

# Warm-Up

$$\overset{(21)}{\frac{2}{3}} + \overset{(21)}{\frac{x}{3}} = \overset{(21)}{4} - \overset{(21)}{\frac{6x}{7}}$$

$$\frac{42}{3} + \frac{21x}{3} = 84 - \frac{126x}{7}$$

$$14 + 7x = 84 - 18x$$

$$14 + 7x + 18x = 84 \quad [-18x + 18x]$$

$$14 + 25x = 84$$

$$\boxed{14-14} + 25x = 84-14$$

$$25x = 70$$

$$\frac{25x}{25} = \frac{70}{25}$$

$$x = \frac{70}{25}$$

$$x = 2.8$$

## Section 6.3 Linear Inequalities

An **inequality** is used to model a situation that can be described by a **range of numbers** rather than a single number.

	What does it mean?	Possible solutions
$x = 3$	The value of $x$ is 3.	One solution $x = 3$
$x > 3$	$x$ is any number greater than 3	4, 14, 10392, 1, 4 1/5, 3.0001...
$x \geq 3$	$x$ is any number greater than or equal to 3	3, 52, 680, 6.24
$x \leq 3$	$x$ is any number than or equal to 3	3, 2, -3 -625...

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Define a variable and write an inequality for each situation.



Let "s" represent speed  
 $s \leq 55$



Let "h" represent height  
 $h \geq 102$



Let "t" represent temperature  
 $t < 4$



Let "a" represent age  
 $a \geq 14$

(1) Define a variable ["Let "statement]

(2) write an inequality to describe each situation:

A. Contest entrants must be at least 18 years old.

1) Let "a" represent the age

2)  $a \geq 18$

B. The temperature has been below -5 degrees for the last week.

A) Let "t" represent the temperature.

B)  $t < -5$

C. You must have 7 items or less to use the express checkout.

a) Let "i" represent items

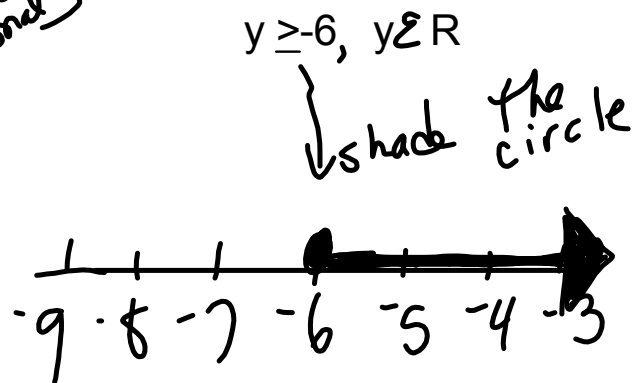
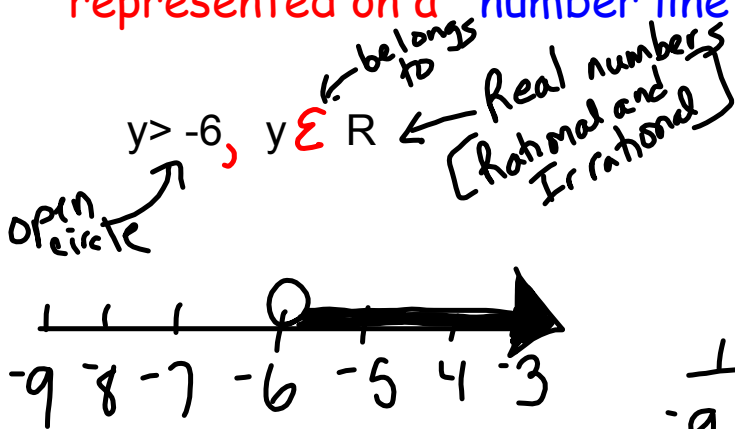
B)  $i \leq 7$

D. Scientists have identified over 40 species of dinosaurs

$y > -6$

What are 4 possible numbers for "y" ?

Because there are so many possible solutions for inequalities they are usually represented on a number line [Graph]

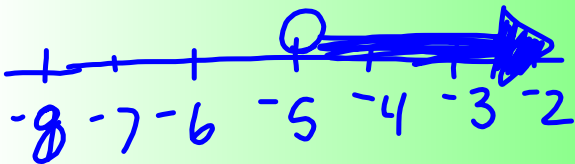


A. Graph each inequality on a number line

B. Write 4 numbers that are solution to the inequality

A.  $t > -5$

$-3, 10, 42$   
 $68$



B.  $-2 \geq x$

$-10, -6, -8$   
 $-52$

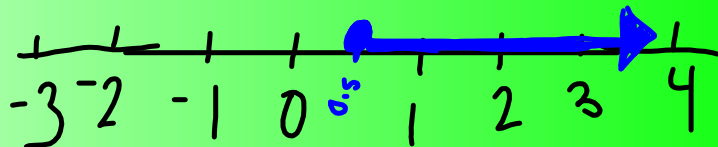
$x \leq -2$



$\frac{1}{2}$

C.  $0.5 \leq a$

$a \geq 0.5$



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$$3.a) 5 < 8 \quad T$$

3, 4, 5,

$$4.a) x < -2$$

8 [a, c] Let statement

9 [sketch the number line]

$$x < -2$$

