

Name \_\_\_\_\_

Table of Contents

# Chapter 4 Inequalities

Page	Title	Grade
1-2	4.1 Writing and Graphing Inequalities Notes	
3	4.1 Practice A Homework <i>See video at msabadie.weebly.com</i>	
4	4.1 Mini Quiz	
5-6	4.2 Solving Inequalities with Addition and Subtraction Notes	
7	4.2 Practice A Homework <i>See video at msabadie.weebly.com</i>	
8	4.2 Mini Quiz	
9-10	4.3 Solving Inequalities with Multiplication and Division Notes	
11	4.3 Practice A Homework <i>See video at msabadie.weebly.com</i>	
12	4.3 Mini Quiz	
13-14	4.4 Solving Two-Step Inequalities Notes	
15	4.4 Practice A Homework <i>See video at msabadie.weebly.com</i>	
16	1.4 Mini Quiz	
17	Take Home Quiz #1	
18	Take Home Quiz #2	
19-20	Test Review	
	Chapter 4 Test	
	My Current Class Average	

Parent Signature \_\_\_\_\_ Date \_\_\_\_\_

Student Signature \_\_\_\_\_ Date \_\_\_\_\_

Teacher Signature \_\_\_\_\_ Date \_\_\_\_\_

Name \_\_\_\_\_ Class Period \_\_\_\_\_

### Evaluation of Notes

Criteria	10 – Unsatisfactory	20 – Satisfactory	25 – Good	30 – Excellent	Score
Set-up and Neatness	<ul style="list-style-type: none"> <li>No name</li> <li>Paper appears to have been scrunched, put through a blender, or used as a napkin</li> </ul>	<ul style="list-style-type: none"> <li>Name</li> <li>Handwriting is hard to read.</li> </ul>	<ul style="list-style-type: none"> <li>Name and class period</li> <li>Some extra notes added</li> </ul>	<ul style="list-style-type: none"> <li>Name and class period</li> <li>Many extra notes added</li> </ul>	_____
Completion of practice	<ul style="list-style-type: none"> <li>One or more sections are blank</li> </ul>	<ul style="list-style-type: none"> <li>Some practice is not complete</li> <li>Not all work is shown</li> </ul>	<ul style="list-style-type: none"> <li>All practice is complete</li> <li>Some work not shown</li> </ul>	<ul style="list-style-type: none"> <li>All practice complete</li> <li>All work shown</li> </ul>	_____
Text marking	<ul style="list-style-type: none"> <li>None of the notes are highlighted or underlined</li> </ul>	<ul style="list-style-type: none"> <li>One or more sections are missing highlighting or underlining</li> </ul>	<ul style="list-style-type: none"> <li>Each section contains highlighting or underlining.</li> </ul>	<ul style="list-style-type: none"> <li>Every key point is highlighted or underlined and it is done so neatly.</li> </ul>	_____
Completed on time or within one day of being absent? +10 points!					_____
<b>Total Score</b>					_____

### Evaluation of Homework

Criteria	0 – Unsatisfactory	30 – Satisfactory	40 – Good	50 – Excellent	Score
Set-up and Neatness	<ul style="list-style-type: none"> <li>No name</li> <li>Paper appears to have been scrunched, put through a blender, or used as a napkin</li> </ul>	<ul style="list-style-type: none"> <li>Name</li> <li>Handwriting is hard to read.</li> </ul>	<ul style="list-style-type: none"> <li>Name and class period</li> <li>Some answers are boxed</li> </ul>	<ul style="list-style-type: none"> <li>Name and class period</li> <li>All answers are boxed</li> </ul>	_____
Completion of practice	<ul style="list-style-type: none"> <li>The homework is not done or attempted.</li> </ul>	<ul style="list-style-type: none"> <li>Some problems are not done.</li> <li>Not all work is shown</li> </ul>	<ul style="list-style-type: none"> <li>All practice is complete</li> <li>Some work not shown</li> </ul>	<ul style="list-style-type: none"> <li>All practice complete</li> <li>All work shown</li> </ul>	_____
<b>Total Score</b>					_____

**Chapter 4**

Inequalities- a mathematical sentence that compares expressions.

Inequality Symbols				
Symbol	<	>	≤	≥
Key Phrases	● is less than	● is greater than	● is less than or equal to	● is greater than or equal to
	● is fewer than	● is more than	● is at most ● is no more than	● is at least ● is no less than

**MAFS.7.EE.2.4**

Use variables to represent quantities in a real-world or mathematical problem, and construct simple inequalities to solve problems by reasoning about the quantities.

**Essential Question**

What are inequalities and how can you represent solutions of an inequality on a number line?

In this lesson, I am *writing and graphing inequalities* so I can *interpret the solutions of inequalities*.

**4.1 Writing and Graphing Inequalities**

Solution of an inequality- a value or values that make the inequality true.

Solution set- is the set or group of all solutions.

The graph of an inequality shows all the solutions of the inequality on a number line. An open circle is used for less than or greater than symbols which do not include that number. A closed circle is used for less than or equal to and greater than or equal to which do include that number.

**Homework  
4.1 Practice A  
#3-6**

**Write the word sentence as an inequality.**

1. A number  $x$  is at most  $-10$ .    2. Twice a number  $y$  is more than  $-\frac{5}{2}$ .

**Homework  
4.1 Practice A  
#7-10 and  
#14-16**

**Tell whether  $-5$  is a solution of the inequality.**

3.  $x + 12 > 7$                       4.  $1 - 2p \leq -9$                       5.  $n \div 2.5 \geq -3$

Homework  
4.1 Practice A  
#11-12

**Graph the inequality on a number line.**

6.  $x < -1$

7.  $z \geq 4$

8.  $s \leq 1.4$

9.  $-\frac{1}{2} < t$

**Tell whether the given value is a solution of the inequality.**

$j + 1 > 10; j = 9$

$-3 \leq \frac{k}{2}; k = -1$

**Write the word sentence as an inequality.**

A number  $n$  is no less than  $-3$ .

A number  $q$  plus 7 is less than 45.

A number  $x$  divided by  $-1$  is at least  $-4$ .

The children in the class are more than 10 years old.

The minimum cost for parking is \$3.

**Write an inequality for the graph.**



## 4.1 Practice A

Write an inequality for the graph. Then, in words, describe all the values of  $x$  that make the inequality true.



Write the word sentence as an inequality.

3. A number  $x$  is at most 3.
4. A number  $y$  added to 2 is greater than 7.
5. A number  $c$  multiplied by 3 is less than  $-12$ .
6. A number  $m$  minus 1.5 is no less than 2.

Tell whether the given value is a solution of the inequality.

7.  $t - 3 \geq 2$ ;  $t = 10$
8.  $6w < -2$ ;  $w = 1$
9.  $p + 1.6 \leq 4$ ;  $p = 5$
10.  $\frac{1}{2}d > -3$ ;  $d = 0$

Graph the inequality on a number line.

11.  $k > 1$
12.  $n \leq -2.5$

13. In order to try out for one of the parts in a play at the local theater, you must be at most 12 years old. Write an inequality that represents this situation.

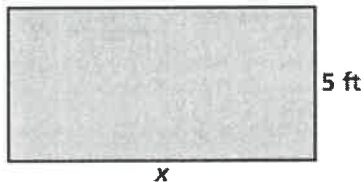
Tell whether the given value is a solution of the inequality.

14.  $3h - 7 < h$ ;  $h = 2$
15.  $q + 8 \geq \frac{q}{4}$ ;  $q = -12$
16. Consider the inequalities  $-2x < 10$  and  $-6 < -2x$ .
  - a. Is  $x = 0$  a solution to both inequalities?
  - b. Is  $x = 4$  a solution to both inequalities?
  - c. Find another value of  $x$  that is a solution to both inequalities.

MAFS.7.EE.2.4	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
<b>Essential Question</b>	How can you use addition or subtraction to solve an inequality? <i>In this lesson, I will use what I know about solving equations and the addition/subtraction properties of equality so I can solve inequalities.</i>
<b>4.2 Solving Inequalities using Addition or Subtraction</b>	<p><u>The Addition Property of Equality</u>: when you add the same number to both sides of an inequality, the inequality remains true.</p> <p><u>The Subtraction Property of Equality</u>: when you subtract the same number to both sides of an inequality, the inequality remains true.</p>
<b>Homework</b> 4.2 Practice A #1-8	<p><b>Solve the inequality. Graph the solution.</b></p> <p>1. <math>y - 6 &gt; -7</math>      2. <math>b - 3.8 \leq 1.7</math>      3. <math>-\frac{1}{2} &gt; z - \frac{1}{4}</math></p>
<b>Homework</b> 4.2 Practice A #1-8	<p><b>Solve the inequality. Graph the solution.</b></p> <p>4. <math>w - 7 \leq -10</math>      5. <math>-7.5 \geq d - 10</math>      6. <math>x + \frac{3}{4} &gt; 1\frac{1}{2}</math></p>

**Write and solve an inequality that represents the value of  $x$ .**

The perimeter is more than 15 feet.



An elevator can carry 800 pounds of weight.

- a.** A student weighing 95 pounds gets on the elevator. Write and solve an inequality to represent the remaining weight that can be added.
- b.** A football player weighing 280 pounds gets on the elevator with the student. Write and solve an inequality representing the remaining weight that can be added.
- 
- c.** Two more football players weighing a total of 470 pounds come to the elevator. Can they get on safely? Explain.

**4.2 Practice A****Solve the inequality. Graph the solution.**

1.  $p - 4 < 2$

2.  $s + 1 \geq -5$

3.  $k - 14 \leq -10$

4.  $2 < n + \frac{3}{2}$

5.  $z - \frac{2}{3} \geq \frac{1}{3}$

6.  $-\frac{1}{2} > -\frac{1}{6} + t$

7.  $d - 2.4 \leq -5.1$

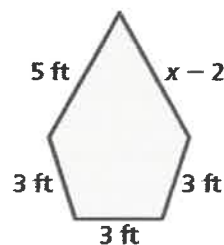
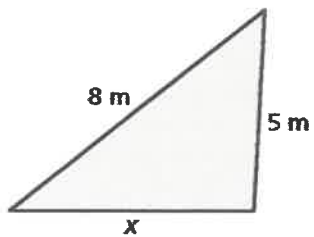
8.  $-4.5 + q > 2.5$

9. To stay within your budget, the area of the house and the garage combined is at most 3000 square feet. The area of the garage is 528 square feet. Write and solve an inequality that represents the area of the house.
10. You have \$137.26 in a bank account. The bank requires you to have at least \$50 in your account or else you are charged a fee. Write and solve an inequality that represents the amount you can write your next check for without being charged a fee.

**Write and solve an inequality that represents  $x$ .**

11. The perimeter is less than 20 meters.

12. The perimeter is at least 18 feet.



13. You need at least 5000 points to earn a gift card from your bank. You currently have 2700 points.
- Write and solve an inequality that represents the number of points you need to earn a gift card.
  - You deposit money in your savings account and earn an additional 400 points. How does this change the inequality?



MAFS.7.EE.2.4	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
<b>Essential Question</b>	How can you use multiplication or division to solve an inequality? In this lesson, <i>I will use what I know about solving equations and the multiplication/division properties of equality so I can solve inequalities.</i>
<b>4.3 Solving Equations using Multiplication and Division</b>	<p><u>The Multiplication Property of Equality</u>: when you multiply the same number to both sides of an inequality, the inequality remains true.</p> <p><u>The Division Property of Equality</u>: when you divide the same number to both sides of an inequality, the inequality remains true.</p> <p>***When you <u>multiply or divide both sides</u> of an inequality by a <u>negative number</u>, the inequality sign must be reversed or <u>flipped</u> for the inequality to remain true.</p>
<b>Homework 4.3 Practice A #1-6</b>	<p><b>Solve the inequality. Graph the solution.</b></p> <p>1. <math>n \div 3 &lt; 1</math>                      2. <math>-0.5 \leq \frac{m}{10}</math>                      3. <math>-3 &gt; \frac{2}{3}p</math></p>
<b>Homework 4.3 Practice A #10-15</b>	<p><b>Solve the inequality. Graph the solution.</b></p> <p>4. <math>4b \geq 2</math>                      5. <math>12k \leq -24</math>                      6. <math>-15 &lt; 2.5q</math></p>

**Solve the inequality. Graph the solution.**

7.  $\frac{x}{-3} > -4$

8.  $0.5 \leq -\frac{y}{2}$

9.  $-12 \geq \frac{6}{5}m$

10.  $-\frac{2}{5}h \leq -8$

11.  $-5z < 35$

12.  $-2a > -9$

13.  $-1.5 < 3n$

14.  $-4.2 \geq -0.7w$

**4.3 Practice A**

Solve the inequality. Graph the solution.

1.  $8x > 8$

2.  $\frac{r}{5} \leq 2$

3.  $-32 > 1.6h$

4.  $\frac{u}{8} \geq 2.1$

5.  $1.5j < -6.6$

6.  $-\frac{3}{2} < 3x$

Write the word sentence as an inequality. Then solve the inequality.

7. Five times a number is not less than 15.
8. The quotient of a number and 4 is less than  $-1$ .
9. An SUV averages 16.5 miles per gallon. The maximum average number of miles that can be driven on a full tank of gas is 363 miles. Write and solve an inequality that represents the number of gallons in a tank.

Solve the inequality. Graph the solution.

10.  $-2p \geq 10$

11.  $-2 > \frac{v}{-3}$

12.  $\frac{g}{-3.2} > 4$

13.  $-\frac{y}{3} \leq 1.4$

14.  $-12 > -9h$

15.  $\frac{a}{-3.5} \leq -1.7$

16. You are creating a decorative rope that is at least 20 feet long.
  - a. To create the rope you are using beads that are 6 inches long. Write and solve an inequality that represents the number of beads that you can use.
  - b. You do not have enough 6-inch beads to make the rope, so you will use 10-inch beads instead. Write and solve an inequality that represents the number of 10-inch beads that you can use.

<b>MAFS.7.EE.2.4</b>	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
<b>Essential Question</b>	How can you solve a two-step inequality using what you have already learned? In this lesson, <i>I will use properties of equality so I can solve two-step inequalities.</i>
<b>4.4 Solving Two-step Inequalities</b>  <b>Homework 3.4 Practice A #1-4</b>	<p><b>Solve the inequality. Graph the solution.</b></p> <p>1. <math>6y - 7 &gt; 5</math>      2. <math>4 - 3d \geq 19</math>      3. <math>\frac{w}{-4} + 8 &gt; 9</math></p>
<b>Homework 4.4 Practice A #6-9</b>	<p><b>Solve the inequality. Graph the solution.</b></p> <p>4. <math>2(k - 5) &lt; 6</math>      5. <math>-4(n - 10) &lt; 32</math>      6. <math>-3 \leq 0.5(8 + y)</math></p>
	<p><b>Solve the inequality.</b></p> <p>7. <math>x - 3 &gt; 7</math>      8. <math>m + 2 \leq -4</math>      9. <math>6y &gt; 8</math></p> <p>10. <math>p \div 5 &lt; -3</math>      11. <math>4z - 3 \geq -1</math>      12. <math>6 &gt; 3(t + 2)</math></p>

**Solve the inequality. Graph the solution.**

13.  $-4 + x \leq 1$



14.  $2 < -\frac{y}{5}$

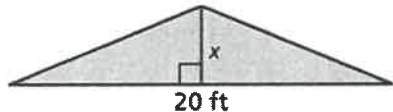


15.  $3(x + 4) \geq 12$



**Write and solve an inequality that represents the value of  $x$ .**

16. The area is no more than 40 square feet.



17. A freezer is set to turn on and start cooling if the temperature rises above  $-10^\circ$  Celsius. The cooling turns off when the freezer has reached a temperature of  $-16^\circ$  Celsius.

Write two inequalities to model the situation.

Give a sample value at which the cooling would turn on, and a sample value at which the cooling would be off.

At her job, Jessie earns \$9.50 per hour. She also earns a \$60 bonus every month.

Jessie needs to earn at least \$460 every month.

Create an inequality that represents this situation, where  $h$  represents the number of hours that Jessie works in a month in order to earn at least \$460.

**4.4 Practice A****Solve the inequality. Graph the solution.**

1.  $3m - 7 < 2$

2.  $-13 \leq -5r + 2$

3.  $2k + \frac{1}{3} > 1$

4.  $4.3 - 1.5c \leq 10$

5. You are renting a moving truck for a day. There is a daily fee of \$20 and a charge of \$0.75 per mile. Your budget allows a maximum total cost of \$65. Write and solve an inequality that represents the number of miles you can drive the truck.

**Solve the inequality. Graph the solution.**

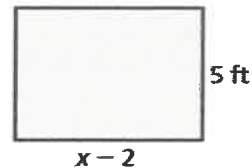
6.  $2(b - 4) > -6$

7.  $-8(p + 3) \leq 16$

8.  $15 \geq \frac{5}{3}(d - 6)$

9.  $3.4 < 0.4(a + 12)$

10. Write and solve an inequality that represents the values of  $x$  for which the area of the rectangle will be at least 35 square feet.

**Solve the inequality. Graph the solution.**

11.  $3x - 7x + 2 < 10 - 12$

12.  $14w - 8w - 5.4 \geq 7.3 - 10$

13. Your weekly base salary is \$150. You earn \$20 for each cell phone that you sell.

- What is the minimum amount you can earn in a week?
- Write and solve an inequality that represents the number of cell phones you must sell to make at least \$630 a week.
- Write and solve an inequality that represents the number of cell phones you must sell to make at least \$750 a week.
- The company policy is that as a part-time employee, the maximum you can earn each week is \$950. Write and solve an inequality that represents the number of cell phones you can sell each week.

**Chapter 4** **Take Home Quiz #1**  
For use after Section 4.2

Write the word sentence as an inequality.

1. A number  $b$  subtracted from 9.8 is greater than  $-4$ .
2. The quotient of a number  $y$  and  $-3.6$  is less than  $6.5$ .

Tell whether the given value is a solution of the inequality.

3.  $x - 2 \geq -1.6$ ;  $x = 0.8$
4.  $-\frac{2}{5}c < 9$ ;  $c = -25$

Graph the inequality on a number line.

5.  $x \geq -2$

6.  $a > 1.5$

7.  $k < \frac{2}{3}$



Solve the inequality. Graph the solution.

8.  $x - \frac{4}{5} > \frac{1}{5}$

9.  $\frac{1}{2} + x < 4$

10.  $c - 2.8 \geq -0.3$



11. A person who is at least 65 years old is often considered a senior citizen. Write an inequality that represents this situation.
12. The solution of  $x + b > -14$  is  $x > -21$ . What is the value of  $b$ ?
13. Your gas tank can hold no more than 14.5 gallons of gasoline. On a trip to the grocery store, you use 1.5 gallons of gasoline. Write and solve an inequality that represents the amount of gasoline left in your gas tank.
14. The requirements for a roller coaster are shown.

**Roller Coaster Requirements**

1. At least 5 feet tall
2. Weigh no more than 350 pounds
3. Must be 16 years or older



- a. Write and graph three inequalities that represent the requirements.
- b. You are 64 inches tall. Do you satisfy the height requirement for the roller coaster? Explain.

**Answers**

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. See left.
6. See left.
7. See left.
8. \_\_\_\_\_
9. \_\_\_\_\_
10. See left.
11. \_\_\_\_\_
12. \_\_\_\_\_
13. \_\_\_\_\_
14. a. \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 See left.  
 b. \_\_\_\_\_  
 \_\_\_\_\_



**Chapter**  
**4**

**Take Home Quiz #2**  
For use after Section 4.4

Solve the inequality. Graph the solution.

1.  $4c < 28$



2.  $\frac{x}{-2} > 4$



3.  $-15y \leq -45$



4.  $-1.2b \geq 4.8$



Write the word sentence as an inequality. Then solve the inequality.

5. The product of a number and  $-5$  is at least  $35$ .

6. A number divided by  $3$  is no more than  $12$ .

Solve the inequality. Graph the solution.

7.  $3t - 1 < 8$



8.  $1.6w + 1.7 \geq 4.9$



9.  $-\frac{k}{4} - 5 \leq -2$



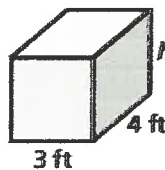
10.  $\frac{x}{3} + \frac{2}{3} > \frac{1}{6}$



11. You need to score at least  $1500$  points on your new video game to obtain the high score. You get  $300$  points after completing each level. Write and solve an inequality to find the number of levels you must beat in order to obtain the high score.

12. A baseball team has  $30$  players. They need to make cuts so that there are at most  $25$  baseball players on the team. Write and solve an inequality to find the number of players that must be cut from the team.

13. The volume of the rectangular prism must be at least  $36$  cubic feet. Write and solve an inequality that represents the value of  $h$ .



**Answers**

1. \_\_\_\_\_

See left.

2. \_\_\_\_\_

See left.

3. \_\_\_\_\_

See left.

4. \_\_\_\_\_

See left.

5. \_\_\_\_\_

6. \_\_\_\_\_

7. \_\_\_\_\_

8. \_\_\_\_\_

9. \_\_\_\_\_

See left.

10. \_\_\_\_\_

See left.

11. \_\_\_\_\_

See left.

12. \_\_\_\_\_

See left.

13. \_\_\_\_\_

\_\_\_\_\_

12. \_\_\_\_\_

\_\_\_\_\_

13. \_\_\_\_\_

\_\_\_\_\_



## Chapter

## 4

## Ms. Abadie's Test Review

Write the word sentence as an inequality.

1. A number  $x$  is less than  $\frac{1}{4}$ .
2. A number  $n$  is no more than 8.
3. A number  $m$  minus 3 is more than  $-4$ .
4. Sixteen times a number  $j$  is no less than  $-2$ .
5. Twice a number  $q$  minus 1 is less than 5.
6. A number  $a$  divided by 2 is no more than 6.
7. To pass the test you must score at least 60 on the test.
8. The maximum cost is \$35.

Tell whether the given value is a solution of the inequality.

9.  $\frac{x}{2} - 1 < -1$ ;  $x = -\frac{3}{4}$
10.  $5x - 17 > 62$ ;  $x = 13$

Solve the inequality.

13.  $b + 8 > 7$
14.  $-3 \geq x - 4.5$
15.  $-\frac{7}{8}c \leq 35$
16.  $\frac{p}{-3} > -5$
17.  $6 < 2g - 4$
18.  $-\frac{1}{4}(w - 5) \geq -2$

Solve the inequality. Graph the solution.

19.  $w - 8 \geq -4$



20.  $-4 > -\frac{m}{10}$



21.  $\frac{1}{4}(3x - 2) < -5$



22.  $\frac{z - 1}{2} \geq \frac{1}{3}$



23. A music teacher budgets \$150 for new books. The minimum cost of a new book is \$12. How many books can she buy? Is this a minimum or a maximum amount? Explain.

24. The perimeter of the rectangle is at least 12 inches. The area is no more than 27 inches. Write and solve an inequality for each condition. Give two possible values for  $x$ .

