Graphing and Writing Inequalities

Additional Examples

Example 1

Describe the solutions of $x - 6 \geq 4$ in words.

x	-4	0	9.99	10	10.01	10.1
$x - 6$	-10	-6	3.99	4	4.01	4.1
$x - 6 \stackrel{?}{\geq} 4$	$-10 \stackrel{?}{\geq} 4$	$-6 \stackrel{?}{\geq} 4$	$3.99 \stackrel{?}{\geq} 4$	$4 \stackrel{?}{\geq} 4$	$4.01 \stackrel{?}{\geq} 4$	$4.1 \stackrel{?}{\geq} 4$
Solution ?	No	No	No	Yes	Yes	Yes

When the value of x is a number less than 10, the value of $x - 6$ is _____.

When the value of x is 10, the value of $x - 6$ is _____.

When the value of x is a number greater than 10, the value of $x - 6$ is _____.

It appears that the solutions of $x - 6 \geq 4$ are _____.

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$x - 6$	-10	-6	3.99	4	4.01	4.1
$x - 6 \stackrel{?}{\geq} 4$	$-10 \stackrel{?}{\geq} 4$	$-6 \stackrel{?}{\geq} 4$	$3.99 \stackrel{?}{\geq} 4$	$4 \stackrel{?}{\geq} 4$	$4.01 \stackrel{?}{\geq} 4$	$4.1 \stackrel{?}{\geq} 4$
Solution ?	No	No	No	Yes	Yes	Yes

When the value of x is a number less than 10, the value of $x - 6$ is **less than 4**.

When the value of x is 10, the value of $x - 6$ is **4**.

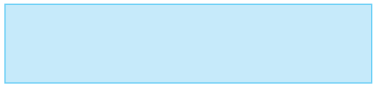
When the value of x is a number greater than 10, the value of $x - 6$ is **greater than 4**.

It appears that the solutions of $x - 6 \geq 4$ are **all real numbers greater than or equal to 10**.

Example 2

Graph each inequality.

A. $m \geq \frac{3}{4}$



Draw a ____ circle at ____.

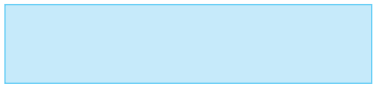
Shade all numbers ____ ____,
and draw an arrow pointing to the ____.

B. $t < 5(-1 + 3)$

$t < 5(-1 + 3)$

$t < 5(\quad)$ Simplify.

$t <$ ____



Draw an ____ circle at ____.

Shade all numbers ____,
and draw an arrow pointing to the ____.

Example 2

Graph each inequality.

A. $m \geq \frac{3}{4}$

Draw a **solid** circle at $\frac{3}{4}$.

Shade all numbers **greater than $\frac{3}{4}$**, and draw an arrow pointing to the **right**.

B. $t < 5(-1 + 3)$

$t < 5(-1 + 3)$

$t < 5($ **2** $)$ Simplify.

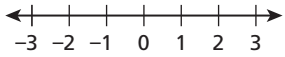
$t <$ **10**

Draw an **empty** circle at **10**.

Shade all numbers **less than 10**, and draw an arrow pointing to the **left**.

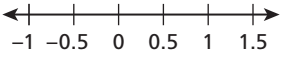
Example 3

Write the inequality shown by each graph.

A. 

Use the variable *x*. The arrow points to the _____, so use _____ or _____. The empty circle at 2 means that 2 is _____, so use _____.

_____

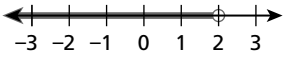
B. 

Use the variable *x*. The arrow points to the _____, so use _____ or _____. The solid circle at -0.5 means that -0.5 is a solution, so use _____.

_____

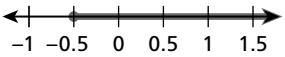
Example 3

Write the inequality shown by each graph.

A. 

Use the variable *x*. The arrow points to the left, so use $<$ or $\leq$. The empty circle at 2 means that 2 is not a solution, so use $<$.

$x < 2$

B. 

Use the variable *x*. The arrow points to the right, so use $>$ or $\geq$. The solid circle at -0.5 means that -0.5 is a solution, so use $\geq$.

$x \geq -0.5$

Example 4

Ray's dad told him not to turn on the air conditioner unless the temperature is at least 85°F. Define a variable and write an inequality for the temperatures at which Ray can turn on the air conditioner. Graph the solutions.

Let *t* represent _____

_____.

Turn on the AC when temperature _____ is at least _____ 85°F

_____

_____

_____

Draw a _____ circle at _____.

Shade all numbers _____

_____, and draw an arrow

pointing to the _____.

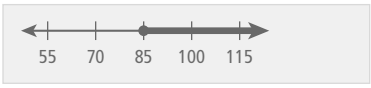
Example 4

Ray's dad told him not to turn on the air conditioner unless the temperature is at least 85°F. Define a variable and write an inequality for the temperatures at which Ray can turn on the air conditioner. Graph the solutions.

Let t represent **the temperatures at which Ray can turn on the air conditioner**.

Turn on the AC when temperature **t** is at least **$\geq$** 85°F **85**

$t \geq 85$



Draw a **solid** circle at **85**.

Shade all numbers **greater than 85**, and draw an arrow pointing to the **right**.

Check It Out!

1. **Describe the solutions of $2p > 8$ in words.**

2. **Graph the inequality.**

$2^2 - 4 \geq w$

3. **Write the inequality shown by the graph.**

4. **A store's employees earn at least $8.25 per hour. Define a variable and write an inequality for the amount the employees may earn per hour. Graph the solutions.**

Check It Out!

1. **Describe the solutions of $2p > 8$ in words.**

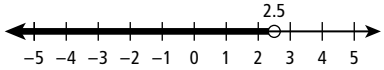
   all real numbers greater than 4

2. **Graph the inequality.**

   $2^2 - 4 \geq w$

3. **Write the inequality shown by the graph.**

   $x < 2.5$

4. **A store's employees earn at least $8.25 per hour. Define a variable and write an inequality for the amount the employees may earn per hour. Graph the solutions.**

   d = amount employee can earn per hour; $d \geq 8.25$;