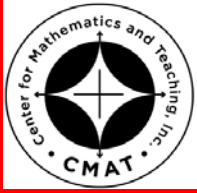


Name _____

Period _____

Date _____



MathLinks

7-10

STUDENT PACKET

**MATHLINKS: GRADE 7
STUDENT PACKET 10
INEQUALITIES**

10.1	Linear Inequalities <ul style="list-style-type: none">• Write expressions, equations, and inequalities.• Graph solutions to inequalities.• Determine whether equations and inequalities are true or false.	1
10.2	Solving Linear Inequalities <ul style="list-style-type: none">• Solve linear equations and inequalities in one variable and graph their solutions.	8
10.3	Inequality Problems <ul style="list-style-type: none">• Change verbal statements that involve inequalities to symbolic statements.• Use inequalities to solve problems.• Graph solutions to inequalities.	13
10.4	Skill Builders, Vocabulary, and Review	17

WORD BANK

Word or Phrase	Definition or Description	Example or Picture
boundary point of a solution set		
equation		
greater than		
inequality		
is equal to		
is greater than		
is less than		
less than		

LINEAR INEQUALITIES

Summary

We will write linear inequalities in one variable and graph their solutions.

Goals

- Write expressions, equations, and inequalities.
- Graph solutions to inequalities.
- Determine whether equations and inequalities are true or false.

Warmup

Here are five mathematical symbols: = < > ≤ ≥

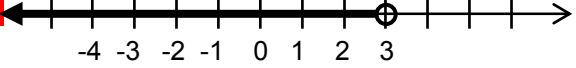
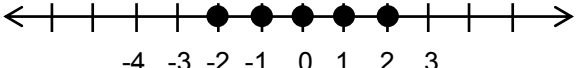
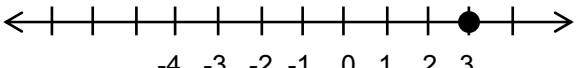
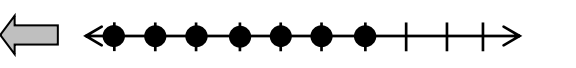
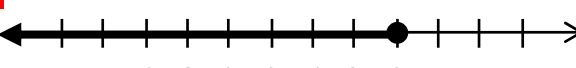
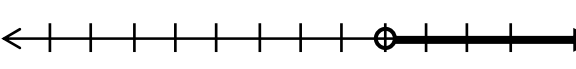
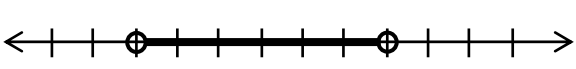
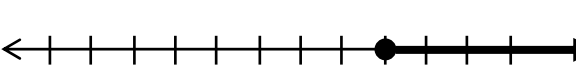
Select two different symbols to make each statement true.

For example, it is true that $6 > 4$, and it is also true that $6 \geq 4$.

	It is true that...	...and it is also true that...
1.	$\frac{3}{4}$ <input style="width: 30px; height: 20px;" type="text"/> 0.75	$\frac{3}{4}$ <input style="width: 30px; height: 20px;" type="text"/> 0.75
2.	-4 <input style="width: 30px; height: 20px;" type="text"/> -6	-4 <input style="width: 30px; height: 20px;" type="text"/> -6
3.	0.52 <input style="width: 30px; height: 20px;" type="text"/> 0.206	0.52 <input style="width: 30px; height: 20px;" type="text"/> 0.206
4.	$-4(-6)$ <input style="width: 30px; height: 20px;" type="text"/> $-3(-8)$	$-4(-6)$ <input style="width: 30px; height: 20px;" type="text"/> $-3(-8)$
5.	$5 - 7$ <input style="width: 30px; height: 20px;" type="text"/> $-2 + (-3)$	$5 - 7$ <input style="width: 30px; height: 20px;" type="text"/> $-2 + (-3)$
6.	$\frac{5 - 7}{8}$ <input style="width: 30px; height: 20px;" type="text"/> $\frac{-4(3 + (-1))}{-2}$	$\frac{5 - 3}{8}$ <input style="width: 30px; height: 20px;" type="text"/> $\frac{-4(3 + (-1))}{-2}$

STATEMENTS AND GRAPHS

Match each statement with the graph of its solutions.

1. $x = 3$	A. 
2. $x > 3$	B. 
3. $x < 3$	C. 
4. $x \geq 3$	D. 
5. $x \leq 3$	E. 
6. $-3 < x < 3$	F. 
7. $n < 3$ (n is an integer)	G. 
8. $-3 < n < 3$ (n is an integer)	H. 

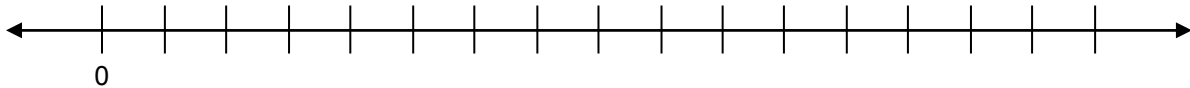
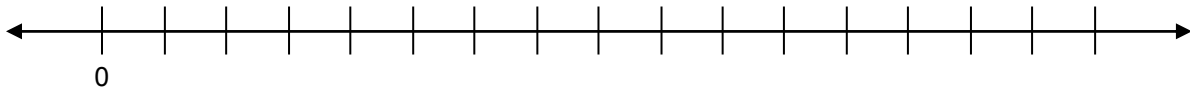
9. Describe the difference between the symbols ● and ○ when graphing on a number line.

EXPLORING INEQUALITIES

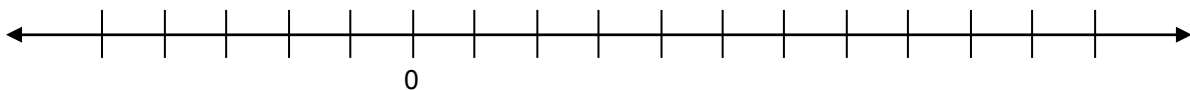
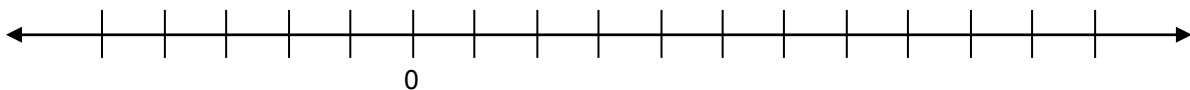
1. Complete the table below. For the last column, write a new inequality that reflects the change. Be sure that your new inequality is in fact a true statement.

Begin each operation with this inequality...	...then do this to both sides...	Steps		New inequality (make sure this is true)
		Left	Right	
$4 < 10$	Add 5	$4 + \underline{\quad}$	$10 + \underline{\quad}$	$9 < 15$
	Add -5			
	Subtract 3			
	Subtract -3	$4 - (\underline{\quad})$		
	Multiply by 8			
	Multiply by -8	$4(\underline{\quad})$		
	Divide by 2			
	Divide by -2	$4 \div \underline{\quad}$		

2. In the table above, circle every result where the inequality changed direction.
3. On the first number line below, graph the numbers 4 and 10. Below it, graph the result of subtracting -3 from 4 and -3 from 10. Draw arrows from each original point to its corresponding new point.



4. On the first number line below, graph the numbers 4 and 10. Below it, graph the result of dividing 4 by -2 and 10 by -2. Draw arrows from each original point to its corresponding new point.



5. When did the direction of the inequality symbol change?

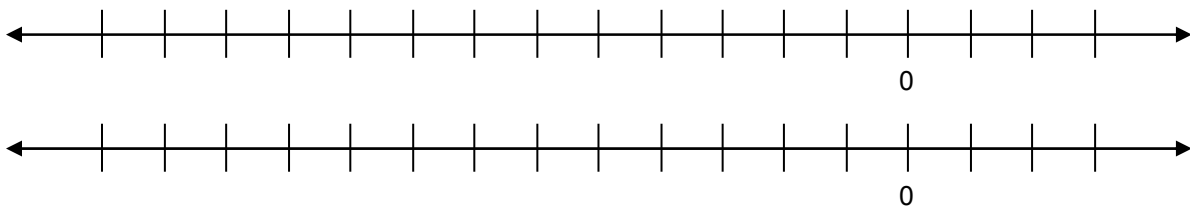
EXPLORING INEQUALITIES (Continued)

6. Complete the table below. For the last column, write a new inequality that reflects the change. Be sure that your new inequality is in fact a true statement.

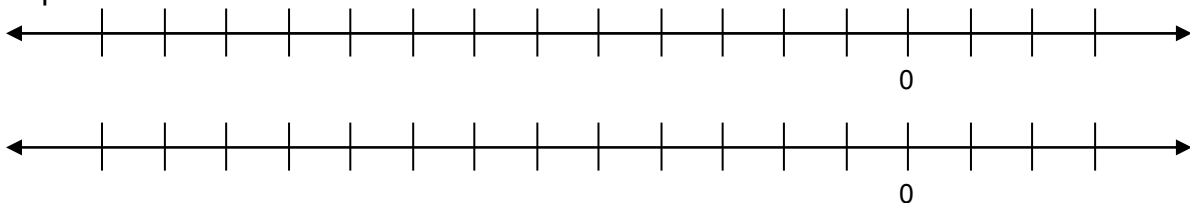
Begin each operation with this inequality...	...then do this to both sides...	Steps		New inequality (make sure this is true)
		Left	Right	
$-6 > -9$	Add 5	$-6 + \underline{\quad}$	$-9 + \underline{\quad}$	
	Add -5			
	Subtract 7			
	Subtract -7			
	Multiply by 2			
	Multiply by -2			
	Divide by 3			
	Divide by -3			

7. In the table above, circle every result where the inequality changed direction.

8. On the first number line below, graph the numbers -6 and -9. Below it, graph the results of dividing -6 by 3 and -9 by 3. Draw arrows from each original point to its corresponding new point.



9. On the first number line below, graph the numbers -6 and -9. Below it, graph the results of dividing -6 by -3 and -9 by -3. Draw arrows from each original point to its corresponding new point.



10. When did the direction of the inequality symbol change?

WORDS, SYMBOLS, AND GRAPHS

Complete the table below.

	Words	Symbols	Graph the solutions	Test a number
Ex.	x is greater than or equal to 4	$x \geq 4$		Is $5 \geq 4$? Yes
1.	x is equal to 4			
2.	x is an integer that is greater than 2			
3.	2 is greater than x	$2 > x$ or $x \square 2$		
4.	the opposite of x is greater than 2	$-x > 2$ $(-1)(-x) \square (-1)(2)$ _____ \square _____		
5.	x is any value between -2 and 4 (inclusive)	_____ \square _____ \square _____		
6.	x is any value between -2 and 4 (exclusive)	_____ \square _____ \square _____		
7.	The opposite of x is less than or equal to 5			

WORDS, SYMBOLS, AND GRAPHS (Continued)

Complete the table below.

	Words	Symbols	Graph the solutions	Test a number
8.	4 is equal to the opposite of x		\longleftrightarrow	
9.	x is an integer less than or equal to 5		\longleftrightarrow	
10.	5 is less than or equal to n . n is an integer		\longleftrightarrow	
11.	x is any value between -5 and -1 (inclusive)		\longleftrightarrow	
12.	x is any value between 0 and -3 (exclusive)		\longleftrightarrow	
13.	The opposite of x is greater than or equal to -3		\longleftrightarrow	
14.	-1 is greater than x		\longleftrightarrow	
15.	2 is greater than the opposite of x		\longleftrightarrow	

TRUE OR FALSE?

Test each statement by substituting numbers into the equation or inequality. Then make a conjecture as to whether the statement is true or false. Use numerical examples to support a conjecture that a statement is true. Only one counterexample is needed to disprove a statement. (The symbol for “not equal to” is \neq .)

Statement	Supporting examples (if any)	Counterexamples (if any)	Conjecture: True or False?
1. If $a = b$, then $b = a$.			
2. If $a \geq b$, then $b \geq a$.			
3. If $a > b$, then $-a > -b$.			
4. If $a = b$ and $b = c$, then $a = c$.			
5. If $a > b$ and $b > c$, then $a > c$.			
6. If $a \neq b$, and $b \neq c$, then $a \neq c$.			

7. Which statements above are false, even though they have supporting examples?

SOLVING LINEAR INEQUALITIES

Summary

We will solve linear inequalities in one variable and graph their solutions.

Goals

- Solve linear equations and inequalities in one variable and graph their solutions.

Warmup

Solve each equation for x . Check the solution in the original equation.

1. $3x - 5 = -2$

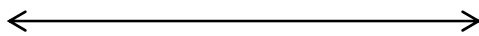
Check:

2. $-2(x - 4) = -4$

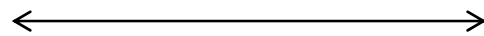
Check:

Solve each inequality and graph the solutions.

3. $-n > 3$ and n is an integer



4. $-5 \leq -x$



5. What is the difference between an equation and an inequality?

SOLVING INEQUALITIES

Solve each inequality. Graph the solutions. Use substitution to check the boundary point and one other point.

1. $-2x + 1 \leq 5$

Graph:

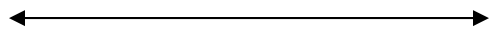


Check the boundary point ($x = \underline{\quad}$).

Test another point ($x = \underline{\quad}$).

2. $-3 \geq x + 6$

Graph:

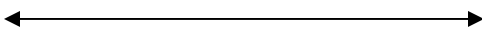


Check the boundary point ($x = \underline{\quad}$).

Test another point ($x = \underline{\quad}$).

3. $\frac{3}{4}(x - 2) > -1\frac{1}{2}$

Graph:

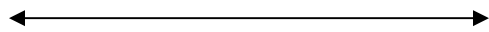


Check the boundary point ($x = \underline{\quad}$).

Test another point ($x = \underline{\quad}$).

4. $0.6 > 0.2 + x + x$

Graph:



Check the boundary point ($x = \underline{\quad}$).

Test another point ($x = \underline{\quad}$).

SOLVING INEQUALITIES (Continued)

Solve each inequality. Graph the solutions. Use substitution to check the boundary point and one other point.

5. $-\left(x - \frac{1}{5}\right) < -3\frac{3}{10}$

Graph:

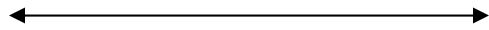


Check the boundary point ($x = \underline{\quad}$).

Test another point ($x = \underline{\quad}$).

6. $-x < -3x - 5$

Graph:

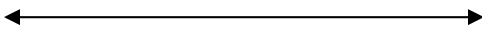


Check the boundary point ($x = \underline{\quad}$).

Test another point ($x = \underline{\quad}$).

7. $-4.5 \leq -x - 5x - 0.9$

Graph:

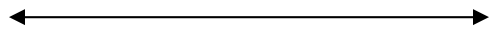


Check the boundary point ($x = \underline{\quad}$).

Test another point ($x = \underline{\quad}$).

8. $x + 3(x - 1) \geq 2$

Graph:



Check the boundary point ($x = \underline{\quad}$).

Test another point ($x = \underline{\quad}$).

SOLVE IT!

Roll one number cube three times. Create an equation or inequality using the table below.

Example: If roll 1 is 4, roll 2 is 3, and roll 3 is 5, then the table gives the inequality $2(x - 1) < 2$.

Solve, graph, and check the solutions.

Number on cube	Roll 1	Roll 2	Roll 3
1	$2x + 4$	\leq	-6
2	$-2x$	$=$	-4
3	$\frac{x}{4}$	$<$	-2
4	$2(x - 1)$	$>$	0
5	$-x + 5$	\geq	2
6	$-5 + x$	$=$	4

Use these templates to record your equations or inequalities and the graphs of their solutions.

<p>1.</p> <p>Graph:</p> <div style="text-align: center; margin: 10px 0;"> </div> <p>Check the boundary point ($x = \underline{\quad}$).</p> <p>Test another point ($x = \underline{\quad}$).</p>	<p>2.</p> <p>Graph:</p> <div style="text-align: center; margin: 10px 0;"> </div> <p>Check the boundary point ($x = \underline{\quad}$).</p> <p>Test another point ($x = \underline{\quad}$).</p>
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SOLVE IT! (Continued)

Use number cubes to create equations or inequalities.

3.

Graph:

Check the boundary point ($x = \underline{\quad}$).Test another point ($x = \underline{\quad}$).

4.

Graph:

Check the boundary point ($x = \underline{\quad}$).Test another point ($x = \underline{\quad}$).

5. How does drawing the graph of an inequality help you to check the accuracy of the solution?

INEQUALITY PROBLEMS

Summary

We will solve problems that involve inequalities.

Goals

- Change verbal statements that involve inequalities to symbolic statements.
- Use inequalities to solve problems.
- Graph solutions to inequalities.

Warmup

For each verbal statement, choose an appropriate symbolic representation from the given choices. Some choices may not be used at all, and some may be used more than once.

Words		Symbols	Choices
1. Matt has less than \$25.	_____	$x \square 25$	A. $x = 25$
2. Derek has exactly \$25.	_____	$x \square 25$	B. $x \approx 25$
3. Shannon has \$25 or more.	_____	$x \square 25$	C. $x > 25$
4. Andrew has no more than \$25.	_____	$x \square 25$	D. $x \geq 25$
5. Ron has at least \$25.	_____	$x \square 25$	E. $x < 25$
6. Steve has \$25 at the most.	_____	$x \square 25$	F. $x \leq 25$
7. Lamar has approximately \$25.	_____	$x \square 25$	G. None of the above

8. For each symbolic statement above, what does x represent?

9. Graph: $x > 2.5$, x is an integer.

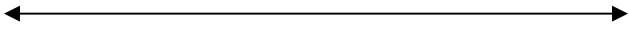


THE BICYCLE SHOP

At the bicycle shop, you are paid \$50 per week plus \$5 for each bike sold.

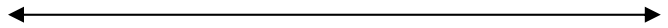
1. How much will you earn if you work for one week, but do not sell any bikes?
2. How much will you earn if you work for one week and sell 4 bikes?
3. If you sold 12 bikes in one week, would you make at least \$100? _____
4. Write an inequality that represents the situation in problem 3, and justify your answer.
5. What's the least number of bikes you would have to sell in a week in order to earn more than \$150?

This week you want your pay to be at least \$200.

6. Write an inequality that describes the number of bikes (b) you need to sell.
7. Solve the inequality and graph the solution. 
8. Explain your answers to problems 6 and 7 in the context of the problem.

RAISING MONEY FOR SCHOOL ACTIVITIES

1. The high school glee club is organizing the spring dance.
 - a. If they charge \$23 per person for the dance and 30 people attend, how much will they collect?
 - b. If they charge \$23 per person for the dance and p people attend, how much will they collect?
 - c. The cost of the rental of the hall for the dance is \$4000. How many people must attend the dance to cover the rental fee? Write an inequality, solve it, and graph the solutions. Explain your answer in the context of the problem.



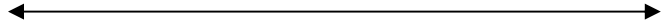
2. The high school basketball team needs to raise at least \$2,700 to travel to a tournament. A booster donates \$250 and the team is selling magazines at \$27 per subscription to make the rest. How many subscriptions must they sell? Write an inequality, solve it, and graph the solutions. Explain your answer in the context of the problem.



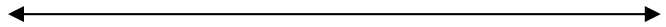
PRACTICE: KATY'S SUMMER

For each problem below, write an inequality, solve it, and graph the solutions. Then explain each answer in the context of the problem.

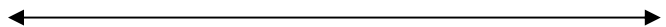
1. Katy has \$460 in a checking account at the beginning of summer. She wants to have at least \$200 in her account by the end of summer. She withdraws \$25 each week for her expenses. How many weeks can Katy withdraw this amount of money from this account?



2. A taxi service charges a \$2.25 flat rate in addition to \$0.64 per mile. Katy wants to spend no more than \$10 on a ride. How many miles can Katy travel without exceeding her limit?



3. Katy goes to the Fun Golf Arcade with her friends. They play golf, have lunch, and then play some video games. A round of golf is \$6.20. Lunch is \$5.60. Video games are \$0.50 each. If Katy wants to spend no more than \$20.00, how many video games can she play?



SKILL BUILDERS, VOCABULARY, AND REVIEW

SKILL BUILDER 1

Write $<$, $=$, or $>$ to make each statement true.

1. $\frac{-18}{9} \underline{\hspace{1cm}} \frac{18}{-9}$	2. $\frac{-24}{-8} \underline{\hspace{1cm}} \frac{33}{-11}$	3. $\frac{3-6}{-1} \underline{\hspace{1cm}} \frac{5+(-3)}{-2}$
4. $(-6+4)(2) \underline{\hspace{1cm}} -4(2)$	5. $6-2(-1) \underline{\hspace{1cm}} 4(-2)$	6. $3(1-10) \underline{\hspace{1cm}} (-9)(-3)$

Compute.

7. $(-3.4)(2) + 5.18$	8. $12.6 - 4.8(3.21)$
9. $\frac{18.4}{0.4} - 15.8$	10. $2\frac{3}{5} + \left(\frac{2}{7}\right)\left(-3\frac{1}{2}\right)$
11. $4\left(-2\frac{5}{8}\right) - 5$	12. $2\frac{1}{2}\left(\frac{1}{4} - 1\frac{1}{8}\right)$

SKILL BUILDER 2

Complete the table.

	Percent	Decimal	Fraction
1.	134%		
2.		0.08	
3.	0.9%		
4.			$\frac{7}{8}$
5.		12.5	

6. Carter took an English test out of 30 points and missed 5 points. Quinlynn took an English test out of 60 points and got 52 points correct. Who received a higher percentage on their respective test? Explain.

Compute.

7. 65% of 15	8. 130% of 64	9. 24% of 180
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10. The left side of a balanced scale has 32 pounds of potatoes plus a bag that is $\frac{5}{8}$ full of potatoes. The right side has 47 pounds of potatoes. Write an equation that describes this situation. Then solve it for the weight of a full bag of potatoes.

Use mental math to find the missing value of the variable to make each equation true.

11. $\frac{5}{8} = \frac{x}{24}$	12. $\frac{-6}{7} = \frac{-12}{x}$	13. $\frac{-4}{x} = \frac{-32}{16}$
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SKILL BUILDER 3

Solve for the unknown. Write MM if you use mental math. Otherwise show all work.

1. $5 + 10b = 65$	2. $68 = 8y + 4$	3. $-3n - 115 = -4$
4. $32 = -8(x + 5)$	5. $\frac{m}{3} + 2 = -4$	6. $-6(p - 8) = 84$
7. $-12 = \frac{-144}{n}$	8. $\frac{3(x + 2)}{5} = 6$	9. $-9 = \frac{(n + 4)}{-10}$

10. The number of girls in a class, g , is unknown. The number of boys in the class is 12.
- Write an expression for the number of students in the class.
 - Write an expression for the number of students in 4 classes if the number of boys and girls in each class are the same as the first class.
 - Write an equation to show that the total number of students in the 4 classes is 100. Then solve the equation.
 - What does the solution to the equation represent?

SKILL BUILDER 4

1. The equation below has been solved incorrectly. Find the mistake, circle it, and rework the solution so it is correct. Check the solution.

Equation/Steps	Circle the error and rework the problem.
$\frac{x}{6} + 3.8 = -10.4$	
$\frac{x}{6} + 3.8 = -10.4$ $- 3.8 \quad - 3.8$	
$6\left(\frac{x}{6}\right) = (6.6)(6)$	
$x = 39.6$	
Check your solution using substitution:	

2. Explain what was done mathematically in each step and check the solution.

	Equation/Steps	State what was done
a.	$44 = -\frac{1}{4}(x + 8)$	a. given equation
b.	$44 = -\frac{1}{4}x - 2$	b.
c.	$+ 2 \quad + 2$	c.
d.	$46 = -\frac{1}{4}x$	d.
e.	$46(-4) = -\frac{1}{4}x(-4)$	e.
f.	$-184 = x$	f.
g.	Check your solution using substitution:	

SKILL BUILDER 5

Simplify.

1. $3n + 5(n - 7) + 3$	2. $4 - 2(x + 9) - 32$	3. $3y - 2y + 5 - y + 9$
------------------------	------------------------	--------------------------

Solve.

4. $4x - 9 = 23$	5. $-17 + 2 = 5(x + 2)$	6. $24 - 3x = 9$
7. $6.8x - 30.8 = 30.4$	8. $3.5(y - 4) = -56$	9. $167.2 = -5.6 + 7.2x$
10. $2\frac{1}{5} + \frac{3}{4}x = 9\frac{1}{10}$	11. $-3\frac{1}{2}x - 4 = -38\frac{1}{8}$	12. $-12\frac{1}{8} = -3x + -9\frac{5}{8}$

13. The longer side of a parallelogram is 8 units more than three times the length of the shorter side. The perimeter is 144 units. What is the length of each side?

SKILL BUILDER 6

Follow the steps to solve each problem.

1. A triangle has a perimeter of 30 units. The second side is 3 times the length of the first side. The third side is $5\frac{1}{2}$ units more than the length of the second side. What is the length of each side?

a. Define the variables.

b. Write an equation and solve.

c. Write the solution in words.

d. Check the solution.

2. The sum of three consecutive even integers is 264. What is each integer?

a. Define the variables.

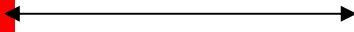
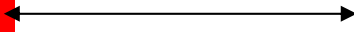
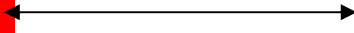
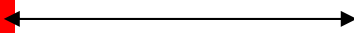


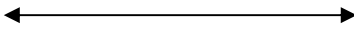
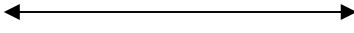
b. Write an equation and solve.

c. Write the solution in words.

d. Check the solution.

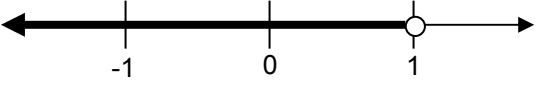
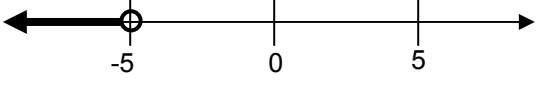
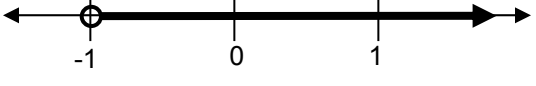
SKILL BUILDER 7

Complete the table.


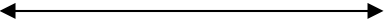
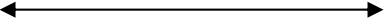
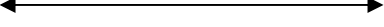
	Words	Write and solve	Graph the solutions	Test a number
1.	x is less than 2			
2.	3 is less than or equal to the opposite of x			
3.	4 is less than or equal to n . n is an integer			
4.		$-x < 3$		
5.				
6.				
7.	x is a value between -2 to 0 (inclusive)			
8.		$-2 < x < 0$		

SKILL BUILDER 8

Match the inequality with the graph of its solutions.

1.	$3x + 9 > 6$	a.	
2.	$-3x - 9 > 6$	b.	
3.	$-3(x - 3) > 6$	c.	

Solve each inequality. Then graph the solutions and check by testing a number.

	Inequality	Graph the solutions	Check the boundary point and test another number.
4.	$6 - x > 3$		
5.	$-5 \leq -x - 9$		
6.	$\frac{2}{3}x + 5 > -5$		
7.	$1.2(x - 4) - 2x < -0.8$		

SKILL BUILDER 9

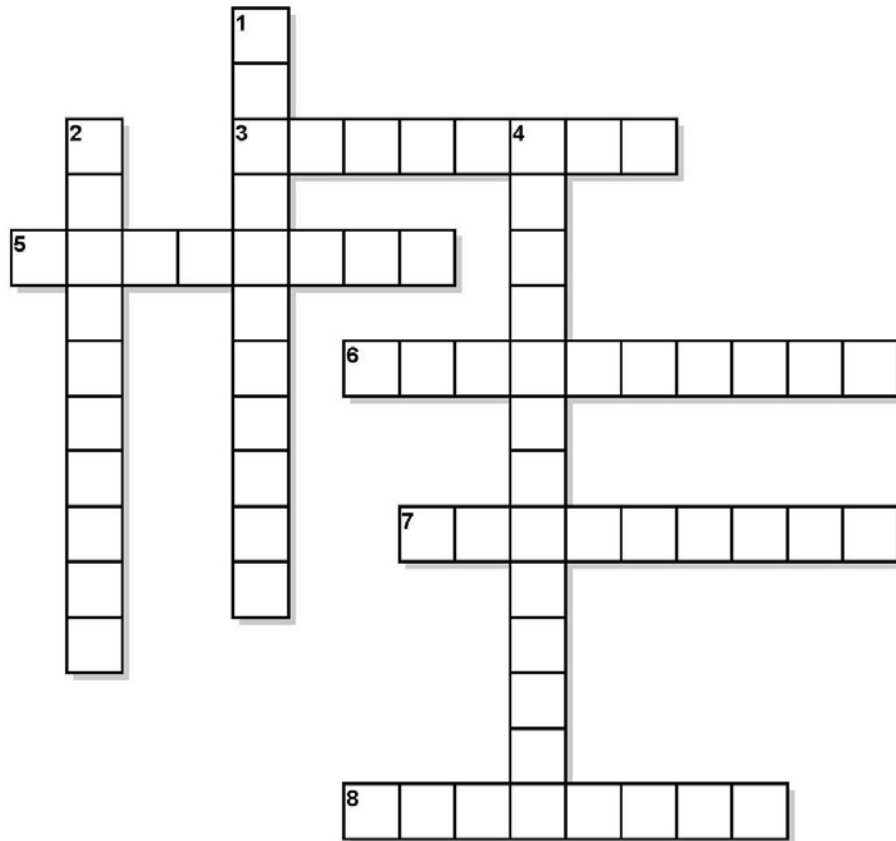
For each problem, translate it into an inequality and solve it. Then check the boundary point and another value.

<p>1. The sum of a number and one more than the number is less than the original number. Find all possible values of the number.</p> <p>a. Write an inequality and solve it:</p> <p>b. Answer in words:</p> <p>c. Check:</p>	<p>2. A number times -3 is less than or equal to two less than the number. Find all possible values of the number.</p> <p>a. Write an inequality and solve it:</p> <p>b. Answer in words:</p> <p>c. Check:</p>
--	---

3. After paying \$5.00 for a salad, Taylor has less than \$27.00 left. How much money did she have before buying the salad? Write an inequality, solve it, and then answer the question in context.

4. Robert makes \$8.50 per hour working at a convenience store. If he gets a bonus of \$25 this week, how many hours must he work to make at least \$165? Write an inequality, solve it, and then answer the question in context.

FOCUS ON VOCABULARY



Across

- 3 A mathematical statement that asserts the equality of two expressions.

- 5 $6 - 5 = 1$ may be read:
5 ____ -4 is equal to 1.

- 6 -2 ____ -1 (3 words)

- 7 $4 + 5$ ____ 9 (3 words)

- 8 There are solutions and non-solutions around this point of a solution set for an inequality.

Down

- 1 $-4 + 7 = 3$ may be read:
7 ____ -4 is equal to 3.

- 2 A mathematical statement that asserts the relative order of two objects.

- 4 6 ____ 2 (3 words)

(For word hints, see the word bank and other vocabulary used in this packet.)
 MathLinks: Grade 7 (Student Packet 10)

SELECTED RESPONSE

Show your work on a separate sheet of paper and select the best answer(s).

1. Choose all the values of x that make $x \geq 5$ true.

- A. $x = -7$ B. $x = \frac{5}{2}$ C. $x = 5$ D. $x = 10$

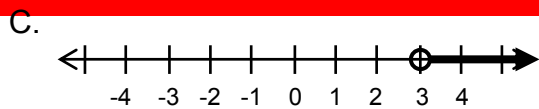
2. Which of the following statements expresses that “the opposite of x is less than 4.”

- A. $-x < 4$ B. $x < -4$ C. $-x \leq 4$ D. None of these.

3. Solve the inequality $-2x + 4 > 12$.

- A. $x > -4$ B. $x < -4$ C. $x < 4$ D. $x > 4$

4. Choose the graph that represents the solutions to $7 > -3x - 2$.

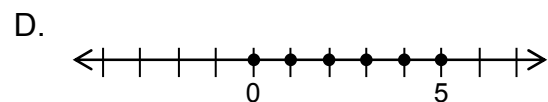
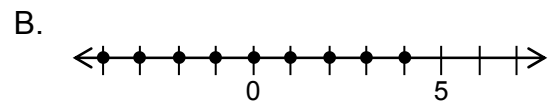
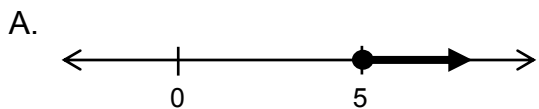


D. None of these

5. Rafael makes \$15 an hour. He needs to make at least \$200 this week. Which of the following inequalities could be used to figure out how many hours, h he needs to work?

- A. $15h > 200$ B. $15h \geq 200$ C. $15h < 200$ D. $15h \leq 200$

6. Gabriel has no more than \$5 in his wallet. Which of the following graphs best represents the number of dollars in his wallet?

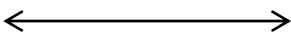
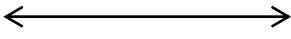
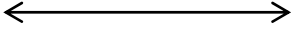


KNOWLEDGE CHECK

Show your work on a separate sheet of paper and write your answers on this page.

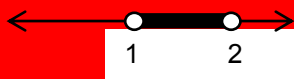
10.1 Linear Inequalities

Complete the table.

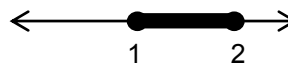
	Words	Symbols	Graph the solution.	Test a number.
1.		$x = -6$		
2.	n is an integer less than or equal to 7			
3.	-2 is less than x			

Use words and symbols to describe the numbers represented in each graph below.

4.



5.



10.2 Solving Linear Inequalities

Solve each of the following and graph the solutions.

6. $5 - x = 9$

7. $5 - x < 9$

8. $5 - x \leq 9$

10.3 Inequality Problems

Solve the following inequalities and graph the solutions.

9. $\frac{1}{2}m + \frac{3}{4} < \frac{7}{8}$

10. $9.5 \geq 1.4d - 3.1$

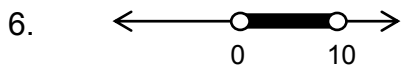
11. $\frac{1}{3}\left(x - \frac{1}{2}\right) > \frac{5}{6}$

HOME-SCHOOL CONNECTION

Here are some problems to review with your young mathematician.

1. Explain how inequalities are different from equations.

Use words to describe the numbers that are represented in each of the following graphs.



7. Marcos needs to make at least \$1,800 a month to cover the cost of his bills. His current job pays him \$20 an hour.

Write an inequality that could help Marcos figure out how many hours, h , he needs to work in a month.

Solve and graph the solutions to the inequality.

Parent (or Guardian) Signature _____

COMMON CORE STATE STANDARDS – MATHEMATICS

STANDARDS FOR MATHEMATICAL CONTENT

6.NS.C*	Apply and extend previous understandings of numbers to the system of rational numbers.¹
6.NS.7a*	Understand ordering and absolute value of rational numbers: Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. <i>For example, interpret $-3 > -7$ as a statement that -3 is located to the right of -7 on a number line oriented from left to right.</i>
6.EE.B*	Reason about and solve one-variable equations and inequalities.¹
6.EE.5*	Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.
6.EE.8*	Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities on number line diagrams.
7.EE.B	Solve real-life and mathematical problems using numerical and algebraic expressions and equations.¹
7.EE.4b	Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities: Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p , q , and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem. <i>For example: As a salesperson, you are paid \$50 per week plus \$3 per sale. This week you want your pay to be at least \$100. Write an inequality for the number of sales you need to make, and describe the solutions.</i>

*Content essential for success in 7th grade

¹ A major cluster for the grade level.

STANDARDS FOR MATHEMATICAL PRACTICE

MP2	Reason abstractly and quantitatively.
MP3	Construct viable arguments and critique the reasoning of others.
MP4	Model with mathematics.
MP6	Attend to precision.
MP8	Look for and make use of repeated reasoning.



9 7 8 1 6 1 4 4 5 0 3 3 7

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