perform operations with multi-digit whole numbers and with decimals to hundredths.
MA.5.NBT.B.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.
MA.5.NBT.B.7	Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.
MA.5.MD	Measurement and Data
MA.5.MD.A	Convert like measurement units within a given measurement system.
MA.5.MD.A.1	Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.
MA.5.MD.B	Represent and interpret data.

ESSENTIAL QUESTIONS

- What patterns are used in dividing decimals?
- How do I represent the division of decimals by whole numbers?
- How can I assess the reasonableness of quotients?
- How can I divide decimals by whole numbers?
- How can I use visuals to represent the division of decimals?
- How can I divide decimals?
- How can I write zeros in the dividend to find the quotient?
- What are metric conversions?

- How can I solve metric conversion problems?
- How can I solve customary conversion problems?
- How can I solve multistep measurement problems?

STANDARDS

NEW JERSEY STUDENT LEARNING STANDARDS: CONTENT AREA

MATH.5.NBT.A	Understand the place value system
MATH.5.NBT.A.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.
MATH.5.NBT.A.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.
MATH.5.NBT.A.3	Read, write, and compare decimals to thousandths.
MATH.5.NBT.B	Perform operations with multi-digit whole numbers & with decimals to hundredths
MATH.5.NBT.B.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.
MATH.5.NBT.B.7	Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

NEW JERSEY STUDENT LEARNING STANDARDS: CAREER READINESS, LIFE LITERACIES AND KEY SKILLS

TECH.9.4.5.CT.1	Identify and gather relevant data that will aid in the problem-solving process (e.g., 2.1.5.EH.4, 4-ESS3-1, 6.3.5.CivicsPD.2).

NEW JERSEY STUDENT LEARNING STANDARDS: COMPUTER SCIENCE AND DESIGN THINKING

CS.3-5.8.2.5.ED.3	Follow step by step directions to assemble a product or solve a problem, using appropriate tools to accomplish the task.

PRE-ASSESSMENTS

Module 17: Module 17 "Are You Ready?" (TM pg. 418)

Module 18: Module 18 "Are You Ready?" (TM pg. 454)

INSTRUCTIONAL PLAN

MODULE 17

Module 17: Understand Decimal Division Patterns

LESSON 17.1

Student Learning Intentions (SLI) WALT: (We are learning to…)	17.1 We are learning to find patterns in quotients when dividing by powers of 10.
Student Learning Strategies	• show patterns in the placement of the decima point when a number is divided by a power of 10. • divide decimals by a power of 10.
Success Criteria	I can use patterns to place the decimal point in a quotient.
Formative Assessment (drives instructional decisions)	Turn and Talk (pgs. 419, 420, 421, & 422) Check Understanding (pg. 422) Exit Ticket (TM pg. 424)
Activities and Resources	**Warm Up:** Activate Prior Knowledge (TM pg. 419B) **Mini-Lesson:** Spark Your Learning (TM pg. 419D) Build Understanding (p. 420-422) **Guided Practice:** Check Understanding (pg. 422) **Independent Practice:** On Your Own (pg. 423) Exit Ticket (TM pg. 423)

	Teacher Resources Into Math Teacher Edition Module 17 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM pg. 419C)

MA.5.OA.B	Analyze patterns and relationships.
MA.5.NBT.A	Understand the place value system.
MA.5.NBT.A.3	Read, write, and compare decimals to thousandths.

LESSON 17.2

Student Learning Intentions (SLI) WALT: (We are learning to…)	17.2 We are learning to use concrete or visual models to show the division of decimals by whole numbers.
Student Learning Strategies	• represent the division of a decimal by a whole number with a concrete model. • use a concrete model to divide a decimal by a whole number.
Success Criteria	I can use concrete or visual model to divide a decimal by a whole number.
Formative Assessment (drives instructional decisions)	Turn and Talk (pgs. 425-426) Check Understanding (pg. 427) Exit Ticket (TM pg. 428)
Activities and Resources	**Warm Up:** Activate Prior Knowledge (TM pg. 425B) **Mini-Lesson:** Spark Your Learning (TM pg. 425D) Build Understanding (p. 426-427) **Guided Practice:** Check Understanding (pg. 427)**Independent Practice:** On Your Own (pg. 428 Exit Ticket (TM pg. 428) Teacher Resources Into Math Teacher Edition Module 17 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM pg. 425C)

MA.5.NBT.B.7	Add, subtract, multiply, and divide decimals to hundredths, using concrete models or

drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

LESSON 17.3

Student Learning Intentions (SLI) WALT: (We are learning to…)	17.3 We are learning to assess the reasonableness of quotients.
Student Learning Strategies	• estimate decimal quotients using compatible numbers.
Success Criteria	I can estimate the quotient of a decimal division problem by using compatible numbers.
Formative Assessment (drives instructional decisions)	Turn and Talk (pgs. 429, 430, & 431) Check Understanding (pg. 431) Exit Ticket (TM pg. 432)
Activities and Resources	**Warm Up:** Activate Prior Knowledge (TM pg. 429B) **Mini-Lesson:** Spark Your Learning (TM pg. 429D) Build Understanding (p. 430) Step It Out (Pg. 431) **Guided Practice:** Check Understanding (pg. 431)**Independent Practice:** On Your Own (pg. 432 Exit Ticket (TM pg. 432) Teacher Resources Into Math Teacher Edition Module 17 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM pg. 429C)

MA.5.NBT.B.7 Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

LESSON 17.4

Student Learning Intentions (SLI) WALT: (We are learning to…)	17.4 We are learning to divide decimals by whole numbers.

Student Learning Strategies	• divide decimals by whole numbers by solving a related whole number division problem.
Success Criteria	I can divide a decimal by a whole number.
Formative Assessment (drives instructional decisions)	Turn and Talk (pgs. 433, 434, & 435) Check Understanding (pg. 435) Exit Ticket (TM pg. 436)
Activities and Resources	**Warm Up:** Activate Prior Knowledge (TM pg. 433B)**Mini-Lesson:** Spark Your Learning (TM pg. 433D) Build Understanding (p. 433) Step It Out (Pg. 434) **Guided Practice:** Check Understanding (pg. 435)**Independent Practice:** On Your Own (pg. 436 Exit Ticket (TM pg. 436) Teacher Resources Into Math Teacher Edition Module 17 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM pg. 433C)

MA.5.NBT.B.7	Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

LESSON 17.5

Student Learning Intentions (SLI) WALT: (We are learning to…)	17.5 We are learning to represent decimal division using a concrete or visual model.
Student Learning Strategies	• divide a decimal by a decimal using a concrete or visual model. • divide a whole number by a decimal using a concrete or visual model.
Success Criteria	I can divide a decimal by a decimal using a visual model.

Formative Assessment (drives instructional decisions)	Turn and Talk (pgs. 437, 438, 439, & 440) Check Understanding (pg. 440) Exit Ticket (TM pg. 442)
Activities and Resources	**Warm Up:** Activate Prior Knowledge (TM pg. 437B) **Mini-Lesson:** Spark Your Learning (TM pg. 437D) Build Understanding (p. 437) Step It Out (Pg. 438) **Guided Practice:** Check Understanding (pg. 440) **Independent Practice:** On Your Own (pg. 441-442 Exit Ticket (TM pg. 442) Teacher Resources Into Math Teacher Edition Module 17 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM pg. 437C)

MA.5.NBT.B.7	Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

LESSON 17.6

Student Learning Intentions (SLI) WALT: (We are learning to…)	17.6 We are learning to place the decimal point in decimal division.
Student Learning Strategies	• divide decimals by using place-value strategies to place the decimal point.
Success Criteria	I can divide a decimal by a decimal.
Formative Assessment (drives instructional decisions)	Turn and Talk (pgs. 443 & 444) Check Understanding (pg. 445) Exit Ticket (TM pg. 446)
Activities and Resources	**Warm Up:** Activate Prior Knowledge (TM pg. 443B)**Mini-Lesson:** Step It Out (Pg. 443-444)**Guided Practice:** Check Understanding (pg. 445)**Independent Practice:** On Your Own (pg. 446) Exit Ticket (TM pg. 446)

	Teacher Resources Into Math Teacher Edition Module 17 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM pg. 443C)

MA.5.NF.A.1	Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators.

LESSON 17.7

Student Learning Intentions (SLI) WALT: (We are learning to…)	17.7 We are learning to write a zero in the dividend to find a quotient.
Student Learning Strategies	• divide decimals by writing a zero in the dividend as needed.
Success Criteria	I can find a quotient by writing a zero in the dividend
Formative Assessment (drives instructional decisions)	Turn and Talk (pgs. 447-448) Check Understanding (pg. 448) Exit Ticket (TM pg. 449)
Activities and Resources	**Warm Up:** Activate Prior Knowledge (TM pg. 447B) **Mini-Lesson:** Step It Out (Pg. 447-448) **Guided Practice:** Check Understanding (pg. 448)**Independent Practice:** On Your Own (pg. 449 450) Exit Ticket (TM pg. 450) Teacher Resources Into Math Teacher Edition Module 17 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM pg. 447C)

MA.5.NBT.A.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.

Module 18: Customary and Metric Measurement

LESSON 18.1

Student Learning Intentions (SLI) WALT: (We are learning to…)	18.1 We are learning to convert and compare metri units.
Student Learning Strategies	• compare and convert units in the metric system.
Success Criteria	I can convert between any two metric units of length liquid volume, or mass.
Formative Assessment (drives instructional decisions)	Turn and Talk (pgs. 455-456) Check Understanding (pg. 457) Exit Ticket (TM pg. 448)
Activities and Resources	**Warm Up:** Activate Prior Knowledge (TM pg. 455B) **Mini-Lesson:** Step It Out (Pg. 455-456) **Guided Practice:** Check Understanding (pg. 457) **Independent Practice:** On Your Own (pg. 458) Exit Ticket (TM pg. 458) Teacher Resources Into Math Teacher Edition Module 18 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM pg. 455C)

MA.5.MD	Measurement and Data
MA.5.MD.A	Convert like measurement units within a given measurement system.
MA.5.MD.A.1	Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.

LESSON 18.2

Student Learning Intentions (SLI) WALT: (We are learning to…)	18.2 We are learning to solve customary and metric conversion problems.
Student Learning Strategies	• solve problems by converting within the customary system. • solve problems by converting within the metric system.
Success Criteria	I can solve problems involving conversions within the same system of measurement.
Formative Assessment (drives instructional decisions)	Turn and Talk (pgs. 459-460) Check Understanding (pg. 461) Exit Ticket (TM pg. 462)
Activities and Resources	**Warm Up:** Activate Prior Knowledge (TM pg. 459B) **Mini-Lesson:** Step It Out (Pg. 459-460) **Guided Practice:** Check Understanding (pg. 461)**Independent Practice:** On Your Own (pg. 462 Exit Ticket (TM pg. 462) Teacher Resources Into Math Teacher Edition Module 18 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM pg. 459C)

MA.5.MD.A	Convert like measurement units within a given measurement system.
MA.5.MD.A.1	Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.

LESSON 18.3

Student Learning Intentions (SLI) WALT: (We are learning to…)	18.3 We are learning to convert measurement units to solve multistep problems.
Student Learning Strategies	• solve multistep problems by converting within the customary system or the metric system.

Success Criteria	I can solve a multistep problem that includes measurement conversions.
Formative Assessment (drives instructional decisions)	Turn and Talk (pgs. 463-464) Check Understanding (pg. 465) Exit Ticket (TM pg. 466)
Activities and Resources	**Warm Up:** Activate Prior Knowledge (TM pg. 463B) **Mini-Lesson:** Step It Out (Pg. 463-464) **Guided Practice:** Check Understanding (pg. 465) **Independent Practice:** On Your Own (pg. 466) Exit Ticket (TM pg. 466) Teacher Resources Into Math Teacher Edition Module 18 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM pg. 463C)

MA.5.MD	Measurement and Data
MA.5.MD.A	Convert like measurement units within a given measurement system.
MA.5.MD.A.1	Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.

REFLECTIONS

INTERDISCIPLINARY CONNECTIONS: NEW JERSEY STUDENT LEARNING STANDARDS FOR ELA, SOCIAL STUDIES, SCIENCE AND/OR MATHEMATICS

LA.RF.5.4.A	Read grade-level text with purpose and understanding.
LA.W.5.1.B	Provide logically ordered reasons that are supported by facts and details from text(s), quote directly from text when appropriate.
LA.L.5.4.B	Use common, grade-appropriate Greek and Latin affixes and roots as clues to the meaning of a word (e.g., photograph, photosynthesis).