Stage 1: Identify Desired Results

| **Essential Question:**

What thought-provoking questions will foster inquiry, meaning making and transfer?
● *An essential question is open-ended; it has no simple "right answer."*
● *Is meant to be investigated, argued, looked at from different points of view*
● *Encourages active "meaning making" by the learner about important ideas.*
● *Raises other important questions.*
● *Naturally arises* | How are spatial relationships, including shape and dimension, used to draw, construct, model and represent real situations or solve problems? |
| **Scaffold Questions:**

What questions can we ask students that break the essential question into smaller pieces of content? | Is there another way to see it?

How can I represent it?

How can I rewrite it?

Are these representations equivalent? |

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Brief Summary of Unit:	In the previous chapter, you worked with multiplication. Now you will turn your attention to division. In Section 6.1, you will find ways to divide different amounts of licorice among different numbers of people. You will gain a deep understanding of division by using diagrams and pictures to model it. The strategies that you develop in this chapter will help you in Chapter 7 when you will work further with division. You will begin Section 6.2 by building expressions with a new tool called *algebra tiles*. You will use variables to describe the perimeters and areas of shapes built with tiles when one dimension is unknown or can represent various lengths.
Desired Understanding: *The long-term accomplishments that students should be able to do with knowledge and skill, on their own. Frames Standards as long-term performance accomplishments. Answer the questions Why? And What can you do with this?*	Section 6.1: In this section, you will begin by looking at integer division by dividing different amounts of licorice among different numbers of people. You will use diagrams and other strategies to divide the licorice equally. Then you will divide fractions and mixed numbers and use your knowledge of division to solve problems. Section 6.2: This section introduces algebra tiles and uses their areas and perimeters to develop the skills of building expressions and combining like terms. You will simplify and evaluate algebraic expressions for given values. In this chapter, you will learn how to: ● Represent division of fractions using diagrams. ● Divide whole and mixed numbers by fractions. ● Use the Order of Operations to find the correct value of a numerical expression. ● Combine like terms and simplify algebraic expressions. ● Use a variable to represent any number.

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Common Core State Standards (CCSS) - Mathematics *List all of the standards in this unit.*	
Mathematical Practices *Which of the mathematical practices will be focused on during this unit?*	The 8 Mathematical Practices are listed below. A "kid friendly" version of each standard is also included. 1. **Make sense of problems and persevere in solving them** 2. **Reason abstractly and quantitatively** 3. **Construct viable arguments and critique the reasoning of others** 4. **Model with mathematics** 5. **Use appropriate tools strategically** 6. **Attend to precision** 7. **Look for and make use of structure** 8. Look for and express regularity in repeated reasoning Kid-Friendly Version of Standards 1. **I never give up on a problem and I do my best to get it right** 2. **I can solve problems in more than one way** 3. **I can explain my math thinking and talk about it with others** 4. **I see the math in everyday life and I can use math to solve everyday problems** 5. **I know how to choose and use the right tools to solve a math problem** 6. **I can work carefully and check my work** 7. **I can use what I know to solve new problems** 8. **I can solve problems by looking for rules and patterns**
Essential Standards*	

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List the Essential Standards that will be taught and assessed in this unit.	
Crossover standards* *Connection to other content areas (Option)*	
Alignment to the Vision of High Quality Instruction in Mathematics *(How do the instructional targets in this unit align to the district's vision of high quality instruction?)*	Teacher Actions: - Teacher establishes clear goals for the mathematics that students are learning, situates targets within learning progressions, and uses the targets to guide instructional decisions. - Teacher engages students in solving and discussing tasks that promote mathematical reasoning and problem solving and allows multiple entry points and varied solution strategies. - Teacher engages students in making connections among mathematical representations to deepen understanding of mathematics concepts and procedures and as tools for problem solving. - Teacher facilitates discourse among students to build shared understanding of mathematical ideas by analyzing and comparing student approaches and arguments. - Teacher uses purposeful questions to assess and advance students' reasoning and sense making about important mathematical ideas and relationships. - Teacher builds fluency with procedures on a foundation of conceptual understanding so that students, over time, become skillful in using procedures flexibly as they solve contextual and mathematical problems. - Teacher consistently provides students, individually and collectively, with opportunities and supports to engage in productive struggle as they grapple with mathematical ideas and relationships.

- Teacher uses evidence of student thinking to assess progress toward mathematical understanding and to adjust instruction continually in ways that support and extend learning.
- Teacher provides instructional scaffolding with the gradual release model of instruction to ensure students are able to construct meaning of mathematics.

Student Actions:
- Students solve problems without giving up.
- Students think about numbers in many different ways.
- Students explain and justify their thinking and understand the thinking of others.
- Students show, analyze and revise their work in many different ways.
- Students use math tools and explain why they chose them.
- Students calculate accurately and efficiently, evaluate their work, and clearly communicate their thinking.
- Students use what they know to solve new problems.
- Students solve problems by looking for rules and patterns and evaluate their result.
- Students apply the mathematics they know to solve problems arising in everyday life, society, and the workplace.

Stage 2: Determine Acceptable Evidence
(With the exception of formative assessments, all assessments listed in this section are required elements of the district's curriculum and the data associated will be collected in the district's performance management driver system.)

| **Measure of Understanding (Performance Task)** *(How will students demonstrate their attainment of the desired understanding?)*	# Chapter 6 Closure What have I learned? Reflection and Synthesis The activities below offer you a chance to reflect about what you have learned during this chapter. As you work, look for concepts that you feel very comfortable with, ideas that you would like to learn more about, and topics you need more help with. 1. SUMMARIZING MY UNDERSTANDING In the last two chapters, you have been working with finding areas and perimeters of triangles, rectangles, trapezoids, parallelograms, and shapes, some of them created by algebra tiles. This section gives you an opportunity to showcase what you know about area and perimeter. Your teacher will provide you with instructions about how to create a "magic book." In this book, you will summarize your understanding of area and perimeter. You will also show how your understanding can be used to find areas and perimeters of various shapes.
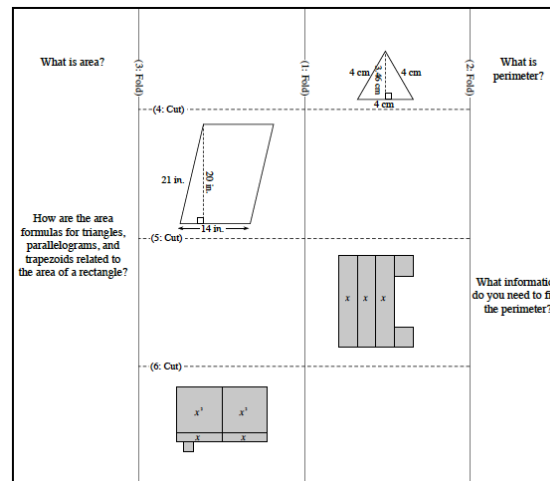
Assemble the Book: Follow your teacher's instructions to create a book. It will become clear later why this is called a "magic book."

What are Area and Perimeter? Use your Toolkit, textbook, and other classroom resources to explain what you know about area. Include an explanation about how the area formulas for triangles, parallelograms, and trapezoids are related to the area of a rectangle. Diagrams might be helpful.

In your magic book, also explain what you know about perimeter. Be specific about the information you need to know about a shape to be able to determine its perimeter.

Area and Perimeter Examples: Follow your teacher's instructions to reveal the hidden portion of the

	book. In this region of the book, show how to find the area and perimeter of each of the eight shapes in the booklet. Note: It might be easier to show the connections between the shape, its area, and its perimeter if you redraw the shape.
Assessing the Performance Task *(How will we evaluate quality student work in the performance task? How will we determine that students can use their learning independently?)*	
Summative Assessments *(How will we know if students can demonstrate mastery of the unit's content, skills, and common core state standards?) Can overlap the performance-based evidence, thereby increasing the reliability of the overall assessment (especially if the performance task was done by a group)*	Independent Assessment

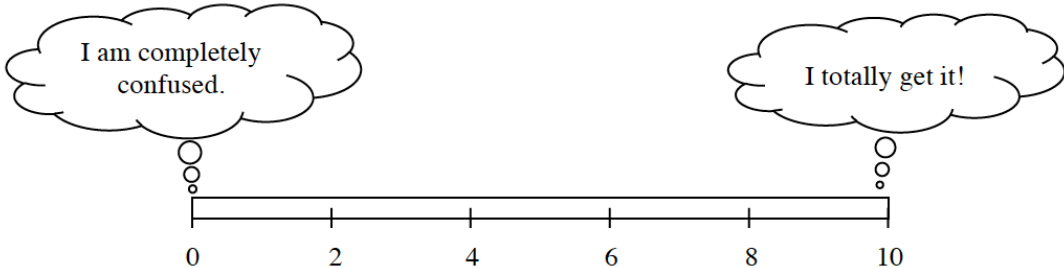**Roscommon Area Public Schools – Curriculum Framework**
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Interim Assessments	Learning Logs
Formative Assessments	Review/Preview
Student Self-Reflection and Self-Regulation **(Student-Centered)** *(How will we measure students' ability to think meta-cognitively?)*	Done with each closure problem. I am completely confused. I totally get it! 0 2 4 6 8 10 Draw a bar or number line that represents 0 to 10. - Color or shade in a portion of the bar that represents your level of understanding and comfort with completing that problem on your own. If any of your bars are less than a 5, choose *one* of those problems and complete one of the following tasks: ● Write two questions that you would like to ask about that problem. ● Brainstorm two things that you DO know about that type of problem. If all of your bars are at 5 or above, choose *one* of those problems and do one of these tasks:

	● Write two questions you might ask or hints you might give to a student who was stuck on the problem. ● Make a new problem that is similar and more challenging than that problem and solve it.
State Assessment Practice *(How will we measure students' ability to interact with content and skills in an MSTEP-like or SAT-like format?)*	
Stage 3: Learning Plan **(Summary of Key Learning Events and Instruction)**	
What activities, experiences and lessons will lead to achievement of the desired results and	In Section 6.1, students extend their knowledge about operations with portions to include division with fractions. Students focus on making sense of the operation of division, relying on diagrams and reasoning, before moving to an algorithm. They begin by distributing some number of whole units among some smaller number of people, generating expressions that include division of fractions. Students then focus on the connection between the operation of division (as they divide units among people) and fractions (the amounts that each person ends up with).

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success at the assessments? *The learning events –* ● *should be derived from the goals of Stage 1 and the assessments of Stage 2 to ensure alignment and effectiveness of the activities.* ● *should match the level of rigor within the standard* ● *support student Acquisition, Meaning Making, and Transfer.*	At the beginning of Section 6.2, students are provided distinctly different rules for finding the area of a trapezoid and are challenged to visualize how the trapezoid might have been decomposed and recomposed based on the rule. Students apply the Order of Operations when they are challenged to use the different rules to calculate the area of a trapezoid. They use the knowledge that a trapezoid with defined dimensions has a specific area in order to verify that they have correctly evaluated different expressions for the area. For the remainder of Section 6.2, students use a concrete manipulative (algebra tiles) to build shapes that have an unknown dimension. That specific but unknown dimension will be represented with a variable, most often x. Students write expressions to represent the perimeter and area of these shapes. Because students will see the shapes and build their expressions differently, they will generate multiple expressions, creating the need to decide whether expressions are equivalent. This motivates the use and practice of combining like terms in an expression. Students will also learn to substitute a given value for a variable and to evaluate an expression. Class Schedule: Bell Work Roles Inquiry/Investigation (Lesson) Review/Preview work time if left Daily Wrap up/closure ALL CHAPTER 6 MATERIALS: Binder Materials (NOTES), Assessments, Learning Targets, Homework
Learning Targets	Learning Targets

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What will students be taught? What should they know? What should they be able to do?	
How will the unit be sequenced and differentiated to optimize achievement for all learners? *Teaching -* ● *should reflect the instructional approaches most appropriate to the goals (not what is easiest or most comfortable for the teacher).* ● *should employ resources most appropriate to the goals (not simply march through a textbook or commercial program).* ● *be responsive to differences in learners' readiness, interests, and preferred ways of learning.*	Chapter 6 Outline **Total: 12-13 days plus optional time for Closure and Assessment** Section 6.1 --- **Lesson 6.1.1** **Objectives:** Dividing **Days: 2** --- **Materials:** ● Licorice or Straws ● Scissors ● Poster paper ● Markers ● Glue sticks or tape **eTools & Videos:** ● Area of a Trapezoid (YouTube) (Vimeo) **Core Problems & Homework:** CP: 6-1 to 6-3

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Day 1 HW: 6-5 to 6-9

Day 2 HW: 6-10 to 6-14

Lesson 6.1.2
Objectives: Fractions as Division Problems
Days: 1

Materials:

● None

eTools & Videos:

Core Problems & Homework:

CP: 6-15 to 6-19

HW: 6-21 to 6-25

Lesson 6.1.3
Objectives: Problem Solving with Division
Days: 1-2

Materials:

● Lesson 6.1.4 RP (ESP), 1 per pair

eTools & Videos:

Core Problems & Homework:

CP: 6-26 to 6-29

Day 1 HW: 6-33 to 6-37

Day 2 HW: 6-38 to 6-42

Lesson 6.1.4

Objectives: Solving Problems Involving Fraction Division

Days: #

Materials:

- Lesson 6.1.4 RP (ESP), 1 per pair

eTools & Videos:

Core Problems & Homework:

Day 1 CP: 6-43 to 6-46

HW:6-51 to 6-55

Day 2 CP: 6-47 to 6-50

HW: 6-56 to 6-60

Section 6.2

Lesson 6.2.1

Objectives: Order of Operations

Days: 2

Materials:

- Lesson 6.2.1 RP (ESP), 1 trapezoid per team

eTools & Videos:

- Lesson 6.2.1 Digital Activity

Core Problems & Homework:

Day 1 CP: 6-61 to 6-64

HW: 6-69 to 6-73

Day 2 CP: 6-65 to 6-67

HW: 6-74 to 6-78

Lesson 6.2.2

Objectives: Area of a Rectangular Shape

Days: 1

Materials:

- Colored pencils

- Algebra tiles OR
- Lesson 6.2.2 RP (ESP), 1 per student

eTools & Videos:

- *6-82 Student eTool* (ESP) **CPM**

- *6-83a Student eTool* (ESP) **CPM**

- *6-83b Student eTool* (ESP) **CPM**

- *6-83c Student eTool* (ESP) **CPM**

- *6-84 Student eTool* (ESP) **CPM**

- *Algebra Tiles* **CPM**

Core Problems & Homework:

CP: 6-79 to 6-83

HW: 6-86 to 6-90

Lesson 6.2.3

Objectives: Naming Perimeters of Algebra Tiles

Days: 1

Materials:

- Colored pencils
- Algebra tiles
- Student work from Lesson 6.2.2

eTools & Videos:

- *6-94 Student eTool* **CPM**

- *6-94 Answer eTool* **CPM**

Core Problems & Homework:

CP: 6-91 to 6-95

HW: 6-96 to 6-100

Lesson 6.2.4

Objectives: Combining Like Terms

Days: 1

Materials:

- Colored pencils
- Algebra tiles

eTools & Videos:

Core Problems & Homework:

CP: 6-101 to 6-103

HW: 6-106 to 6-110

Lesson 6.2.5

Objectives: Evaluating Algebraic Expressions

Days: 1

Materials:

- Algebra tiles
- 4" by 6" index cards
- Computer with Internet access

eTools & Videos:

- *6-111 Figure 1 Teacher eTool*
- *6-111 Figure 2 Teacher eTool*
- *6-111 Figure 3 Teacher eTool*

Core Problems & Homework:

CP: 6-111 to 6-113

HW: 6-115 to 6-119

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	Chapter Closure (Various Options)
Key Vocabulary	
Resources *Description or link to resources*	area algebraic expression coefficient combining like terms constant term dimensions equivalent expressions evaluate Order of Operations product quotient ratio

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	rule
	simplify
	term
	variable