Unit One – Algeb	praic Thinking (Part C – Rational Numbers)
6.1 Integers	*I can use positive and negative numbers to show amounts in
_	real-world situations and explain what the number 0 means in
	those situations.
	*I can recognize opposite signs of numbers as indicating
	places on opposite sides of 0 on the number line.

Discuss with your group – how do you THINK you would represent 40 degrees below 0 as an integer?

What will I learn?

Positive numbers are greater than 0. They can be written with or without a positive sign (+).

Negative numbers are less than 0. They are written with a negative sign (-).

Two numbers that are the same distance from 0 on a number line, but on opposite sides of 0, are called opposites. The opposite of 0 is 0.

Integers are the set of whole numbers and their opposites.



Write a positive or negative integer to represent each situation.

A contestant gains 250 points on a game show.	+250 or 250
Gasoline freezes at 40 degrees below zero.	- 40
A student loses 5 points for being late to class.	- 5
A hiker climbs 900 feet up a mountain.	+ 900



Write a positive or negative integer to represent each situation.

1) You withdrew \$42 from an account.	2) An airplane climbs to 37,500 feet.
- 42	+ 37,500

Unit One – Algebraic Thinking (Part C – Rational Numbers)		
6.2 Ordering	*I can order positive and negative numbers.	
Integers		

Discuss with your group – which is greater? - 5 or - 6

On a horizontal number line, <u>numbers to the left are less than numbers to the right</u>. Numbers to the right are greater than numbers to the left.





Complete the statement using < or >.

1.	2.	3.
3 _>0	- 7 2	2 4

Error Analysis: Describe and correct the error in comparing the negative numbers.



-1 is farther right on number line than -3, so -1 is larger than -3 -3 < -1

Unit One – Algebraic Thinking (Part C – Rational Numbers)				
6.3 Fractions &	*I can understand that a rational number is a point on a			
Decimals on	number line.			
Number Line				

Discuss with your group – how do you THINK you would compare? Which is greater, -0.58 and – $\frac{1}{2}$.



Find a fraction or a mixed number that is between the two numbers.



Discuss with your group – how do you THINK you would define absolute value?



Compare using <, >, or =. Find the absolute value first!!

1)	2)
-4 _>2	-5 _< _5
4	5
3)	4) Find the common denominator
9.2 _<_ 10 9.2 10.0	$\begin{vmatrix} \frac{2}{3} \\ \frac{4}{2} \end{vmatrix} = \begin{vmatrix} -\frac{2}{6} \\ -\frac{2}{6} \end{vmatrix}$
	$\overline{6}$ $\overline{6}$

Order the values from least to greatest. Find the absolute value first!!

5) 1 4	6)	30	22	18
5,0, -1 , 4 ,-2	-18,	30 ,-19,	-22 , -2	20 , -18
-2, 0, -1 , 4 , 5	-20,	-19, -18,	-18 , -	22 , 30

Unit One – Algebraic Thinking (Part C – Rational Numbers)6.5 Coordinate*I can graph in all four quadrants of the coordinate plane to
help me solve real-world and mathematical problems.

Discuss with your group – how do you THINK you would plot (-3, 2)?

A coordinate plane is formed by the intersection of a horizontal number line and a vertical number line. The number lines intersect at the origin and separate the coordinate plane into four regions called quadrants.



Plot the ordered pair in the coordinate plane.

Point	Coordinates	Quadrant
Α	(-4, 3)	Ξ
В	(2, -3)	IV
С	(-5 <i>,</i> -2)	Ξ

An ordered pair is used to locate a point in a coordinate plane.



If a blizzard hits a town at noon, display the data from the table in a line graph.

	-			•			
Hours after noon, x	0	1	2	3	4	5	6
Temperature, y	6°F	7°F	5°F	1°F	1°F	0°F	-3°F



Make three observations from the graph. possible answers:

*In this time period, the temperature high occurred at 1:00 PM.

*The temperature dropped from 1:00 PM to 6:00 PM.

*The temperature stayed constant from 3:00 - 4:00 PM.

Discuss with your group – how do you THINK you would reflect (2,5) in the x-axis?



What will I learn?

*To reflect a point in the x-axis, use the same x-coordinate and take the opposite of the ycoordinate.

*To reflect a point in the y-axis, use the same y-coordinate and take the opposite of the xcoordinate.

Reflecting Points in One Axis:

a. Reflect (-2, 4) in the x-axis. Plot (-2, 4).

> To reflect (-2, 4) in the *x*-axis, use the same *x*-coordinate, -2, and take the opposite of the *y*-coordinate. The opposite of 4 is -4.

So, the reflection of (-2, 4) in the x-axis is (-2, -4).

b. Reflect (-3, -1) in the y-axis.

Plot (-3, -1).

To reflect (-3, -1) in the *y*-axis, use the same *y*-coordinate, -1, and take the opposite of the *x*-coordinate. The opposite of -3 is 3.

So, the reflection of (-3, -1) in the y-axis is (3, -1).

		_			
(-2, 4)	1	y			
	1 4				
+++	- 3		+		-
+++	-2	$ \rightarrow $	_		
	Γ*Ι				
4-3-2	- 0	_			-
	0	1	2	34	ж
	0		2	34	x
	-2		2	34	x
	-2		-	3 4	*
(-2, -4)	-2 -3		2	3 4	X
(-2, -4)	-2		2	3 4	x

	1	У
	3	
+++	2	
++++	1	
4-3-2	0	1234x
3, -1)		(3, -1)
	Ē.	
	- 3.4	
	$[-3]{4}$	

Reflecting points in Both Axes:

Reflect (2, 1) in the x-axis followed by the y-axis.

Step1: First, plot (2, 1).

Step 2: Next, reflect (2, 1) in the x-axis. Use the same x-coordinate, 2, and take the opposite of the y-coordinate. The opposite of 1 is -1.

The point (2, 1) reflected in the *x*-axis is (2, -1).

Step 3: Finally, reflect (2, -1) in the y-axis. Use the same y-coordinate, -1, and take the opposite of the x-coordinate. The opposite of 2 is -2.

The point (2, -1) reflected in the *y*-axis is (-2, -1).

	3	y .
	2	(2, 1)
	1,	
-4-3-2	0	1 2 3 4 x
	-2	(2, -1)
	-3	

	3 2 1	y (2, 1)
-4-3-2	0	1 2 3 4 x (2, -1)
	-3	

<u> </u>	
7.5 Writing and	*I can write an inequality which has many solutions and
Graphing	represent these solutions on a number line.
Inequalities	

Discuss with your group – how do you THINK you would represent ... "Your friend is more than 6 minutes late."

Read each statement. Circle each number that makes the statement true.



An *inequality* is a mathematical sentence that compares expressions. It contains the symbols $<, >, \leq, \text{ or } \geq$. To write an inequality, look for **Inequality Symbols** the following phrases to determine where to Symbol < > s ≥ is less is less than or is greater than place the inequality symbol. is greater

Key

Phrases

Write each word sentence as an inequality.

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Write the word sentence as an inequality.

a. A number c is less than -4.

A number c is less than -4.

- с -4<
- An inequality is c < −4.</p>
- b. A number k plus 5 is greater than or equal to 8.
 - A number k plus 5 is greater than or equal to 8.
 - k + 5 \geq An inequality is k + 5 ≥ 8.
- c. Four times a number q is at most 16. Four times a number q is at most 16. 4q16

1. A number n is greater than 1.

than

is fewer

than

n > 1

2. Twice a number p is fewer than 7.

2p < 7

3. A number w minus 3 is less than or equal to 10.

than

is more

than

or equal to

is no less than

is at least

equal to

is at most

is no more than

w - 3 ≤ 10

4. A number z divided by 2 is at least -6.

z/2 ≥ -6

An inequality is 4q ≤ 16.

Unit One – Algebraic Thinking (Part C – Rational Numbers)			
7.6 Solving	*I can solve an addition or subtraction inequality.		
Inequalities			
(+ or -)			

Discuss with your group – how do you THINK you would solve? m + 12 > 20

Solve inequalities.

- Replace the inequality sign with an equal sign, and solve the equation using inverse operation.
- Replace the equal sign with the original inequality symbol, and graph this new inequality.



Discuss with your group – how do you THINK you would solve? **30m < 145**

