Big Ideas

Equations and inequalities can be used to represented and solve mathematical and real-world problems. Students can represent and analyze relationships between independent and dependent variables.

Vocabulary

Variable, equation, balance the equation, isolate the variable, inverse operation, inequality, less than greater than, less than or equal to, greater than or equal to, inequality symbols $(<, >, \le, \ge)$, solution, number line, dependent variable, independent variable, constant, discrete data, continuous data

Prior Learning

In Grades 3-5, students have solved addition, subtraction, and multiplication and division problem situations with unknowns using question marks and open boxes for the unknowns, students in older grades using variables for the unknown number. In Grade 6, Module 8, students represented situations with expressions.

Essential Questions

- How can inequalities be used to model real world problems?
- What are the goals when solving equations?
- How do we isolate the variable in an addition equation?
- What are the variables in the problem?
- How can you use algebraic symbols to write rules and equations relating variables?
- How do equations help us solve problems and represent situations?
- What does it mean to solve an equation?
- How are inequalities the same as or different from equations?
- How can we represent the solution of an inequality?
- What are the steps we use to solve an equation or inequality?

Competencies

- Students will determine if a value or set of values makes an equation or inequality true.
- Students will solve problems and represent situations by writing and solving equations.
- Students will write an inequality to represent a constraint in a real-world situation.
- Students will solve inequalities and represent the solution of an inequality on a number line.
- Students will determine solutions to different types of equations.
- Students will identify and manipulate inverse equations using different operations.
- Students will solve one step addition, subtraction, multiplication, and division equations.
- Students will develop the knowledge of how to graph solution sets to simple inequalities.

Misconceptions

- Students may have a difficult time interpreting situations with variables and equations.
- Some students use key words to choose an operation or operations for the equation, not realizing that those words can be misleading.
- Students may misunderstand what the graph represents in a contextual inequality.
- Students may use the wrong operations in solving equations or inequalities.

Resources from The Key Elements to Mathematics Success - KEMS Grade 6 for Building the Conceptual Understanding of this Module

KEMS Lesson 23 – One Step Equations – Add and Subtract Additional Activities: Quiz – T555, Chain Reaction T906

KEMS Lesson 24 - One Step Equations – Multiply and Divide Additional Activities: Quiz – T579, Scavenger Hunt T907

KEMS Lesson 25 – Introduction to Inequalities Additional Activities: Quiz – T605-606, Mystery Square T908

KEMS Lesson 26 – Represent and Analyze Quantitative Relationships Additional Activities: Quiz – T629-631, Scavenger Hunt T909-T912

NYS Next Generation Learning Standard	Examples
6.EE.5 Understand solving an equation or inequality as a process of answering a question: which values from	Students explore equations as expressions being set equal to a specific value. The solution is the value of the variable that will make the equation or inequality true. Students use various processes to identify the value(s) that when substituted for the variable will make the equation true.
a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given	Example 1: Joey had 26 papers in his desk. His teacher gave him some more and now he has 100. How many papers did his teacher give him?
number in a specified set makes an equation or inequality true.	This situation can be represented by the equation $26 + n = 100$ where n is the number of papers the teacher gives to Joey. This equation can be stated as "some number was added to 26 and the result was 100." Students ask themselves "What number was added to 26 to get 100?" to help them determine the value of the variable that makes the equation true. Students could use several different strategies to find a solution to the problem:
	• Reasoning: 26 + 70 is 96 and 96 + 4 is 100, so the number added to 26 to get 100 is 74.
	 Use knowledge of fact families to write related equations: n + 26 = 100, 100 - n = 26, 100 - 26 = n. Select the equation that helps to find n easily
	 Use knowledge of inverse operations: Since subtraction "undoes" addition then subtract 26 from 100 to get the numerical value of n Scale model: There are 26 blocks on the left side of the scale and 100 blocks on the right side of the scale. All the blocks are the same size. 74 blocks need to be added to the left side of the scale to make the scale balance. Bar Model: Each bar represents one of the values. Students use this visual representation to demonstrate that 26 and the unknown value together make 100.
	100 26 n
	Solution: Students recognize the value of 74 would make a true statement if substituted for the variable. $26 + n = 100$ $26 + 74 = 100$ $100 = 100 \checkmark$
	Example 2: The equation $0.44 \ s = 11$ where s represents the number of stamps in a booklet. The booklet of stamps costs 11 dollars and each stamp costs 44 cents. How many stamps are in the booklet? Explain the strategies used to determine the answer. Show that the solution is correct using substitution. Solution: There are 25 stamps in the booklet. I got my answer by dividing 11 by
	0.44 to determine how many groups of 0.44 were in 11. By substituting 25 in for <i>s</i> and then multiplying, I get 11.
	0.44(25) = 11 $11 = 11 \checkmark$
	Example 3: Twelve is less than 3 times another number can be shown by the inequality $12 < 3n$. What numbers could possibly make this a true statement?
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Solution: Since $3 \cdot 4$ is equal to 12 I know the value must be greater than 4. Any value greater than 4 will make the inequality true. Possibilities are 4.13, 6, $5\frac{3}{4}$, and 200. Given a set of values, students identify the values that make the inequality true.

Questions for 6.EE.5

1. Work with your partner and model the following equation with tiles and then draw the pictorial representation below.

c + 4 = 9

2. Solve the following equation. Show all the steps to explain your answer and check your solution.

32 = n + 17

3. Solve the following equation. Show all the steps and check your solution.

x - 14 = 25

4. Model the following equation with your partner using tiles. Then create the pictorial representation in the space below.

2c = 12

5. Solve the following equation. Show the steps to solving and checking the solution.

4*t* = 32

6. Which inequality below has a solution set where *x* is greater than 6.

A. 5x < 30 B. 3x + 4 > 19 C. 6x + 10 > 46 D. 2x + 8 < 20

7. Which equation is true when n = 5?

A. 3n = 18 B. 4n + 4 = 24 C. 8n + 10 = 60 D. 2n + 8 = 20

8. Which of the following equations has a solution of x = 15?

A. 3x = 36 B. 6x + 4 = 52 C. 8x + 10 = 130 D. 2x + 12 = 52

9. The set of numbers contains 2, 4, 8 and 9 contains values for x. What value of x makes the equation below true?

D. x = 9

$$3x + 7 = 34$$

A. x = 2

B. x = 4 C. x = 8

10. Which of the following values for w will make the following equation true?

3.1w = 6.82

A. w = 2.2 B. w = 47.18 C. w = 4.91 D. w = 21.142

Answer Key for Questions for 6.EE.5

1. Pictures may vary. c = 5

2. 32 = n + 17

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-17 -17 15 *= n* 3. x - 14 = 25+14 +14x = 394. Pictures may vary. $\frac{2c}{2} = \frac{12}{2}$ c = 6 5. 4t = 324 t = 86. B. x > 67. B. 4n + 4 = 24; n = 58. C. 8x + 10 = 130; x = 159. D. *x* = 9 10. A. w = 2.2

Tasks for 6.EE.5

*Teacher Note: Please read the Commentary section for the Illustrative Math Tasks. Some tasks will be instructional requiring more teacher modeling and direction. Others will provide the opportunity for students to demonstrate their knowledge of a concept.

Illustrative Math Task: Log Ride <u>https://tasks.illustrativemathematics.org/content-standards/6/EE/B/5/tasks/673</u> Illustrative Math Task: Triangular Tables <u>https://tasks.illustrativemathematics.org/content-standards/6/EE/B/tasks/494</u> Illustrative Math Task: Busy Day <u>https://tasks.illustrativemathematics.org/content-standards/6/EE/B/tasks/985</u>

Extra Questions for Warm-ups and Homework for 6.EE.5

1. Practice solving the following equation with your partner using chips and cups. c + 8 = 12

2. Have student pairs work together to model with cups and tiles and then draw the pictorial representation of the following equation: 4c = 8

C 1	
NYS Next Generation Learning Standard	Examples
6.EE.6 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,	 Students write expressions to represent various real-world situations. Example Set 1: Write an expression to represent Susan's age in three years, when a represents her present age. Write an expression to represent the number of wheels, <i>w</i>, on any number of bicycles.

depending on the purpose at	• Write an expression to represent the value of any number of quarters, q.	
hand, any number in a	Solutions:	
specified set.	a+3 $2n$ $0.25a$	
	Given a contextual situation, students define variables and write an expression to	
	represent the situation.	
	Example 2: The skating rink charges \$100 to reserve the place and then \$5 per person. Write an expression to represent the cost for any number of people.	
	n = the number of people	
	100 + 5n	
	No solving is expected with this standard; however, 6.EE.2c does address the	
	evaluating of the expressions. Students understand the inverse relationships that can exist between two variables. For example, if Sally has 3 times as many	
	bracelets as Jane, then Jane has $\frac{1}{3}$ the amount of Sally. If <i>s</i> represents the	
	number of bracelets Sally has, the $\frac{1}{3}s$ or $\frac{s}{3}$ represents the amount Jane has.	
	Connecting writing expressions with story problems and/or drawing pictures will give students a context for this work. It is important for students to read algebraic expressions in a manner that reinforces that the variable represents a number.	
	Example Set 3:	
	 Maria has three more than twice as many crayons as Elizabeth. Write an algebraic expression to represent the number of crayons that Maria has. Solution: 2c + 3 where c represents the number of crayons that Elizabeth has An amusement park charges \$28 to enter and \$0.35 per ticket. Write an 	
	algebraic expression to represent the total amount spent. Solution: $28 + 0.35t$ where t represents the number of tickets purchased	
	• Andrew has a summer job doing yard work. He is paid \$15 per hour and a \$20 bonus when he completes the yard. He was paid \$85 for completing one yard. Write an equation to represent the amount of money he earned.	
	Solution: $15h + 20 = 85$ where h is the number of hours worked	
	• Describe a problem situation that can be solved using the equation $2c + 3 = 15$; where c represents the cost of an item	
	• Possible solution:	
	Sarah spent \$15 at a craft store.	
	• She bought one notebook for \$3.	
	$\int \int duration does for a domain s for a domain s.$	
	 Bill earned \$5.00 mowing the lawn on Saturday. He earned more money on 	
	Sunday. Write an expression that shows the amount of money Bill has	
	earned. Solution: $$5.00 + n$	
Questions for 6.EE.6		

1. Jason had 45 caramels. Then Jason's sister took c of the caramels. Write the expression that shows the number of caramels Jason has left.

2. Amy has 20 pairs of earrings in her jewelry box. Thirteen of them are silver (s), and the rest are gold (g). Which expression can be used to represent how many pairs of earrings are gold?

A. 20-s B. 13+s C. $13 \times s$ D. 20+13

3. Julia read 6 books from the library each month for p months in a row. Write an expression to show how many books Julia read all together.

Answer Key for Questions for 6.EE.6

1. Jason has (45 - c) caramels left. Tom has (b + 97) bouncy balls.

2. A. 20 - s

3. 6p

Tasks for 6.EE.6

*Teacher Note: Please read the Commentary section for the Illustrative Math Tasks. Some tasks will be instructional requiring more teacher modeling and direction. Others will provide the opportunity for students to demonstrate their knowledge of a concept.

Illustrative Math Task: Firefighter Allocation

https://tasks.illustrativemathematics.org/content-standards/6/EE/B/7/tasks/425

Illustrative Math Task: Pennies to Heaven

https://tasks.illustrativemathematics.org/content-standards/6/EE/B/6/tasks/1291

Extra Questions for Warm-ups and Homework for 6.EE.6

1. Mercedes just got a new job. She makes \$6.50 an hour. After Mercedes receives her pay, she needs to pay her sister for a pair of \$39 jeans. Write an expression for this real-world situation.

NYS Next Generation Learning Standard	Examples	
6.EE.7 Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$; $x - p =$ q; $px = q$; and $x/p = q$ for cases in which p, q and x are all nonnegative rational.	Students have used algebraic expressions to generate answers given values for the variable. This understanding is now expanded to equations where the value of the variable is unknown but the outcome is known. For example, in the expression, $x + 4$, any value can be substituted for the x to generate a numerical answer; however, in the equation $x + 4 = 6$, there is only one value that can be used to get a 6. Problems should be in context when possible and use only one variable.	
Note: For the $\boldsymbol{x}/\boldsymbol{p} = q$ case, $p \neq 0$.	Students write equations from real-world problems and then use inverse operations to solve one-step equations based on real world situations. Equations may include fractions and decimals with non-negative solutions.	
	Students recognize that dividing by 6 and multiplying by $\frac{1}{6}$ produces the same	
	result. For example, $\frac{x}{6} = 9$ and $\frac{1}{6}x = 9$ will produce the same result.	
	Example 1: Meagan spent \$56.58 on three pairs of jeans. If each pair of jeans costs the same amount, write an algebraic equation that represents this situation and solve to determine how much one pair of jeans cost.	
	\$56.58 J J J	
	Sample Solution: Students might say: "I created the bar model to show the cost of the three pairs of jeans. Each bar labeled J is the same size because each pair of jeans costs the same amount of money. The bar model represents the equation	

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3J = \$56.58. To solve the problem, I need to divide the total cost of 56.58
between the three pairs of jeans. I know that it will be more than \$10 each
because 10 x 3 is only 30 but less than \$20 each because 20 x 3 is 60. If I start
with \$15 each, I am up to \$45. I have \$11.58 left. I then give each pair of jeans
\$3. That's \$9 more dollars. I only have \$2.58 left. I continue until all the money
is divided. I ended up giving each pair of jeans another \$0.86. Each pair of jeans
costs \$18.86 (15+3+0.86). I double check that the jeans cost \$18.86 each because
\$18.86 x 3 is \$56.58."
Example 2: Julie gets paid \$20 for babysitting. He spends \$1.99 on a package of trading cards and \$6.50 on lunch. Write and solve an equation to show how much money Julie has left.
Solution: $20 = 1.99 + 6.50 + x$, $x = 11.51

Questions for 6.EE.7

1. After basketball practice, 15 students had a choice of water or a sports drink. Six of the students chose water. How many chose a sports drink? Write an equation that can be used to solve the problem and then solve for the solution.

2. Jenni wants to purchase a new pair of tennis shoes that cost \$35.00, including tax. She is saving her babysitting money. If she has already saved \$21.77, how much more money does she need to be able to purchase the shoes? Write an equation and then solve the problem.

3. Janelle has four brothers and sisters. They are all pooling their money to buy their favorite uncle a present. They have picked out a present that costs \$37.45 including tax. How much money does each of the children need to save? Write an equation to solve the problem. Solve and then check the solution.

4. Alex wants to purchase a new DVD that costs \$14.00, including tax. If Alex got \$10 for his birthday, how much more money does he need to be able to purchase the DVD? Write an equation and then solve the problem.

5. Greg is planning a camping trip for his family and friends. He has seven tents, and each one can sleep four people. How many people can Greg invite on the camping trip? Which equation below could be used to solve this problem?

A.
$$\frac{7}{x} = 4$$
 B. $\frac{x}{7} = 4$ C. $7x = 4$ D. $x + 4 = 7$

6. Solve the following equation. Check your solution.

5y = 20A. y = 4B. y = 5C. $y = 4\frac{2}{5}$ D. $y = 5\frac{3}{5}$

7. A group of people bought tickets to see a movie. Tickets cost \$5 per person. The total cost of all the tickets was \$80. How many people bought tickets? Solve the equation and check your solution.

Answer Key for Questions for 6.EE.7

1. x+6=15 $\frac{-6-6}{x}=9$

9 students chose a sports drink.

2.
$$x + 21.77 = 35.00$$

 $-21.77 - 21.77$
 $x = 13.23$

Jenni will need an additional \$13.23 for the shoes.

- 3. 5x = 37.45; x = \$7.49
- 4. x + 10 = 14

x = 4Alex needs \$4 more to buy the DVD.

- 5. B. $\frac{x}{7} = 4$
- 6. A. y = 4
- 7. 5t = 80; t = 16 16 people bought tickets.

Tasks for 6.EE.7

*Teacher Note: Please read the Commentary section for the Illustrative Math Tasks. Some tasks will be instructional requiring more teacher modeling and direction. Others will provide the opportunity for students to demonstrate their knowledge of a concept.

Illustrative Math Task: Morning Walk

https://tasks.illustrativemathematics.org/content-standards/6/EE/B/7/tasks/1107

Illustrative Math Task: Fruit Salad

https://tasks.illustrativemathematics.org/content-standards/6/EE/B/7/tasks/1032

Illustrative Math Task: Firefighter Allocation

https://tasks.illustrativemathematics.org/content-standards/6/EE/B/7/tasks/425

Illustrative Math Task: Anna in D.C.

https://tasks.illustrativemathematics.org/content-standards/6/EE/A/3/tasks/997

Extra Questions for Warm-ups and Homework for 6.EE.7

1. A supply company is making packages of pencils. There are 12 pencils in each package. The company produces 480 pencils per day. Write an equation and determine how many packages of pencils the company produces per day?

2. Yesinia wants to buy a new game that costs \$28.00, so she decides to make bracelets with some leftover craft materials. She plans to sell them for \$4.00 each, so how many bracelets does she need to make and then sell in order to have enough money for the game? Write an equation and solve.

3. Eight people went out for a business lunch. They split the bill evenly and each person paid \$15.44. What was the cost of the entire bill?

NYS Next Generation Learning Standard	Examples
6.EE.8 Write an inequality of the form $x > c, x \ge c, x \le c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem.	Many real-world situations are represented by inequalities. Students write inequalities to represent real world and mathematical situations. Students use the number line to represent inequalities from various contextual and mathematical situations.

Recognize that inequalities of these forms have infinitely many solutions; represent solutions of such inequalities on a number line. Example 1: The class must raise at least \$100 to go on the field trip. They have collected \$20. Write an inequality to represent the amount of money, m, the class still needs to raise. Represent this inequality on a number line.

Solution: The inequality $m \ge \$80$ represents this situation. Students recognize that possible values can include too many decimal values to name. Therefore, the values are represented on a number line by shading.



A number line diagram is drawn with an open circle when an inequality contains a < or > symbol to show solutions that are less than or greater than the number but not equal to the number. The circle is shaded, as in the example above, when the number is to be included. Students recognize that possible values can include fractions and decimals, which are represented on the number line by shading. Shading is extended through the arrow on a number line to show that an inequality has an infinite number of solutions.

Example 2: Graph $x \le 4$.

Example 3: The Flores family spent less than \$200.00 last month on groceries. Write an inequality to represent this amount and graph this inequality on a number line.

Solution: 200 > x, where x is the amount spent on groceries.

Questions for 6.EE.8

- 1. Write an inequality to represent the following statement: "Brian has a grade in math of at least 70%."
- 2. Which number line correctly shows the solution for 8x < 32?

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A. (-6 - 5 - 4 - 3 - 2 - 1 \ 0 \ 1 \ 2 \ 3 \ 4 \ 5 \ 6

B. (-6 - 5 - 4 - 3 - 2 - 1 \ 0 \ 1 \ 2 \ 3 \ 4 \ 5 \ 6)

C. (-6 - 5 - 4 - 3 - 2 - 1 \ 0 \ 1 \ 2 \ 3 \ 4 \ 5 \ 6)

D. (-6 - 5 - 4 - 3 - 2 - 1 \ 0 \ 1 \ 2 \ 3 \ 4 \ 5 \ 6)
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3. Josie is working for the summer. She earns \$240 per week and plans on working for 5 weeks. If she makes more than \$1,250 she will lose some of her financial aid for college. Write an inequality to model how much she can make in order to keep all of her financial aid.

4. Rachel had fewer than 12 pairs of earrings. Write an inequality to represent the number of pairs of earrings she had and graph the solution on the number line below.

5. Gina had to earn at least \$52 to go on her field trip for school. Write an inequality to represent her situation and graph the solution on the number line below. **Answer Key for Questions for 6.EE.8** 1. $x \ge \overline{70\%}$ 2. D. -6-5-4-3-2-10123456 3. $240x \le 1,250$ 4. x < 125. $x \ge 52$ 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 Tasks for 6.EE.8 *Teacher Note: Please read the Commentary section for the Illustrative Math Tasks. Some tasks will be instructional requiring more teacher modeling and direction. Others will provide the opportunity for students to demonstrate their knowledge of a concept. Illustrative Math Task: Height Requirements https://tasks.illustrativemathematics.org/content-standards/6/EE/B/8/tasks/2010 Illustrative Math Task: Fishing Adventures 1 https://tasks.illustrativemathematics.org/content-standards/6/EE/B/8/tasks/642 Extra Questions for Warm-ups and Homework for 6.EE.8 **1.** Explain the meaning of the following inequality symbols: < and \leq **2.** Fill in the blank with the correct inequality symbol: 9 4; 3 2+1; 7 8; 15 18 **3.** Solve the following inequality $x + 12 \ge 25$ **4.** What is the solution set to the inequality? x + 12 < 285. What is the solution to the inequality x - 14 < 17? **NYS Next Generation** Examples **Learning Standard** 6.EE.9 The purpose of this standard is for students to understand the relationship between two variables, which begins with the distinction between dependent and Use variables to represent independent variables. The independent variable is the variable that can be two quantities in a real-world changed; the dependent variable is the variable that is affected by the change in problem that change in the independent variable. Students recognize that the independent variable is relationship to one another. graphed on the x-axis; the dependent variable is graphed on the y-axis. Given a verbal context and an equation, identify the Students recognize that not all data should be graphed with a line. Data that is dependent variable, in terms discrete would be graphed with coordinates only. Discrete data is data that would

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of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent	not be represented with fractional parts such as people, tents, records, etc. For example, a graph illustrating the cost per person would be graphed with points since part of a person would not be considered. A line is drawn when both variables could be represented with fractional parts.	
variables using graphs and tables, and relate these to the equation.	Students are expected to recognize and explain the impact on the dependent variable when the independent variable changes (As the x variable increases, how does the y-variable change?) Relationships should be proportional with the	
e.g., In a problem involving motion at constant speed, list and graph ordered pairs of distances and times.	line passing through the origin. Additionally, students should be able to write an equation from a word problem and understand how the coefficient of the dependent variable is related to the graph and /or a table of values.	
e.g., Given the equation d = 65t to represent the relationship between distance and time, identify t as the independent variable and d as	Students can use many forms to represent relationships between quantities. Multiple representations include describing the relationship using language, a table, an equation, or a graph. Translating between multiple representations helps students understand that each form represents the same relationship and provides a different perspective.	
the dependent variable.	Example 1:	
1	What is the relationship between the two variables? Write an expression that illustrates the relationship.	
	x 1 2 3 4 y 2.5 5 7.5 10	
	Solution:	

y = 2.5x

Questions for 6.EE.9

1. There are 12 eggs in each dozen. The variable "e" represents the number of eggs and the variable "d" represents the dozens of eggs. Janice is buying 4 dozen eggs, which is the independent variable and which is the dependent variable?

2. The function for the function table below is to subtract 4. Fill in the missing values in the table.

Input (x)	Output (y)
6	
	5
12	
	12
21	

3. Mary Marshall offers babysitting services in her neighborhood. She charges \$6.50 per hour. Write an equation that can be used to determine how much money she will earn when babysitting.

Answer Key for Questions for 6.EE.9

The "d" is the independent variable and the "e" is the dependent variable. The number of eggs depends on the number of dozens of eggs that she buys.
 2.

4

Input (x)	Output (y)
6	10
1	5
12	16
8	12
21	25

3. m = 6.50h

Tasks for 6.EE.9

*Teacher Note: Please read the Commentary section for the Illustrative Math Tasks. Some tasks will be instructional requiring more teacher modeling and direction. Others will provide the opportunity for students to demonstrate their knowledge of a concept.

Illustrative Math Task: Chocolate Bar Sales

https://tasks.illustrativemathematics.org/content-standards/6/EE/C/9/tasks/806

Extra Questions for Warm-ups and Homework for 6.EE.9

1. Andrew has money to spend at the mall. He wants to spend all of his money in the music store. He plans to buy as many CDs as he can. Each CD costs \$14. Create a table to model the cost of the number of CDs from 1-5 CDs.

2. Explain the difference between the independent and the dependent variable.

Works Referenced in the Development of the Module		
Common Core State Standards Initiative	Ohio Department of Education	
www.corestandards.org	http://education.ohio.gov/Topics/Learning-in-	
	Ohio/Mathematics	
Illustrative Mathematics Project	North Carolina Math Tools for Teachers	
https://illustrativemathematics.org/	https://tools4ncteachers.com/	
Mathematics Assessment Project	Smarter Balanced Assessment Consortium	
https://www.map.mathshell.org/index.php	https://smarterbalanced.org/	
PARCC	Utah Education Network	
http://parcconline.org/	https://www.uen.org/core/math/	
NOYCE Foundation:		
https://www.insidemathematics.org/		