Start w/ PPT

AT most ≤ no more than ≤
at least ≥ no less than ≥

Linear Inequalities LI3

Graphing Inequalities

Explore

Name KEY

Date _____ Period _____

1. Children at a local daycare are allowed to go outside when the temperature is 84° or lower. Write some temperatures that would prevent the children from going outside.

85°, 86°, 87° etc.

2. Children at another daycare in the same town are allowed to go outside when the temperature is below 84°. How does this situation differ from the situation above?

Can't go outside if temp is 84°

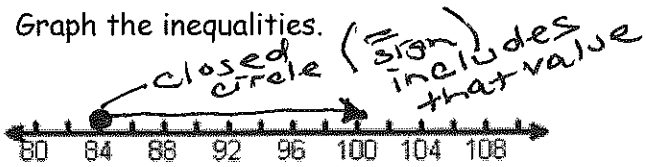
Prevent: 84°, 85°, 86°, 87° etc

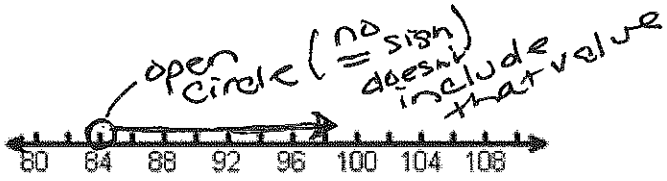
Step 3. Write the inequalities that represent the situations in numbers 1 and 2.

Discuss

Number 1: $x \geq 84$ Number 2: $x > 84$

4. Graph the inequalities.



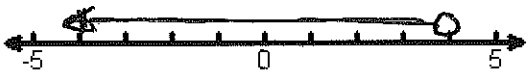


Graphing Inequalities on a number line:

- Determine type of circle (open or closed)
- Shade line in the direction of numbers that make the inequality true

5. Write and graph the inequality described in each situation.

a. Mrs. Rahe asked a student to choose a number less than four. $n < 4$



b. In order to open a savings account at Forever Bank and Trust, you must deposit at least $50. $d \geq 50$

6. Graph the following inequalities

a. $x > 5$

b. $x \leq 18$

7. Match the following graphs with their inequality.

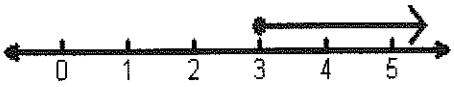
D $x > 3$

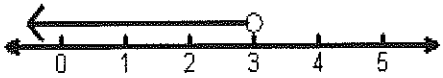
C $x < 3$

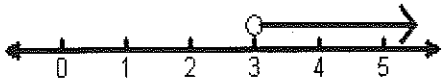
B $x \geq 3$

A $x \leq 3$

A.

B. 

C. 

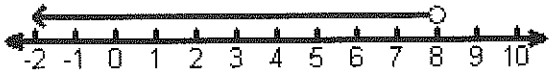
D. 

8. a. If $8 > x$, state 3 numbers that make the inequality true.

7, 6, 5

b. Which of the following graphs best represents the inequality?

A.

(B.) 

c. Compare $8 > x$ and $x < 8$. same inequality but written and described differently ① 8 is greater than x ② x is less than 8

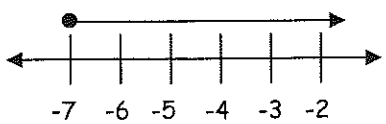
9. Describe how you determine whether you use an open circle or a closed circle when graphing an inequality on a number line.

Place an open circle on a number if it is not included in the solution; place a closed circle on a number when it is included in the solution

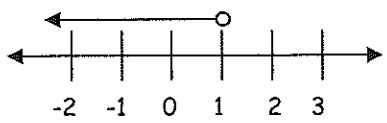
10. Describe how you determine whether you shade to the right or to the left when graphing an inequality on a number line.

Shade in the direction of the possible solutions
OR
shade in the direction that makes the inequality true

11. Write the inequality represented by each number line graph.

a. 

$x \geq -7$

b. 

$x < 1$

→ What does the word solution mean when referring to an inequality? Any value that makes the inequality true

KEY

Linear Inequalities 2
Card Sort Recording Sheet

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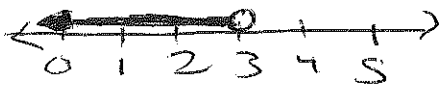
Less than Below 	more than or equal to Minimum At least Not less than 	Equal to
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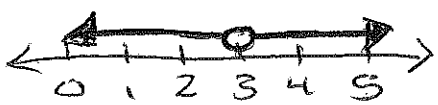
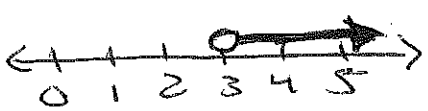
Less than or equal to Maximum At most Not more than 	Not equal to 	Greater than Above more than 

EP: pg. 171 #27-33, 42-45

Introduction to Inequalities

Homework

Name KEY

Date _____ Period _____

1. Write "true" or "false" for each inequality.

a. $2 > 4$ False

b. $-1 \geq 0$ False

c. $8 \leq 8$ True

d. $-2 < -3$ False

e. $\frac{1}{2} > \frac{1}{3}$ True

f. $2.3 < 2.03$ False

g. $6 - 2 \geq 12 - 8$ True
$4 \geq 4$

h. $3 - 9 < 4 - 9$ True
$-6 < -5$

j. $(-4)^2 > -4^2$ True
$16 > -16$

2. $-6 \leq -2$

a. What happens to the inequality when you add 3 to both sides? nothing
$-6+3 \leq -2+3 \quad -3 \leq 1$

b. What happens to the inequality when you subtract -4 from both sides? nothing
$-6-4 \leq -2-4 \quad -10 \leq -6$

c. What happens to the inequality when you multiply by 5 on both sides? nothing
$-6 \cdot 5 \leq -2 \cdot 5 \quad -30 \leq -10$

d. What happens to the inequality when you divide by -2 on both sides? inequality reverses
$-6 \div -2 \ (\leq) \ -2 \div -2 \quad +3 \ (\geq) \ +1$

3. Simplify and complete each statement by inserting an inequality symbol. An operation has been performed to both sides of the inequality; the first one has been started for you.

a. $4 < 8$

$4 + 3 \ \underline{<} \ 8 + 3$

$7 \ \underline{<} \ 11$

b. $-3 < -2$

$-3 - 5 \ \underline{<} \ -2 - 5$

$-8 \ \underline{<} \ -7$

c. $5 > -9$

$5(-2) \ \underline{>} \ (-9)(-2)$

$-10 < +18$

★ reversed multiplying by negative

d. $x > -7$

$5(x) \ \underline{>} \ 5(-7)$

$5x > -35$

e. $1 \leq 6$

$1(-2) \ \underline{\geq} \ 6(-2)$

$-2 \quad -12$

★ reversed

f. $y \geq -8$

$\frac{y}{-2} \ \underline{\leq} \ \frac{-8}{-2}$

$\frac{-y}{2} \leq +4$

★ reversed dividing by a negative ★

4. Given $-2 < x < 10$, state a value for x that makes the statement true and value for x that makes the statement false.

True: $x = 8$

False: $x = -6, x = 12$