Algebra 1 Student Notes $< \quad > \quad \le \quad \ge$

2.1 Write and Graph Inequalities

Learning Outcomes: I can write inequalities from graphs or sentences.

I can graph inequalities.

EXPLORATION 1   **Writing and Graphing Inequalities**

Work with a partner. Write an inequality for each statement. Then sketch the graph of the numbers that make each inequality true.

a. Statement The temperature t in Sweden is at least $-10°C$.

Inequality $t \ge -10$ ↳ lowest

Graph

-40 -30 -20 -10 0 10 20 30 40
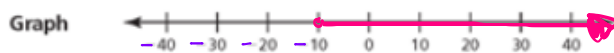
b. Statement The elevation e of Alabama is at most 2407 feet.

Inequality $e \le 2407$ ↳ highest

Graph

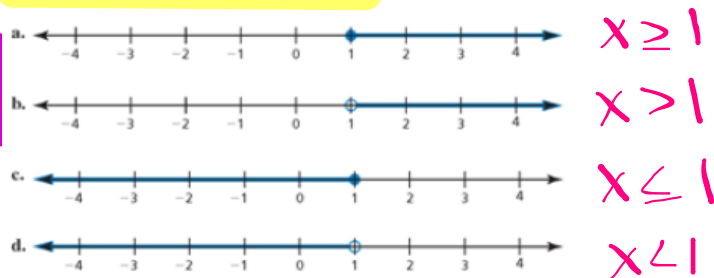-3000 -2000 -1000 0 1000 2000 3000

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ATTENDING TO PRECISION

To be proficient in math, you need to communicate precisely. You also need to state the meanings of the symbols you use.

● includes endpoint ($\le$, $\ge$)

○ no endpoint ($<$, $>$)

EXPLORATION 2   **Writing Inequalities**

Work with a partner. Write an inequality for each graph. Then, in words, describe all the values of x that make each inequality true.

a.   -4 -3 -2 -1 0 1 2 3 4 $x \ge 1$

b.   -4 -3 -2 -1 0 1 2 3 4 $x > 1$

c.   -4 -3 -2 -1 0 1 2 3 4 $x \le 1$

True?   d.   -4 -3 -2 -1 0 1 2 3 4 $x < 1$

Tell whether -4 is a solution of each inequality.

a. $x + 8 < -3$ → $-4 + 8 < -3$? $4 < -3$ no

b. $-4.5x > -21$ → $-4.5(-4) > -21$
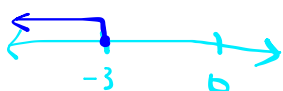
$18 > -21$

yes

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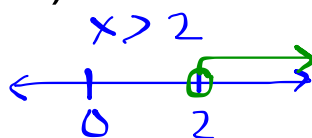
1

LOL

letter on left

Then the inequality points the direction you should shade, but if you need to switch you **MUST** switch EVERYTHING!

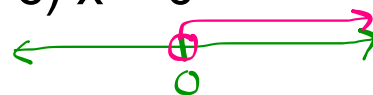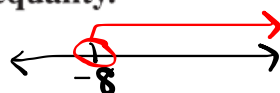**Examples:** Graph each inequality.

a) $y \leq -3$

b) $2 < x$
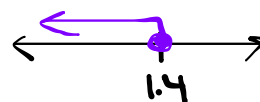
$x > 2$

c) $x > 0$

Practice:

Graph the inequality.

7. $b > -8$

8. $1.4 \geq g$

$g \leq 1.4$

9. $r < \frac{1}{2}$

10. $v \geq \sqrt{36}$

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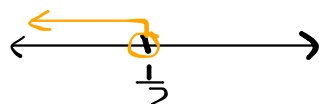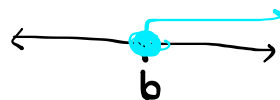
1) The graphs show the height restrictions h (in inches) for two rides at an amusement park. Write an inequality that represents the height restriction of each ride.

Ride A

| | | | | | | | | | | | |
44   46   48   50   52   54

$h \geq 48$

Ride B

| | | | | | | | | | | | |
44   46   48   50   52   54

$h < 52$
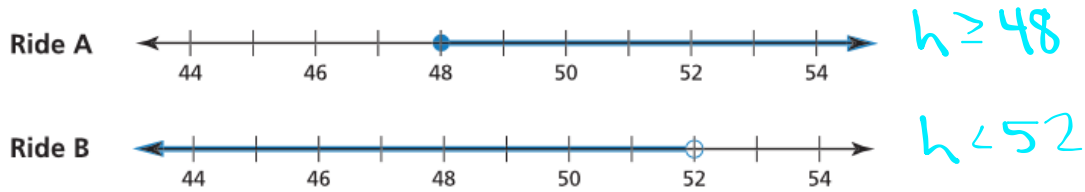
2) Write both inequalities in set builder notation:

A $h \geq 48 \cdots \{h \mid h \geq 48\}$ ← such that

B $h < 52 \cdots \{h \mid h < 52\}$

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Write an inequality:

1) Twice a number increased by 5 is not fewer than 10

    $2n$ $+5$ not $<$

   $2n + 5 \geq 10$

2) Twice the sum of a number and 5 is at most -8

    $2(+)$ $x+5$ highest

   $2(x+5) \leq -8$

3) Half a number decreased by 7 is more than 20

    $\frac{1}{2}x$ -7

   $\frac{1}{2}x - 7 > 20$

4) Your age has to be at least 16 to get a drivers license

    a $\geq$ → lowest

   $a \geq 16$

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HW: pg. 58

A: 2, 4, 8, 12, 14, 22 - 28(e), 35, 36, 40, 44 - 50(e), 54, 60 - 66(e)

B: 1, 2, 4,- 44(e), 60 - 66(e)

C: 1, 6, 10, 14, 16, 22, 26, 28, 30, 32, 38, 40, 42, 44, 60