Grade Level	**6th Grade**	**Content Area**	**Math**
Course Title (grades 9-12 Only)			
Length of Unit	**5 days**	**Time of Year**	**2rd Quarter**
Expected Prior Knowledge *The knowledge/skills mastered earlier in the year foundational to the mastery of the required Standard in the current sample.*	6.EE.6: Students should be able to use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.		
Alignment to Program of Instruction *Briefly outline methods of instruction found in this sequence of lessons that align to the Program of Instruction described in A.3.*	The following methods of instruction are aligned to the Program of Instruction: (1) Common Core State Standard: instruction aligned to K.NBT.1. (2) Direct Instruction: teacher-led and driven instruction. (3) Understanding by Design (UbD): UbD lesson plan template used; title/objective identified for every lesson. (4) RTI & Differentiated Instruction: RTI tier-2 and 3 students identified with DOMA screenings and/or formative assessments. Tier-2 and 3 students provided with differentiated instruction respectively in small group or one-on-one using the intrinsic RTI remedial properties of Singapore Math; that is: (a) Scaffolding: concrete-to-pictorial-to-abstract approach, math problems go from 1 step to 2 steps to multistep; (b) Visual representation: use of the bar modeling method; (c) Differentiation resources: modeling of proficient problem solving, reteaching opportunities, extra-practice, tips for helping struggling students, modeling with thinkalouds, corrective feedback and frequent cumulative review.		
Standard Number and Description *List the Number* and full description for the required Standard.*	**6.EE.7.** Solve real world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p, q and x are all nonnegative rational numbers.		
Summative Assessment *Describe a cumulative and comprehensive activity, clearly separate from instruction and guided or independent practice, which allows each student to individually demonstrate mastery of the required Standard. A copy of the summative assessment must be attached to the curriculum sample.*	The students will solve real world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p, q and x are all nonnegative rational numbers. The summative assessment includes 10 word problems. Each problem includes 1 variable. Students are exposed to solving with each of the four numerical operations through the variety of problems. Students are expected to write an appropriate equation and solve for the variable for each of the 10 problems.		
Scoring Scale and Mastery Level *Explain how the assessment is scored, to include points per question, how points are awarded, total points possible, criteria necessary to demonstrate mastery, and grading scale. A copy of the answer key and scoring rubric (whichever applicable) must be attached to the curriculum sample.*	Calculating the Score: Each problem is worth 2 points. The student will get one point for writing the equation and one point for solving the problem. A score of 80% is mastery.) A score of 20/20 = 100%, A score of 18/19 = 90-98%, A score of 16/17 = 80=89% (80% is mastery), A score of 14/15 = 70-79%, A score of 12/13 = 60-69%		
Materials/Resources Needed	Pencil, Journal, Internet access with projector, individual student white boards, white board markers, eraser, Chart		

	Paper, Post-it notes, Computer access, and a videos on math concepts and vocabulary relevant to standard 6.EE.7. http://www.youtube.com/watch?v=lHSHYMgXRdo , http://www.youtube.com/watch?v=EKmd4C5CjXA. Singapore Math instructional materials.

Lesson (add as needed)	**Instruction**	**Student Activities**
1	**Objective: Students will write and solve addition and subtraction equations using variables.** • The teacher explains the day's objective to the students and reviews equations and variables in addition and subtraction word problems. **Guided Practice:** • The teacher will begin instruction by presenting an instructional video based on the standard 6.EE.7. (The video reinforces vocabulary, explains the process of solving word problems, and real-world equations.) • Students will be directed to take notes on key vocabulary and concepts while the watching of the video. • Following the video, the teacher will facilitate a class discussion regarding the key points of the video as recorded in student notes. • The teacher will pose a word problem on the board. (See Appendix A.) The teacher will review inverse operations to ensure understanding and then solve the problem. • The teacher will continue to pose problems to students (Appendix A), model appropriate responses on the classroom white board using student input, and direct students to take notes on the modeled problems and strategies. **Independent Practice:** • Students will retrieve supplies (personal white board, marker, and eraser). • The teacher will pose a question and the students will write the equation and answer on their personal whiteboards. The teacher will check each whiteboard for accuracy and review, if necessary. This practice will continue with additional similar problems. • The teacher will use the DOMA screenings and/or formative assessments to identify at-risk students and pool them in RTI tier-2 and 3	Students will take notes while watching a video about using variables. Students will discuss as a class, the key points of the video. Students follow the teacher's review about inverse operations and take notes on the problems and strategies. Students will work on the problems in Appendix A and write answers on their personal white boards.

	groups. He/she will provide tier-2 and 3 students respectively with small group and/or one-on-one differentiated instruction with scaffolding and differentiation tools such as concrete-to-pictorial-to-abstract examples, bar modeling, modeling with thinkalouds, reteaching opportunities, extra-practice, corrective feedback and frequent cumulative review.	
2	**Objective: The students will solve operations with partners using one variable.** • The teacher will prompt the students to recall the concepts learned from the previous lesson. • The teacher will review addition and subtraction equations. (See Appendix B) **Guided Practice:** After the review, the students will be given different word problems to dissect and solve with a partner. The teacher will walk around the room to aid in questions or problems. **Independent Practice:** • The students will work with a partner to solve problems that are administered by the teacher orally. These problems can be completed on personal white boards to ensure comprehension of all students. • Provide tier-2 and 3 students respectively with small group and/or one-on-one differentiated instruction with scaffolding and differentiation tools such as concrete-to-pictorial-to-abstract examples, bar modeling, modeling with thinkalouds, reteaching opportunities, extra-practice, corrective feedback and frequent cumulative review.	Students will review the concepts taught the previous day. Students will review the process of solving a word problem. Students will work on word problems administered by the teacher to check for understanding. Students will use their white boards to complete these problems. Students will continue to review under teacher direction, writing their answers to teacher problems on their white boards.
	Objective: The students will write and solve multiplication and division equations using variables. • The teacher will review equations and variables in multiplication and division word problems. • The teacher will begin instruction by presenting an instructional video based on the standard 6.EE.7. The video reinforces vocabulary, explains the process of solving word problems, and real-world equations. Students will be directed to take notes on key vocabulary and concepts during the watching of the video. • Following the video, the teacher will facilitate a class discussion regarding the key points of the video as recorded in student notes.	Students will take notes while watching a video about using variables. Students will discuss as a class, the key points of the video. Students follow the teacher's review about inverse operations and take notes on the problems and strategies. Students will work on the problems in Appendix A and write answers on their personal white boards.

3	**Guided Practice:** • The teacher will pose a word problem on the board. (See Appendix C.) The teacher will review inverse operations, thinking aloud, to ensure understanding and then solve the problem. • The teacher will continue to pose problems to students (Appendix C), model appropriate responses on the classroom white board using student input, and direct students to take notes on the modeled problems and strategies. **Independent Practice:** • Students will retrieve supplies (personal white board, marker, and eraser). • The teacher will pose a question and the students will write the equation and answer on their personal whiteboards. The teacher will check each whiteboard for accuracy and review, if necessary. • This practice will continue with additional similar problems. • Provide tier-2 and 3 students respectively with small group and/or one-on-one differentiated instruction with scaffolding and differentiation tools such as concrete-to-pictorial-to-abstract examples, bar modeling, modeling with thinkalouds, reteaching opportunities, extra-practice, corrective feedback and frequent cumulative review.	
4	**Objective: Students will work with a partner to solve problems using all operations.** • The teacher will guide students in the review of concepts practiced in the previous lesson. • The teacher will post numerous problems on chart paper around the classroom. The problems will use all operations. The students will work with a partner to solve the problems on post-it notes and, when completed, place the note on the coordinating problem. **Guided Practice:** • The teacher will explain how the students will work in collaborative groups to solve various problems posted around the room. (See Appendix D) The students will be given different word problems to dissect and solve with a partner. The teacher will walk around the room to aid in questions or problems.	Students will review the multiplication and division steps from the previous lesson. The students will move around the room looking at different word problems and use post-it notes to solve the problems. Once finished the students will post their notes on the chart paper and the teacher will review for understanding.

	Independent Practice: • The students will work with a partner to solve the problems listed on the chart paper. The students will use post-it notes to solve each problem. When completed, the students will place the note on the coordinating problem. • Teacher will monitor progress and post-it responds. • Provide tier-2 and 3 students respectively with small group and/or one-on-one differentiated instruction with scaffolding and differentiation tools such as concrete-to-pictorial-to-abstract examples, bar modeling, modeling with thinkalouds, reteaching opportunities, extra-practice, corrective feedback and frequent cumulative review.	
5	**Objective: The students will solve real world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p, q and x are all nonnegative rational numbers. (Summative Assessment)**	Students will complete the summative assessment.

Appendix A

1. Lisa had 66 coins. Then she found *p* more coins in a drawer. If Lisa has 103 coins now, how many did she find in her drawer?

2. John earned *e* extra credit points. Phil earned 96 fewer extra credit points than John did. If their points together totaled 147, how many points did John earn?

3. Holly has 239 books. Karen has 104 books. How many books do Holly and Karen have altogether?

4. Carl planted 44 fewer trees than Megan did. Megan planted *t* trees. If Megan planted 79 trees, how many trees did Carl plant?

Appendix B

1. Wade had 16 caramels. Then, Wade's sister took *c* of the caramels. If they started with 29 caramels, how many did Wade's sister take?

2. Ethan has *s* small spoons and 6 big spoons. If combined he has 24, how many small spoons does Ethan have?

Appendix C

1. Mr. Jones is buying each of his 7 cousins a ticket to the movies. Each ticket cost t. He paid $49 for all of the tickets. Write the equation to show the cost of one movie ticket.

2. Three friends went together to buy a gift. Each person spent $13.83. Together they spent g. Write the equation to show the total cost of the gift.

3. Jonah ran 22 miles. Lilly ran 8 times as many miles as Jonah. Write the equation to show the number of miles Lilly ran.

4. Mary is saving up money to go on a trip. This month, she saved three times as much money as she saved last month. Last month, she saved $24.00. How much money did Mary save this month?

Appendix D

1. Hannah had 11 CDs until she won *c* more in a contest. She won two times the amount she has now. How many CDs did Hannah win?

2. Liam has 3 times more rubber bands than Amber. Amber has 73 rubber bands. How many rubber bands does Liam have?

Summative Assessment

6.EE.7. Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p, q and x are all nonnegative rational numbers.)

Directions: Write and solve the equations below. Each problem is worth 2 points.

1. Jayden planted *t* fewer trees than Benjamin. Benjamin planted 36 trees. If 50 trees were planted, how many did Jayden plant?

2. The gorilla in the Los Angeles Zoo is six feet tall. The giraffe is 18 feet tall. How many times taller than the gorilla is the giraffe?

3. There were *f* frogs in a pond. 42 of the frogs hopped away. If 90 frogs started in the pond, how many were left?

4. Corey has 8 boxes. He puts an equal number of marbles in each box. If there is 96 marbles, how many marbles are in each box?

5. Henry is *x* years old. Betty is 3 times as old as Henry. Peter is 4 years older than Betty is. If Henry is 4 years old, how old is Peter?

6. Terry bought some bottles of milk at $2 each. He gave the cashier $50 and received $38 in change. How many bottles of milk did Terry buy?

7. Ty has 48 marbles. He puts x marbles in a bag. There are 5 bags and 3 marbles altogether. How many marbles are in each bag?

8. A rope is *r* meters long. An iron rod is 3 times as long as the rod. If the rope is 9 meters long, how long is the rod?

9. Kelly has 66 trading cards. Bre has *t* trading cards. If together they have 175 cards, how many cards does Bre have?

10. Max picked a bunch of flowers. When he arranged them in 2 vases, each vase had 16 flowers. How many flowers did Max pick?

Answer Key and Scoring

Answer Keys

1. 14 trees
2. 3 times taller
3. 48 frogs
4. 12 marbles
5. 16 years old
6. 6 bottles of milk
7. 9 marbles in each bag
8. 27 meters long
9. 109 cards
10. 32 flowers

Scoring

Each question is worth 2 points.

A score of 20 points out 20 = 100%.

A score of 18 points out 20 = 90%.

A score of 16 points out 20 = 80%. Mastery.

A score of 14 points out 20 = 70%. Passing grade.

A score of 12 points out of 20 = 60%. Not a passing grade for less than 70%.