2017 - 2018 | **Grade 6 Go Math! Quarter 3 Planner** | **12-13 Days**

CHAPTER 7 Algebra: Expressions

BIG IDEA: In 6th grade, students begin to work with expressions and equations with variables. Here are a couple key ideas to keep in mind while teaching this chapter:

1. Research indicates that students have difficulty understanding the nature of variables. It's crucial that teachers communicate that there are three common uses for variables in math:
   a. Variables can represent a specific unknown (Ex. $x + 5 = 12$).
   b. Variables can be used as a pattern generalizer (Ex. $a + b = b + a$).
   c. Variables are used as quantities that vary in joint variation (Ex. $y = 2x + 3$, as x changes, so does y).
2. When simplifying expressions with algebraic expressions, students have a tendency to add unlike terms due to students' desire to find a "final result." To avoid this, try emphasizing the order of operations, attaching visual or other concrete meaning to algebraic terms, and modeling authentic problems.
3. Help students understand that equivalent expressions are only "superficially different" in the sense that they describe different procedures that result in the same value. Helping students understand equivalent expressions provides a foundation for the development of a relational understanding of the equal sign. Instead of viewing the equal sign as a command to produce an answer to a computation problem, students need to understand that an equation uses an equal sign to state that two expressions are equivalent.

Adapted from Go Math: Teaching for Depth, pg. 259E.

Critical Area Project: The Great Outdoors, The Great Outdoors Support Pages

HMH Professional Development Videos:
Equivalent Expressions

Quarter 3 Fluency Resources:
Fluency Resources in Go Math
Building Fluency Through Word Problems
Building Fluency Through Number Talks

ESSENTIAL QUESTION: How do you write, interpret, and use algebraic expressions?
STANDARDS: 6.EE.1, 6.EE.2a, 6.EE.2b, 6.EE.2c, 6.EE.3, 6.EE.4, 6.EE.6

ELD STANDARDS:

ELD.PI.6.1- Exchanging information/ideas via oral communication and conversations.
ELD.PI.6.3- Offering opinions and negotiating with/persuading others.
ELD.PI.6.5- Listening actively and asking/answering questions about what was heard.
ELD.PI.6.9- Expressing information and ideas in oral presentations.
ELD.PI.6.11- Supporting opinions or justifying arguments and evaluating others' opinions or arguments.
ELD.PI.6.12- Selecting and applying varied and precise vocabulary.

Lesson		Standards & Math Practices	Essential Question	Math Content and Strategies	Models/Tools Go Math! Teacher Resources G6	Connections (ENGAGE prior knowledge)	Vocabulary	Academic Language Support	Journal
7.1	Exponents	6.EE.1 Companion Pg. 86 MP 6, MP 7, MP 8	How do you write and find the value of expressions involving exponents?	In this lesson, students are shown how to write numbers in exponential form. Encourage students to think of exponents as a shorthand for representing repeated multiplication. Relate powers of 10 to the base-ten number system.	Place value charts	Ask students to complete the table. After each problem, review the meaning of exponents. Exponent | Repeated Multiplication | Value 4^2 | | 3^4 | |	exponent, base, factor	**ELD Standards** • ELD Standards • ELA/ELD Framework • ELPD Framework • ELL Math Instruction Framework • Integrating the ELD Standards into Math **Access Strategies**	Explain what the expression 3^4 means and find its value.

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<table>
<tr><td></td><td>2 x 2 x 2</td><td></td></tr>
<tr><td></td><td>5 x 5 x 5 x 5</td><td></td></tr>
</table>
*Students were exposed to exponents in 5th grade.
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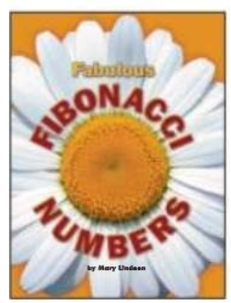
Organizing Learning for Student Access to Challenging Content
Student Engagement Strategies
Problem Solving Steps and Approaches

Equitable Talk

Accountable Talk Simply Stated
Equitable Talk Conversation Prompts
Accountable Talk Posters
Five Talk Moves Bookmark
Effective Math Talks

Cooperative Learning

Cooperative Learning Role Cards
Collaborative Learning Table Mats
Seating Chart Suggestions

Math Word Wall - Grades 3-6
Literature


Fabulous Fibonacci Numbers From the Grab-and-Go Differentiated Centers Kit –
Students read about Leonardo Fibonacci and some of his mathematical discoveries relating to patterns.
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<td>7.2</td>
<td>Evaluate Expressions Involving Exponents</td>
<td>6.EE.1
Companion Pg. 86

MP 4, MP 6</td>
<td>How do you use the order of operations to evaluate expressions involving exponents?</td>
<td>Students build understanding of how to use rules for the order of operations. As students progress throughout the year, they will encounter both numerical and algebraic expressions, so frequent reminder of these rules is necessary.</td>
<td>GEMS</td>
<td>Have students use their order of operations to solve. Ask the students to solve the following problem:
$4^2 + 3 =$
$6 - 2^2 + 10 \div 5 =$

*Use this to review Order of Operations with GEMS.</td>
<td>Numerical expression, order of operations, evaluate</td>
<td>Evaluate the expression $3 + (3 \times 8 - 20)^2 - 10$</td>
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<tr>
<td>7.3</td>
<td>Write Algebraic Expressions</td>
<td>6.EE.2a
Companion Pg. 87

MP 2, MP 4, MP 6</td>
<td>How do you write an algebraic expression to represent a situation?</td>
<td>Students will write algebraic expressions (expressions with unknown values represented by variables). Being able to represent problems algebraically is of utmost importance in the study of mathematics, as well as in science and programming classes.</td>
<td>Properties of operations</td>
<td>Ask students the following question:
“How would we read the expression x + 4?”
*Explain to the students how this can be read as “x plus 4, 4 more than x, and the sum of x and 4.”
Have students complete the table:
<table>
<tr><td>Expression</td><td>Situation</td></tr>
<tr><td></td><td>the product of 5 and y</td></tr>
<tr><td></td><td>s decreased by 7</td></tr>
<tr><td>m + 8</td><td></td></tr>
<tr><td>(5x) – 2</td><td></td></tr>
</table>
</td>
<td>Algebraic expression, variable</td>
<td>An online shoe store charges $6 shipping for each order and $40 per pair of shoes ordered. Write an expression that can be used to find the cost in dollars for p pair of shoes ordered.</td>
</tr>
<tr>
<td>7.4</td>
<td>Identify Parts of Expressions</td>
<td>6.EE.2b
Companion Pg. 87

MP 1, MP 2, MP 6</td>
<td>How can you describe the parts of an expression?</td>
<td>Students analyze the structure of an expression using order of operations; identify the operations and represent in words. The ability to identify this structure allows students to begin to see single expressions as being built of simpler components. Make sure to focus on the identification of terms.

HMH PD Video:
Equivalent Expressions</td>
<td>GEMS</td>
<td>Give students this problem:
A pumpkin farm sells small pumpkins in bags of n pumpkins each. Helen buys 3 bags of pumpkins. Write and expression that can be used to find the total number of pumpkins Helen bought.

Separately read each of the next 2 pieces aloud and have students adjust their expression:
“The next day, Helen went back and bought two more pumpkins. What expression can be used to find her new total?”

“Four days later, Helen went back and bought more pumpkins so that her total</td>
<td>Terms, coefficient</td>
<td>Jenna bought b pounds of bananas at $2 per pound and a $7 bag of apples. Write an expression that can be used to represent the amount of dollars Jenna spent on fruit at the store.</td>
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</table>

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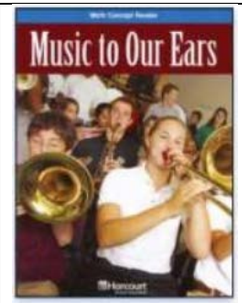
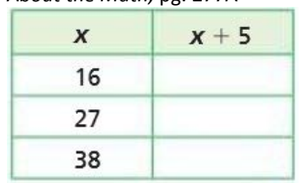
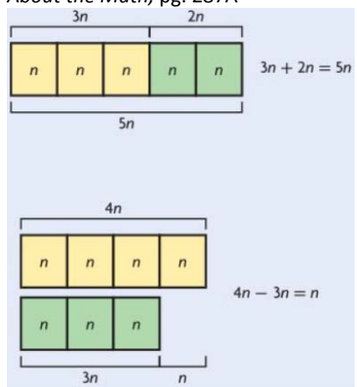
<td></td><td></td><td></td><td></td><td></td><td></td><td>number of pumpkins was doubled. What expression can be used to find the total number of pumpkins she has now?”</td><td></td><td rowspan="3"> 

Music to Our Ears
From the Grab-and-Go Differentiated Centers Kit –
Students read the book and learn how a band uses equations to find out how much money they have raised for a trip.

<u>Model and Discuss:</u>
About the Math, pg. 277A
 

About the Math, pg. 287A
 
</td><td></td>
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<td>7.5</td><td>Evaluate Algebraic Expressions and Formulas</td><td>6.EE.2c
Companion Pg. 87

MP 4, MP 5, MP 6</td><td>How do you evaluate an algebraic expression or a formula?</td><td>Students will build an understanding that an algebraic expression can have infinitely many values; substituting numbers for variables. When evaluating an expression for several values of the variable, it is often useful to make a table.
<table><tr><td>X</td><td>X + 5</td></tr><tr><td>1</td><td>6</td></tr><tr><td>2</td><td>7</td></tr><tr><td>3</td><td>8</td></tr></table>
HMH PD Video:
Equivalent Expressions</td><td>make tables</td><td>Have students review their Order of Operations by evaluating the following expression:
$4 + (11 \times 5) - 7^2$

If Ramon reads 25 pages a day, how many days will he need to read to finish a book that has 400 pages? Complete the table to solve the problem.
<table><tr><td>Days</td><td>Pages</td></tr><tr><td>1</td><td>25</td></tr><tr><td>2</td><td></td></tr><tr><td>4</td><td></td></tr><tr><td></td><td>200</td></tr><tr><td></td><td></td></tr></table></td><td>Algebraic expression, variable</td><td>Julio mows lawns for extra money. He earns $20 a week plus $5 for each lawn he mows. The expression $20 + 5l$ gives the amount in dollars he earns each week for mowing l lawns. How much would he earn if he mowed 6 laws in one week?</td>
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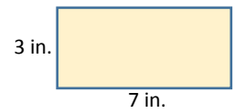
<td>7.6</td><td>Use Algebraic Expressions</td><td>6.EE.6
Companion Pg. 93

MP 1, MP 2, MP 4</td><td>How can you use variables and algebraic expressions to solve problems?</td><td>Students use a variable to represent an unknown.
Students need to realize that it is possible for a variable to represent a single number in some situations and more than one number in other situations.

HMH PD Video:
Equivalent Expressions</td><td>Bar model</td><td>Ask students the following question about this shape:
“Tell me everything you can about this rectangle.”
 

*The goal is to have the student surface the area and/or perimeter of the shape. You can explain how variables are used to represent unknowns in many situations, like the formula used to find the area of a rectangle ($l \times w$) and the perimeter of a rectangle ($l + l + w + w$, or $2l + 2w$).</td><td>Algebraic expression, variable</td><td>Write an algebraic expression for the word expression:
5 more than the product of x and 8.

Then evaluate the expression for $x = 4$.</td>
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<td>7.7</td><td>Problem Solving – Combine Like Terms</td><td>6.EE.3
Companion Pg. 89

MP 1, MP 4, MP 5</td><td>How can you use the strategy use a model to combine like terms?</td><td>Students use a bar model to combine like terms. A part-whole bar model can be used to help students add like terms. A comparison bar model can be used to help students subtract like terms.

HMH PD Video:</td><td>bar model, graphic organizer</td><td>Ask students “What does the expression $5n$ represent?” (5 times n) Then ask the students to “rewrite the expression using repeated addition instead of multiplication.</td><td>Like terms</td><td>Simplify the expression $5y – 2y + 14$ by combining like terms. Explain your answer by drawing a model.</td>
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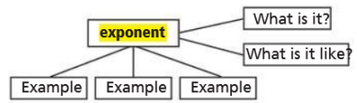
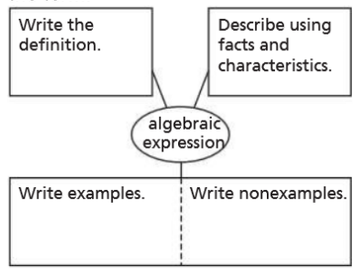
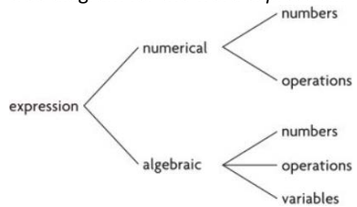
</table>

				Equivalent Expressions		*Students will need to use this type of thinking to construct bar models of the expressions.		**Vocabulary Strategies:** *Word Definition Map,* pg. 261B- A word definition map can be used to make a visual representation of a term's meaning. Encourage students to use context and information from the text, prior knowledge, and the glossary to help them complete a word definition map, such as the one below.  *Graphic Organizer,* pg. 269B- A graphic organizer such as the one below can help students better understand the term *algebraic expression* as well as other new vocabulary terms. Have students fill in the definition and characteristics using their own words. Then have them list several examples and nonexamples of the term.  *Word Association Tree Diagram,* pg. 277B- Students can extent their understanding of words and concepts by making a word-association tree diagram. The diagram starts with a target word, and branches are labeled with words associated with the target word. Additional levels of branches can be added as appropriate. Have	
7.8	Generate Equivalent Expressions	6.EE.3 Companion Pg. 89 MP 2, MP 3, MP 8	How can you use properties of operations to write equivalent algebraic expressions?	Students use the properties of addition, properties of multiplication, and distributive property to manipulate algebraic expressions. Students will eventually be able to multiply binomials by repeatedly applying the Distributive Property. HMH PD Video: Equivalent Expressions	Properties of operations, distributive property	Write 5 × (4 + 6) and 5 × 4 + 5 × 6 on the board. Ask the students the following questions: 1. Are these two expressions equivalent? 2. How do you know? 3. Is there a property that can help you see that these are equivalent without calculating? (Distributive Property) *This will help connect to the students' knowledge of properties from previous grades. Have students use strategies to solve the following: 2 x 9 x 12 18 x 3 x 4 2 x 9 x 6 x 2 18 x 12	Equivalent expressions, commutative property, associative property, identity property, distributive property	Select **all** the expressions that are equivalent to 3 + w + w + w. A) $3(1 + w)$ B) $3 + 3w$ C) $3 + w^3$ D) $3w^3$
7.9	Identify Equivalent Expressions	6.EE.4 Companion Pg. 90 MP 2, MP 6	How can you identify equivalent algebraic expressions?	Students use the properties of addition, properties of multiplication, and distributive property to evaluate if expressions are equivalent. Equivalent expressions name the same number for every value of the variable. If students can apply properties to rewrite the expressions in the same form, then the expressions are equivalent. HMH PD Video: Equivalent Expressions	Properties of operations	Write (5 × 8) + 6 and (8 x 5) + 6 on the board and ask the students: 1. Are these expressions equivalent? 2. What property can you use to demonstrate that these expressions are equivalent? Ask the same questions for these two expressions: (5 × 8) + 6 & 6 + (5 × 8)	Equivalent expressions, commutative property, associative property, identity property, distributive property	Select **all** the expressions that are equivalent to $4(3x + 6y)$. A) $12x + 6y$ B) $12x + 24y$ C) $2(6x + 12y)$ D) $4(12x + 24y)$

								students complete a word-association tree diagram for the word *expression*.  This expression has ___ terms. The first term is ___. This term is the product of the coefficient ___ and the variable ___. The second term is the number ___. The first operation to use is ___, and the second operation to use is ____. The Commutative Property applies to _____. The Associative Property applies to _____.	
Assessments: Go Math Chapter 7 Test Go Math Chapter 7 Performance Task - Bump and Spike									

2017 - 2018	Grade 6 Go Math! Quarter 3 Planner CHAPTER 8 Algebra: Equations and Inequalities	13-15 Days

BIG IDEA: Students with a deep understanding of solving equations view an equation as a statement about a relationship between two expressions (in other words, one side of the equal sign is worth the same as the other side of the equal sign). When the relationship between the expressions is emphasized, the application of the properties of equality takes on more meaning. Ideas of how to focus on this relationship are as follows:

- When solving equations, the metaphor of keeping a scale balanced is often useful to students.
- Using manipulatives, such as algebra tiles, can help students visualize the balance metaphor.
- Use the phrase "is the same as" for the equal sign instead of "is equal to" in order to emphasize the relational aspect of the symbol and to make connections to the balance metaphor.
- Graph the solution to an equation on a number line to build a foundation for the solution to an inequality. It is also helpful to solve an equation and inequality side by side for students to see the similarities.

Adapted from Go Math: Teaching for Depth, pg. 305E.

HMH Professional Development Videos:

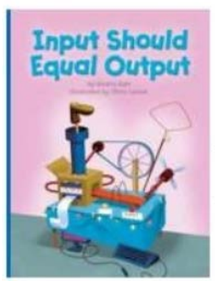
Multiplication and Division Equations

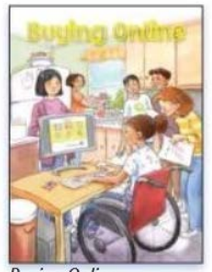
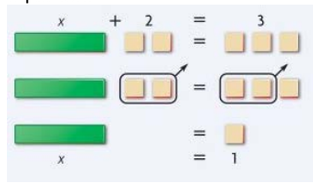
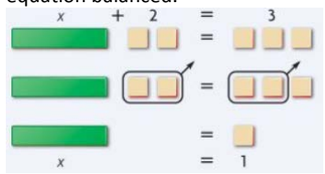
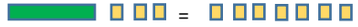
ESSENTIAL QUESTION: How can you use equations and inequalities to represent situations and solve problems?

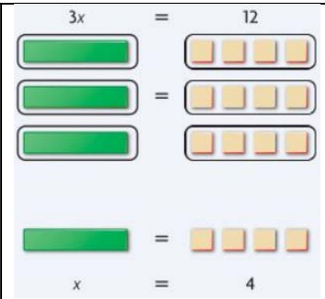
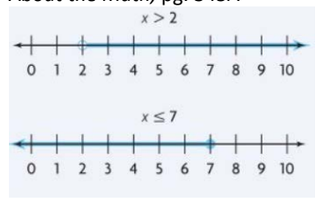
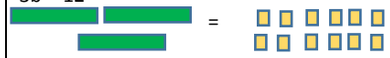
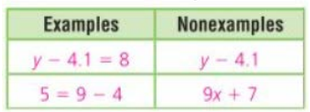
STANDARDS: 6.EE.5, 6.EE.7, 6.EE.8

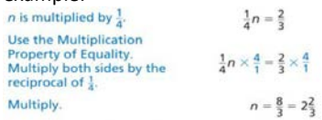
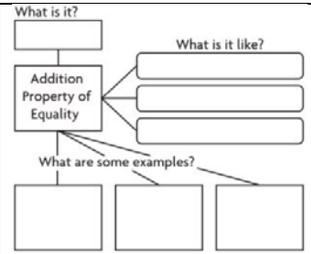
ELD STANDARDS:

ELD.PI.6.1- Exchanging information/ideas via oral communication and conversations.
ELD.PI.6.3- Offering opinions and negotiating with/persuading others.
ELD.PI.6.5- Listening actively and asking/answering questions about what was heard.
ELD.PI.6.9- Expressing information and ideas in oral presentations.
ELD.PI.6.11- Supporting opinions or justifying arguments and evaluating others' opinions or arguments.
ELD.PI.6.12- Selecting and applying varied and precise vocabulary.

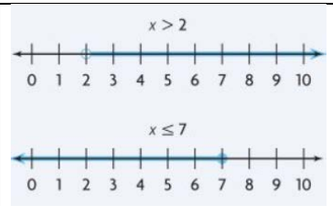
Lesson		Standards & Math Practices	Essential Question	Math Content and Strategies	Models/Tools Go Math! Teacher Resources G6	Connections (ENGAGE prior knowledge)	Vocabulary	Academic Language Support	Journal
8.1	Solutions of Equations	6.EE.5 Companion Pg. 92 MP 2, MP 4, MP 6	How do you determine whether a number is a solution for an equation?	Understanding what it means for a number to be a solution provides the foundation for working with equations. For example, if students solve the equation $x + 5 = 19$ and get $x = 14$, the skills they learn in this lesson will help them to articulate that $x = 14$ means that 14 is a value that makes the equation true. Additionally, they will be able to conceptualize the meaning of their answer in context. For example, if the equation models the situation, "Billy has 5 more points than Jim. If Billy has 19 points, how many points does Jim have?" students	Substitution	What goes in the blank? □ + 12 = 20 10 - □ = 6 15 = 5 + □ Now using what we know about expressions and variables, what is the variable worth? x + 12 = 20 10 – j = 6 15 = 5 + n *Students have been solving for unknowns for many years, but it has been in the form of blanks. This is a great way to show that the variables represent an unknown.	Equation, solution of an equation, substitute	**Literature**  *Input Should Equal Output* *From the Grab-and-Go Differentiated Centers Kit –*	Use mental math to find the solution to $4x = 36$. Then use substitution to check your answer.

				will understand that x = 14 means that Jim has 14 points.				Students read about friends who build a function machine to find the value of one variable in an equation when the value of another variable is known. **Literature**  *Buying Online* *From the Grab-and-Go Differentiated Centers Kit –* Students read about four friends who use a linear equation and function tables to find the cost of buying music videos online. **Math Models:** *About the Math,* pg. 315A Students use algebra tiles to discuss and show how they solved the equation.  *About the Math,* pg. 323A	
8.2	Write Equations	6.EE.7 Companion Pg. 94 MP 2, MP 3, MP 4, MP 6	How do you write an equation to represent a situation?	When writing equations, students might ask whether a phrase such as *the difference of n and 2* can be represented by the expression *2 – n*. Emphasize that *2 – n* and *n – 2* are not equivalent expressions because subtraction is not commutative. For example, *2 – 1 ≠ 1 – 2*. The same can be said for division (15 ÷ 5 ≠ 5 ÷ 15). In both cases, the order of the expression must match the order of the numbers in the word expression. HMH PD Video: Multiplication and Division Equations	Math Word Wall	Jamie is making cookies for a bake sale. She triples the recipe in order to have enough cookies to sell. Jaime uses 12 cups of flour to make the triple batch. Write an equation that can be used to find out how much flour *f* is needed for one batch of cookies. Use of bar models would be helpful for them to understand the meaning of a *triple batch* as it relates to the variable f. 	Equation, solution of an equation, word sentence		Corrine spent $360 on uniforms for her softball team. Each uniform costs $30. Write an equation that can be used to find the number of uniforms she bought.
8.3	Investigate – Model and Solve Addition Equations	6.EE.7 Companion Pg. 94 MP 3, MP 4, MP 5	How can you use models to solve addition equations?	Use algebra tiles to represent equations. They use a rectangular tile to represent *x* (or another variable) and a square tile to represent 1. Make sure to make connections to a balance scale and the importance of keeping the equation balanced.  HMH PD Video: Multiplication and Division Equations	Algebra tiles, Algebra Tiles Work Mat - Addition Solving Equations with Boxes Solving Algebra Equations	Focus on using the algebra tiles to build equations the students are already familiar with. For example: *x* + 4 = 6  x + 2 = 5  x + 3 = 7  x + 2 = 9  Although they may be able to find the value of *x* quickly, remind them that the variable is an unknown. Ask them to use the algebra tiles to build the equation and solve for x. Emphasize the importance of balance and connect to what they know about the number that makes the equation true. *Once the students understand how to build the equation, it will be much easier for them to manipulate the tiles.	Equation, solution of an equation, model the equation		Use a drawing to solve the equation *x* + 8 = 10.

8.4	Solve Addition and Subtraction Equations	6.EE.7 Companion Pg. 94 MP 2, MP 8	How do you solve addition and subtraction equations?	To help students determine how to solve an equation such as *n + 35 = 80*, teach them to think or say aloud, "This equation involves addition. The inverse operation of addition is subtraction. Since 35 is added to *n*, I need to subtract 35 from both sides to undo the addition." HMH PD Video: Multiplication and Division Equations	Algebra tiles, Substitution	Use a string number talk to determine the value of x: *x* + 6 = 35 x + 5 = 35 x + 4 = 35 x + 3 = 35 x + 2 = 35 x + 1 = 35 x + 0 = 35 x – 1 = 35 x – 2 = 35 Have students discuss what they notice about solving the equations as they relate to balance. Provide more examples as needed. x + 3 = 20 x – 3 = 20	Model of the equation, balance, variable	 *About the Math,* pg. 345A 	Solve the equation and check the solution. 14.5 = *n* + 11.8
8.5	Investigate – Model and Solve Multiplication Equations	6.EE.7 Companion Pg. 94 MP 1, MP 4, MP 5, MP 6	How can you use models to solve multiplication equations?	Students use *x* tiles and 1 tiles to model each side of the equation and then use the tiles to find the value of the variable.  HMH PD Video: Multiplication and Division Equations	Algebra tiles, Algebra Tiles Work Mat - Multiplication Solving Equations with Boxes Solving Algebra Equations	Have students use algebra tiles to build and solve the following referring to the green tile as a box: If two boxes are equal to 4, how much is in each box? 2b = 4  3b = 9  4b = 12  3b = 12  *Focus on having the students build the equation using algebra tiles. Most students might know the answer using mental math, but having the students try to build the equation will help with the understanding of balance.	Model of the equation, balance, variable	**Vocabulary Builder:** *Examples and Nonexamples*- Have students take a few minutes to list as many examples and nonexamples of equations as they can. *Possible answers are given.*  *Word Definition Map*- Help students complete the Word Definition Map for the vocabulary term *Addition Property of Equality*.	Solve the equation by drawing a model. 4*x* = 16

8.6	Solve Multiplication and Division Equations	6.EE.7 Companion Pg. 94 MP 2, MP 7, MP 8	How do you solve multiplication and division equations?	Students are taught to solve multiplication equations involving fractional coefficients by using the Division Property of Equality. For example:  n is multiplied by $\frac{1}{4}$. $\frac{1}{4}n = \frac{2}{3}$ Use the Multiplication Property of Equality. Multiply both sides by the reciprocal of $\frac{1}{4}$. $\frac{1}{4}n \times \frac{4}{1} = \frac{2}{3} \times \frac{4}{1}$ Multiply. $n = \frac{8}{3} = 2\frac{2}{3}$ This is not required for this grade. Instead have students solve multiplication and division equations by making sense of properties of equality and the relationship between multiplication and division as inverse operations. HMH PD Video: Multiplication and Division Equations **Do not do problems 5 & 10. Also do not do *Practice Book* problems 5, 9, 12, 14 & Lesson Check 2.	Algebra tiles, Substitution	*Guess my number:* □ ÷ 2 = 4 □ ÷ 3 = 5 10 ÷ □ = 2	Model of the equation, balance, variable		Solve the equation and check the solution. $4.2 = \frac{n}{7}$
8.7	Problem Solving – Equations with Fraction **AC Option: Skip this lesson -aligns more with 7th grade standards.	6.EE.7 Companion Pg. 94 MP 2, MP 6, MP 7, MP 8	How can you use the strategy to solve a simpler problem to solve equations involving fractions?	Students learn that they can multiply both sides of an equation by the denominator of a fraction to change the fraction to a whole number before solving the equation. If there is more than one fraction, they can multiply by the product of the denominators. This helps students that struggle with fractions; it allows them to still have success in solving equations.	Problem solving graphic organizer, Math boards	$4n = 20$ What strategy can you use to solve this? What strategy might be best to solve this? $\frac{1}{2}n = 20$ *Students may come up with multiple strategies to solve the first problem. Have them choose which strategy would be the most effective to use to solve the second problem.	Model of the equation, balance, variable		Samuel ran $\frac{3}{4}$ of a mile each day until he ran a total of 12 miles. Write an equation for the situation and solve the equation.
8.8	Solutions of Inequalities	6.EE.5 Companion Pg. 92 MP 2, MP 3, MP 6	How do you determine whether a number is a solution of an inequality?	Students may wonder why they need to use inequalities instead of just equations. Emphasize that inequalities are used for situations in which there are multiple solutions. For example, a sign for a	Algebra tiles, Substitution		Inequality, solution of an inequality, substitute, value of the variable		Which of these numbers (2.4, .99, 1.9) are solutions for the inequality $p \geq 1.5$?

				roller coaster ride states that anyone who is a least 48" tall can ride. This situation has many solutions. *h ≥ 48*		You must be at least 57" to ride the roller coaster. How tall can you be to get on the ride? Who isn't able to get on the ride? How do we show more than one possible answer? Fill in the blank: 7.1 ◯ 7.6 *What does the symbol represent? What do these symbols represent? >, = Are there any other symbols to represent inequalities? *Make sure that you elicit or give the students the following symbols: >, <, ≥, ≤, = Now what could you use to fill in this blank? □ < 4			How is the following sign incorrect? How can it be reworded? What inequality can we use to show this? 
8.9	Write Inequalities	6.EE.8 Companion Pg. 95 MP 2, MP 4	How do you write an inequality to represent a situation?	Students need to see the importance of identifying the variable and using the correct symbol in their sentences. Using the ≤ symbol when the given number should not be included in the solution set incorrectly communicates the solution set. Use statements such as: In the inequality m ≤ 12, is 12 included in the solution set? In the inequality x > 0, is 0 included in the solution set?	Math Word Wall	Do a sorting activity: r > 10 — Walter sold more than 10 tickets. s ≤ 10 — Fewer than 10 children are at the party. t ≥ 10 — No more than 10 people can be seated at a table. w < 10 — At least 10 people need to sign up for the class. *This will help them use the math terms they already learned in working with expressions and connect them to inequalities	Inequality, solution of an inequality, greater, at least, less than, any number		Write an inequality for the word sentence. The cost of the camp in *d* dollars is at least $125.
8.10	Graph Inequalities	6.EE.8 Companion Pg. 95 MP 4, MP 5 MP 6	How do you represent solutions of an inequality on a number line?	Use a number line to represent all the solutions of an inequality. Use an empty circle to represent > or <, while using a filled-in circled to represent ≥ or ≤.	Integer # Line Integer # Line 2	Show the students a number line from 0 to 100. Have students graph the following inequality using the number line.	Number line, Inequality, solution of an inequality, greater, at least, less than, any number		Write and graph an inequality to represent the word sentence. Jared puts no more than 6 apples in each bag.

						 This will tap into their background knowledge. Now ask the students, “How do you think I could show ‘less than 55 or equal to 55’ on this number line?” Which values could be solutions to this inequality? *Allow students to think and talk with neighbors. Elicit student responses. Then begin the Unlock the Problem.			
Assessment: Go Math Chapter 8 Test Go Math Chapter 8 Performance Task - Brain Teaser									

2017 - 2018	Grade 6 Go Math! Quarter 3 Planner CHAPTER 9 Algebra: Relationships between Variables	8-9 Days

BIG IDEA: In this chapter, teachers need to emphasize the underlying concepts taught throughout the chapter.

1. Develop conceptual understanding of relationships between independent and dependent variables leading up to the concept of a function:
   a. Letters are viewed as variables (For example, the value of one variable can change in relation to the value of another variable, instead of simply unknowns).
   b. Expressions are interpreted as rules that describe the relationship between variables.
   c. The equal sign is a comparison operator expressing equivalence.
2. Develop deeper algebraic understanding by emphasizing translations between mathematical representations such as tables, graphs, verbal expressions, and equations.
   a. Emphasize tables and graphs first, as students may struggle more with symbolic equations.
   b. A table of values can motivate students to find the equation or "rule" that generates the corresponding outputs.
3. Use tables to develop a deeper understanding of relationships between variables. Consider the table of values to the right for the rule $y = 5x + 2$.
   a. Students should see that x increases by 1, y increases by 5. They can also see the two columns as two varying quantities.
   b. This focuses on the pattern of change in each variable. It also supports understanding of the input-output correspondence feature of a function and the concept of independent and dependent variables.

x	*y*
0	2
1	7
2	12
3	17

Adapted from Go Math: Teaching for Depth, pg. 355C.

HMH Professional Development Videos:

Variables and Dependency

ESSENTIAL QUESTION: How can you show relationships between variables?

STANDARDS: 6.EE.9

ELD STANDARDS:

ELD.PI.6.1- Exchanging information/ideas via oral communication and conversations.
ELD.PI.6.3- Offering opinions and negotiating with/persuading others.
ELD.PI.6.5- Listening actively and asking/answering questions about what was heard.
ELD.PI.6.9- Expressing information and ideas in oral presentations.
ELD.PI.6.11- Supporting opinions or justifying arguments and evaluating others' opinions or arguments.
ELD.PI.6.12- Selecting and applying varied and precise vocabulary.

Lesson		Standards & Math Practices	Essential Question	Math Content and Strategies	Models/Tools Go Math! Teacher Resources G6	Connections (ENGAGE prior knowledge)	Vocabulary	Academic Language Support	Journal
9.1	Independent and Dependent Variables	6.EE.9 Companion Pg. 97 MP 1, MP 4, MP 6, MP 7	How can you write an equation to represent the relationship between an independent variable and a dependent variable?	Students may wonder why it is important to identify the independent variable and the dependent variable in a situation. Explain that there are situations in which one variable depends on another. For example: *Jacob buys books for $15 each*. Explain that in this situation the total cost of the books depends on the number bought, $t = 15b$, where the value of t is determined by the value of b.	Input/Output Table - 2 Column Input/Output Table - 3 Column Rule of 4 Recording Sheet	Benji has a bag of marbles and 3 more marbles on his desk. If he has a total of 15 marbles, write an equation that represents the situation. *Students should come up with something like: $b + 3 = 15$ *What if we didn't know the total and labeled it t? What would happen to t if the value of b changed?	Independent variable, dependent variable		Write an equation for the situation. Then determine the independent and dependent variable. Jessica is selling bags of grapes g. She sells each bag for $4. Write an equation that can be used to determine the total amount of money she makes t.

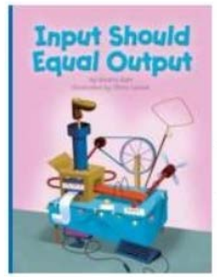
<table>
<tr>
<td></td><td></td><td></td><td></td><td>HMH PD Video:
Variables and Dependency</td><td></td><td></td><td></td><td>Literature</td><td></td>
</tr>
<tr>
<td>9.2</td>
<td>Equations and Tables</td>
<td>6.EE.9
Companion Pg. 97

MP 2, MP 3, MP 4, MP 7</td>
<td>How can you translate between equations and tables?</td>
<td>As students gain experience using tables, they will be able to use two column tables, with one column for inputs and another for outputs. But while the topic is new, encourage the students to use three column tables instead.

Rewriting a two-column table as a three-column table:
$y = 2x + 1$
<table><tr><th>Input
x</th><th>Output
y</th></tr><tr><td>4</td><td></td></tr><tr><td>7</td><td></td></tr><tr><td>10</td><td></td></tr></table>
<table><tr><th>Input
x</th><th>Rule
$2x+1$</th><th>Output
y</th></tr><tr><td>4</td><td>$2 \times 4 + 1$</td><td></td></tr><tr><td>7</td><td>$2 \times 7 + 1$</td><td></td></tr><tr><td>10</td><td>$2 \times 10 + 1$</td><td></td></tr></table>

HMH PD Video:
Variables and Dependency</td>
<td>Input/Output Table - 2 Column
Input/Output Table - 3 Column
Rule of 4
Recording Sheet</td>
<td>Alice has 5 more points than Mario. Let’s examine possible solutions for this equation:
m + 5 = a

How many points would Alice have, if Mario has 1?
What would a equal if m is 2?

Can we put this information in a table?
<table><tr><td>m</td><td>a</td></tr><tr><td>1</td><td></td></tr><tr><td>2</td><td></td></tr><tr><td></td><td></td></tr></table>
Can you complete the last row?</td>
<td>Independent variable, dependent variable</td>
<td> 
Input Should Equal Output

From the Grab-and-Go Differentiated Centers Kit –
Students read about friends who build a function machine to find the value of one variable in an equation when the value of another variable is known.</td>
<td>Write an equation for the relationship shown in the table, then find the missing value.
<table><tr><td colspan="2">Customers Served</td></tr><tr><td>Number of customers, c</td><td>Total Profit, t</td></tr><tr><td>2</td><td>$15</td></tr><tr><td>4</td><td>$30</td></tr><tr><td>6</td><td>$45</td></tr><tr><td>10</td><td></td></tr></table></td>
</tr>
<tr>
<td>9.3</td>
<td>Problem Solving – Analyze Relationships</td>
<td>6.EE.9
Companion Pg. 97

MP 1, MP 4, MP 8</td>
<td>How can you use the strategy find a pattern to solve problems involving relationships between quantities?</td>
<td>In this unit, students learn that mathematical relationships can be represented verbally, in a table, or in an equation. Soon, the students will learn that the same relationships can be shown in a graph. Students that have the ability to translate flexibly between the different representations, along with knowing when to use each type most effectively, will be more apt to persevere in problem solving and increase their proficiency in finding solutions.

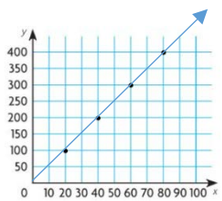
HMH PD Video:
Variables and Dependency</td>
<td>Input/Output Table - 2 Column
Input/Output Table - 3 Column
Rule of 4
Recording Sheet
Math boards</td>
<td>Examine the following equations:
$y = 4 + x$
$y = 4x$

As x increases by 1, do the values of y change in the same way for both equations?

*No – as x increases by 1, y increase by 1 in the addition equation, but increases by 4 in the multiplication equation.</td>
<td>Independent variable, dependent variable</td>
<td>Literature
 
Buying Online

From the Grab-and-Go Differentiated Centers Kit –
Students read about four friends who use a linear equation and function tables to find the cost of buying music videos online.

<u>Math Models:</u>
About the Math, pg. 361A</td>
<td>Using the information in the table, how many customers would they need to serve to earn $120 in profit?
<table><tr><td colspan="2">Customers Served</td></tr><tr><td>Number of customers, c</td><td>Total Profit, t</td></tr><tr><td>2</td><td>$15</td></tr><tr><td>4</td><td>$30</td></tr><tr><td>6</td><td>$45</td></tr><tr><td>10</td><td></td></tr></table></td>
</tr>
<tr>
<td>9.4</td>
<td>Graph Relationships</td>
<td>6.EE.9
Companion</td>
<td>How can you graph the</td>
<td>When learning about the relationship between two quantities, students</td>
<td>Input/Output Table - 2 Column</td>
<td>In y = 3x, does y increase or decrease when x increases from 1 to 9?</td>
<td>Independent variable,</td>
<td></td>
<td>Display the table from problem #4 on pg. 363</td>
</tr>
</table>

		Pg. 97 MP 3, MP 4, MP 6	relationship between two quantities?	should understand the following conventions: • In a relationship, the value of the output depends on the value of the input. • The input, commonly represented by the variable *x,* is associated with the horizontal axis of the coordinate plane. The output is commonly represented by the variable *y* and is associated with the vertical axis of the coordinate plane. HMH PD Video: Variables and Dependency	Input/Output Table - 3 Column Coordinate Plane - First Quadrant Rule of 4 Recording Sheet	*What is the pattern? Complete the table: x | y 1 | 2 | 3 |	dependent variable	Rewriting a two-column table as a three-column table: $y = 2x + 1$ Input (x): 4, 7, 10 — Output (y): Input (x) | Rule (2x+1) | Output (y) 4 | $2 \times 4 + 1$ | 7 | $2 \times 7 + 1$ | 10 | $2 \times 10 + 1$ |	and ask the following question: Graph the relationship represented by the table. Use the graph to find the unknown value of *y*. Justify your answer using your graph.
9.5	Equations and Graphs	6.EE.9 Companion Pg. 97 MP 3, MP 4, MP 5	How can you translate between equations and graphs?	Relationships can be shown in many ways- in words, in a table, with an equation, or by a graph. Translating the information to a different form allows one to more easily see or understand the relationship. Remind students that a solution of an equation with two variables is an ordered pair. Equations with two variables have infinitely many solutions. An equation shows the relationship, where a graph can show many solutions.	Input/Output Table - 2 Column Input/Output Table - 3 Column Coordinate Plane - First Quadrant Rule of 4 Recording Sheet	Review plotting ordered pairs on a coordinate plane. Is the point (2,4) different from the point (4,2)? Explain your thinking and show using a coordinate plane.	Linear equation	**Vocabulary Builder:** *Graphic Organizer-* Have students use the graphic organizer below to learn more about dependent variables and independent variables. Students should write the essential and nonessential characteristic, as well as provide examples and non-examples. Essential Characteristics: unknown value; not dependent on other variables Nonessential Characteristics: could be any letter; could be in equation with any operation independent variable Examples: *x* in $y = x + 4$; *b* in $t = 5b$ Non-examples: *y* in $y = x + 4$; *t* in $t = 5b$	Write a linear equation for the graph below. 

Assessments:

Go Math Chapter 9 Test

Go Math Chapter 9 Performance Task - Bike Hike

**Common Assignment - Critical Area 3 (*Expressions and Equations*) Performance Assessment: Cooperstown Bound

2017 - 2018	Grade 6 Go Math! Quarter 3 Planner CHAPTER 10 Area	12-14 Days

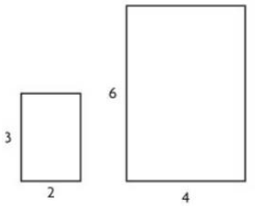
BIG IDEA: In this chapter, students use their prior knowledge of area of a rectangle to develop and formalize understanding of areas of a parallelogram, a triangle, a trapezoid, and other shapes. It is also the foundation for determining the area of other figures.

- Students explore by using actual or visual models, drawing the figure on grid paper, or interpreting drawings on a coordinate grid.
- These explorations lead to discovering, verifying, and using the area formulas meaningfully. They extend students' understanding deeper than memorization can.
- As they investigate figures and compose or decompose them, they discover that prior experiences can help them to measure and interpret results.

Students also relate well to measurement problems since they arise from their own world and can be visualized and modeled. An idea to explore is the relationship between perimeter and area when the lengths of the sides are increased. (see example to the right)

- Students can determine that when the lengths of the sides of a rectangle double, the perimeter also doubles. However, the area multiplies by 4.

"As students develop a view of mathematics as a connected and integrated whole, they will have less of a tendency to view mathematical skills and concepts separately. If conceptual understandings are linked to procedures, students will not perceive mathematics as an arbitrary set of rules. This integration of procedures and concepts should be central in school mathematics." (NCTM, 2000, p. 65)



Rectangle	Perimeter	Area
3 by 2	10 cm	6 sq cm
6 by 4	20 cm	24 sq cm

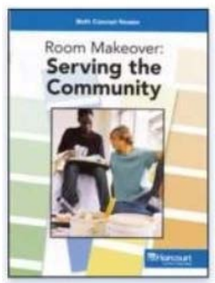
Adapted from Go Math: Teaching for Depth, pg. 387E.

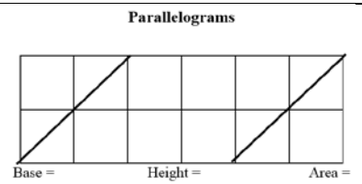
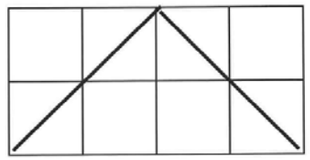
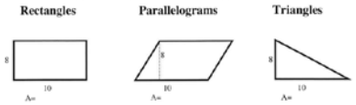
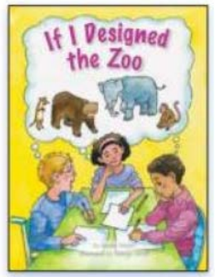
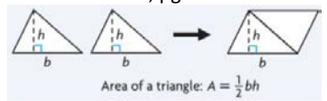
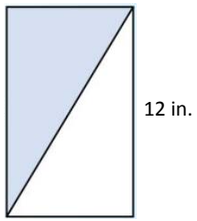
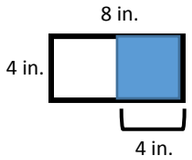
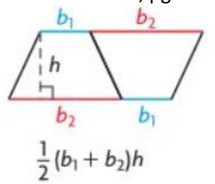
Critical Area Project: This Place is a Zoo!, This Place is a Zoo! Support Pages

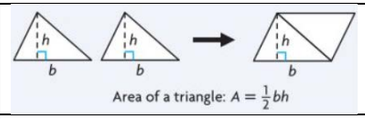
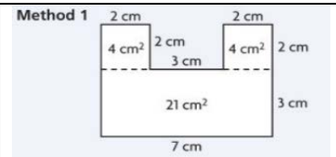
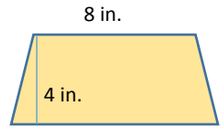
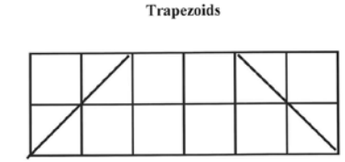
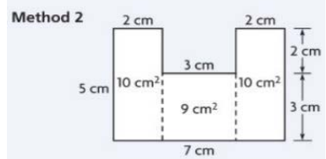
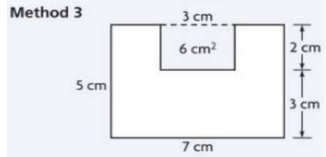
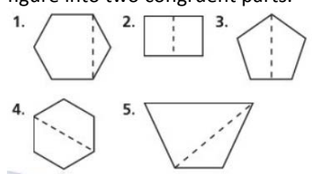
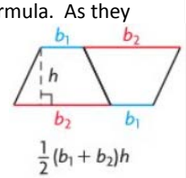
ESSENTIAL QUESTION: How can you use measurements to describe two-dimensional figures?
STANDARDS: 6.G.1, 6.G.3, 6.EE.2c, 6.EE.7

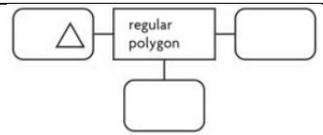
ELD STANDARDS:

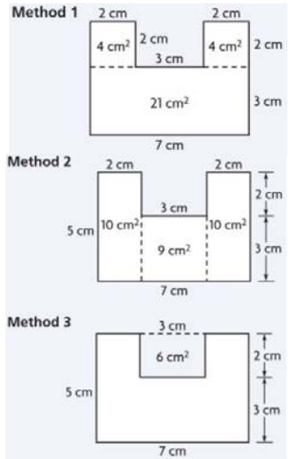
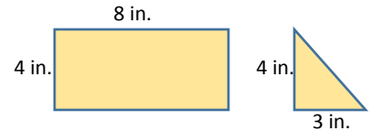
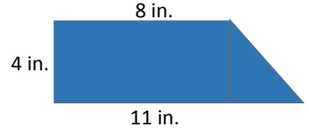
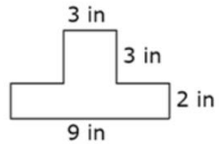
ELD.PI.6.1- Exchanging information/ideas via oral communication and conversations.
ELD.PI.6.3- Offering opinions and negotiating with/persuading others.
ELD.PI.6.5- Listening actively and asking/answering questions about what was heard.
ELD.PI.6.9- Expressing information and ideas in oral presentations.
ELD.PI.6.11- Supporting opinions or justifying arguments and evaluating others' opinions or arguments.
ELD.PI.6.12- Selecting and applying varied and precise vocabulary.

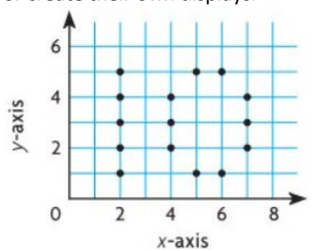
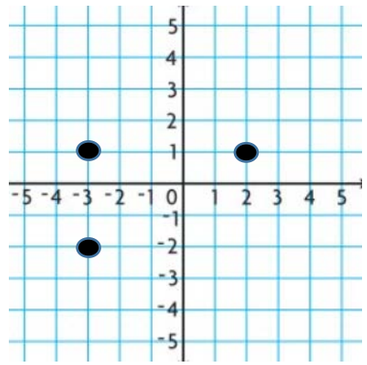
Lesson		Standards & Math Practices	Essential Question	Math Content and Strategies	Models/Tools Go Math! Teacher Resources G6	Connections (ENGAGE prior knowledge)	Vocabulary	Academic Language Support	Journal
10.1	Algebra – Area of Parallelograms	6.G.1, 6.EE.2c, 6.EE.7 Companion Pg. 156, 87, 94 MP 4, MP 5, MP 6, MP 8	How can you find the area of parallelograms?	In this lesson, students may struggle with the idea that a parallelogram and rectangle can have the same area when the parallelogram extends farther in one direction than the rectangle. Students may also struggle with the idea that they cannot always use the side length for the height. *Allowing students to cut out a parallelogram and examine its relationship to a rectangle with the same base and height will reinforce that the height of a parallelogram is different from a side length.	Grid Paper-4 per in Grid Paper-5 per in $A = bh$, $A = s^2$, Area of rectangles, parallelograms & Triangles Area of Triangles and Parallelograms with Grid Area with Tiles	What is the area of the rectangle? 4 in. 8 in. Can you show more than one way to find the area? Use square tiles or pattern blocks and grid paper and have students build and discuss the area of a parallelogram as it relates to a rectangle. Area with Tiles	Area, parallelogram	**Literature**  *Room Makeover: Serving the Community*	A parallelogram has a base of 6 inches and a total area of 48 square inches. What is the height of the parallelogram?

								*From the Grab-and-Go Differentiated Centers Kit –* Students read about using area to find the amount of paint and the tile needed for a room.	
10.2	Investigate – Explore Area of Triangles	6.G.1 Companion Pg. 156 MP 1, MP 7, MP 8	What is the relationship among the areas of triangles, rectangles, and parallelograms?	This lesson is a great way to help build the conceptual understanding that many shapes can be composed or decomposed into triangles and rectangles. This also lends itself to many opportunities for student talk, constructing arguments, and justifications.	Grid Paper-4 per in Grid Paper-5 per in Tracing paper Area of rectangles, parallelograms & Triangles Area of Triangles and Parallelograms with Grid Area with Tiles	Use square tiles and grid paper and have students discuss the area of a triangle as it relates to a rectangle. Area with Tiles **Triangles**  Have students make connections between the area of rectangles, parallelograms, and triangles. 	Congruent	**Literature**  *If I Designed the Zoo* *From the Grab-and-Go Differentiated Centers Kit –* Students read about calculating the area and perimeter of the complex shapes that make up animal enclosures at the zoo. **Math Models:** *About the Math*, pg. 397A 	A student folded a rectangle in half and shaded half of it gray. Find the area of the unshaded portion. 
10.3	Algebra – Area of Triangles	6.G.1, 6.EE.2c Companion Pg. 156, 87 MP 1, MP 5, MP 8	How can you find the area of triangles?	Students use previous knowledge regarding the area of a parallelogram to derive the area formulas for triangles. Students use grid paper to draw, manipulate, and compare figures with given dimensions. For example, the model shows two congruent triangles rearranged to form a parallelogram. This helps the students understand that the area of the triangle is half of the area of the parallelogram.	Grid Paper-4 per in Grid Paper-5 per in $A = \frac{1}{2}bh$ Area of rectangles, parallelograms & Triangles Area of Triangles and Parallelograms with Grid Area with Tiles	Give the students the picture of the rectangle and ask "What is the area of the shaded portion? How do you know?"  Use a transparency of a rectangle and the following examples of triangles and parallelograms to have students figure out the area of the shapes as they relate to the original rectangle.	Congruent	*About the Math*, pg. 405A  *About the Math*, pg. 415A	The rear sail of the sailboat has a base of 14 ft. and a height of 30 ft. What is the area of the rear sail? 

						Area of rectangles, parallelograms & Triangles			
10.4	Investigate – Explore Area of Trapezoids	6.G.1 Companion Pg. 156 MP 4, MP 7, MP 8	What is the relationship between the areas of trapezoids and parallelograms?	Students manipulate the shapes to understand that two trapezoids can be put together to make a rectangle or a parallelogram. Make sure to draw a relation to the idea that a rectangle is a special parallelogram with 4 right angles. Then make the connection to a trapezoid with 2 right angles can be doubled to create a rectangle.	Grid paper, Grid Paper-4 per in Grid Paper-5 per in Area with Tiles	Discuss the following:  What do we call this shape? In thinking about the area of triangles and parallelograms, is there a way that we could find the area of this shape? You can also use square tiles and grid paper to have students figure out the area of trapezoids. 	Trapezoid	  **Vocabulary Builder:** *Congruent Figures –* Read the definition of congruent figures on page 393 with students. Have students identify which figures show a diagonal and explain why the other figures do not show a diagonal. Then have students determine whether the dashed line divides the figure into two congruent parts.  *Semantic Mapping –* Have students complete a graphic organizer that describes regular polygons. Students should draw examples of regular polygons to remember the characteristics. Then have students complete a second organizer for irregular polygons.	Find the area of a trapezoid that has bases that are 15 inches and 20 inches and a height of 9 inches. Explain how you determined the area.
10.5	Algebra – Area of Trapezoids	6.G.1, 6.EE.2c Companion Pg. 156, 87 MP 1, MP 3, MP 7	How can you find the area of trapezoids?	Students need to learn to find the area of a trapezoid without referring to the corresponding parallelogram. In this lesson, they learn to formalize this area relationship by writing it symbolically in a formula. As they work though this lesson, make sure to relate the formula to what they learned in the previous lesson. It may be helpful to work through a visual model like this: 	Grid Paper-4 per in Grid Paper-5 per in $A = \frac{1}{2}(b_1 + b_2)h$	Solve the expression: 4(3 +9) What was the first step that we needed to complete? Why? What is a formula? What types of mathematical formulas can you think of? *The first question will help them review the order of operations, while the second question will help them review formulas.	Trapezoid		Use the formula for the area of a trapezoid to find the height of a trapezoid with bases 8 inches and 6 inches and an area of 112 square inches. Explain how you arrived at your answer.

						Make connections to develop spatial reasoning between rectangles, parallelograms, triangles, and trapezoids. Spatial Reasoning for Area This can be used to develop spatial reasoning and discuss the relationship between the different shapes.			
10.6	Area of Regular Polygons	6.G.1, 6.EE.2c Companion Pg. 156, 87 MP 7, MP 8	How can you find the area of regular polygons?	In previous lessons, students have found the area of a triangle. Here, students find the area of a regular polygon by dividing it into congruent triangles. • Make sure students can identify the base and height of a triangle and can use them in the formula for the area of a triangle. • For example: *"What is the area of a triangle with a height of 5 cm and a base of 12cm? If there are 5 of these triangles, what is the total area?"*	Grid Paper-4 per in Grid Paper-5 per in Draw line segments to form triangles, $A = \frac{1}{2}bh$	What information do you need to find the area of this triangle?  They will need to know the base and the height. You can give them: base = 4 and height = 6	Regular polygon		A square has sides that measure 6 inches. Explain how to use the method in this lesson to find the area of the square.

10.7	Composite Figures	6.G.1, 6.EE.2c Companion Pg. 156, 87 MP 1, MP 2, MP 5	How can you find the area of composite figures?	You can often use different ways to find the area of a composite figure. Showing the students multiple ways helps them to understand the concept. Here's an example:  • **Method 1** Break the figure into two squares and a rectangle. Add the areas. $A = (2^2) + (2^2) + (7 \times 3) = 29 \text{ cm}^2$ • **Method 2** Break the figure into two rectangles and a square. Add the areas. $A = (2 \times 5) + (3^2) + (2 \times 5) = 29 \text{ cm}^2$ • **Method 3** Use the outer boundaries to form a rectangle that includes an extra area. Find the entire area and then subtract the extra area. $A = (7 \times 5) - (2 \times 3) = 29 \text{ cm}^2$	Grid Paper-4 per in Grid Paper-5 per in $A = \frac{1}{2}bh$, $A = \frac{1}{2}(b_1 + b_2)h$, $A = lw$	Find the area of the following shapes:  How could you find the area of this shape?  	Composite figure		A company is using this design for their shirts. The design is made by joining a square and a rectangle. This figure shows the design. What is the total area of this shape? 
10.8	Problem Solving – Changing Dimensions **Optional – does not address the standard.	6.G.1 Companion Pg. 156 MP 1, MP 3, MP 8	How can you use the strategy *find a pattern* to show how changing dimensions affects area?	If each dimension of a polygon is multiplied by a factor of n, then the area will increase by a factor of n^2. Why is this the case? -For any rectangle with length a and width b, the area is equal to $a \times b$. if each dimension is multiplied by a factor of n, then the dimensions become $a \times n$ and $b \times n$, respectively. -To find the area of the new rectangle, simply multiply the new dimensions: $(a \times n) \times (b \times n)$. You can then use the Commutative and Associative Properties to rearrange the factors: $(a \times b) \times (n \times n) = (a \times b) \times n^2$. Therefore,	Grid Paper-4 per in Grid Paper-5 per in Math Boards	Find the area of the rectangle.  How would the area change if I doubled the length and height of the rectangle?	Regular polygon, composite figure		If another rectangle had a length and height that were three times as large as this one, what would the area of that rectangle be? 

				the new area is equal to the original area multiplied by n^2.					
10.9	Figures on a Coordinate Plane	6.G.3 Companion Pg. 158 MP 4, MP 6, MP 7	How can you plot polygons on a coordinate plane and find their side lengths?	Coordinate planes can be used to provide information in a wide variety of applications, such as area on maps, locations, latitude and longitude, etc. For example, a wide variety of electronic displays are based on illuminated points at specific locations. Scoreboards and clocks display different information depending on which lights are activated. As an extension, you can show this figure and have the students use the coordinate plane to plot the number 3 or create their own displays.  	Coordinate Plane - Four Quadrants, Coordinate Plane - First Quadrant	What are the coordinates of the point needed to create a rectangle?  What is the area of this rectangle? How do you know?	Ordered pair, coordinate plane		Use a coordinate grid as a map to solve the following problem: On the map, the library is located at (-5, 2), the bus station is located at (-5, 6), and the courthouse is located at (7, 2). Each square unit in the grid represents 1 square kilometer. What is the distance from the courthouse to the library in kilometers?
Assessments: Go Math Chapter 10 Test Go Math Chapter 10 Performance Task - Chinese Checkers SBAC Claim 1 Question Stems SBAC Sample Items Index									