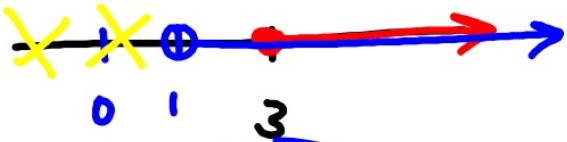
Wed. ET

7. $\frac{3}{3} < \frac{3w}{3}$ or $\frac{3w}{3} \geq \frac{9}{3}$

$1 < w$ or $w \geq 3$

$w > 1$

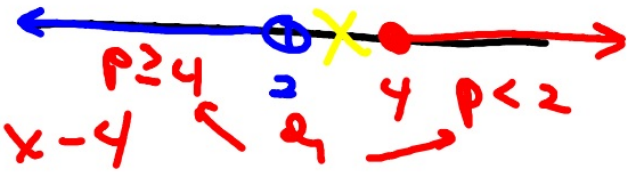


$x > 1$

8. $-3p + 1 \leq -11$ or $p < 2$

$\quad -1 \quad -1$

$\frac{-3p}{-3} \leq \frac{-12}{-3}$ $\quad p \geq 4$



9. $2x + 4 \leq 6$ or $x \geq 2x - 4$

$\quad -4 \quad -4$ $\qquad -x \quad -x$

$\frac{2x}{2} \leq \frac{2}{2}$ $\qquad 0 \geq x - 4$

$\qquad +4 \qquad +4$

$x \leq 1$

$4 \geq x$

$x \leq 4$

10. $2y + 2 < 12$ or $y - 3 \geq 2y$

$\quad -2 \quad -2$ $\qquad -y \quad -y$

$\frac{2y}{2} < \frac{10}{2}$ $\qquad -3 \geq y$

$y < 5$ $\qquad y \geq -3$

ARN

Algebra 1 5.5

Solve and graph absolute value inequalities

distance always pos.

inequality from 0

absolute value

less than $<$ $\leq$

greater than $>$ $\geq$

number line & distance

whiteboards

$|5| = 5$

$|-3| = 3$

$|-5.9| = 5.9$

Gr. 6-7 standard

| ???| = 5

$|-5| = 5$

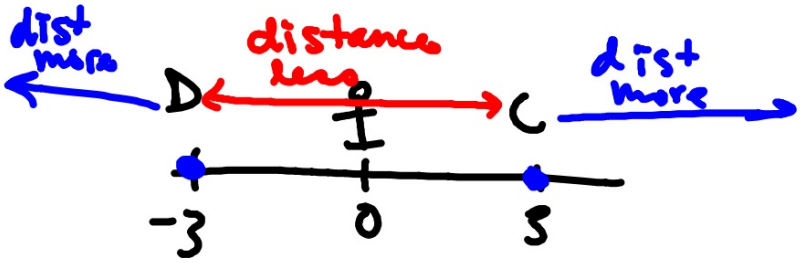
$|5| = 5$

$|(3-6)|$

$|-3| = 3$

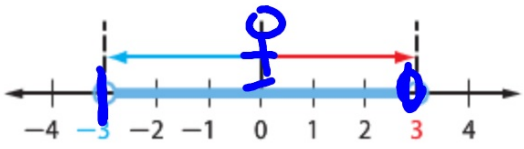
absolute value = distance (from zero)

Number line
stand 3 steps away



Where is 3 away?
Where is closer than 3?
Where is farther than 3?

1 Absolute Value Inequalities (<) The inequality $|x| < 3$ means that the distance between x and 0 is less than 3.



Example 1 Solve Absolute Value Inequalities (<)

Find the bubble

Sol[illegible]h inequality. Then graph the solution set.

a. $|m + 2| < 11$

Distance = 11

left

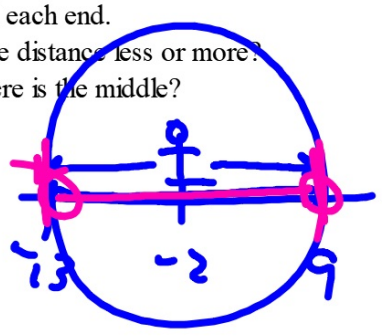
right

$m + 2 = -11$
$-2 \quad -2$
$m = -13$

$m + 2 = 11$
$-2 \quad -2$
$m = 9$

$-13 < m < 9$

What might have been inside the | | originally?
Find each end.
Is the distance less or more?
Where is the middle?

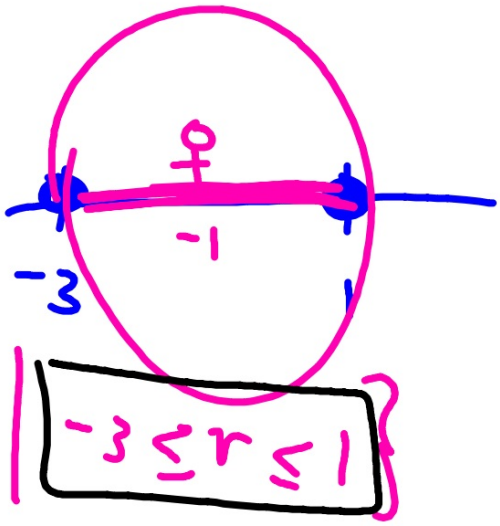


9. $|r+1| \leq 2$

$r+1 = -2$ $\quad$ $r+1 = 2$

$-1 \quad -1$ $\quad$ $-1 \quad -1$

$r = -3$ $\quad$ $r = 1$



$\{r \mid -3 \leq r \leq 1\}$

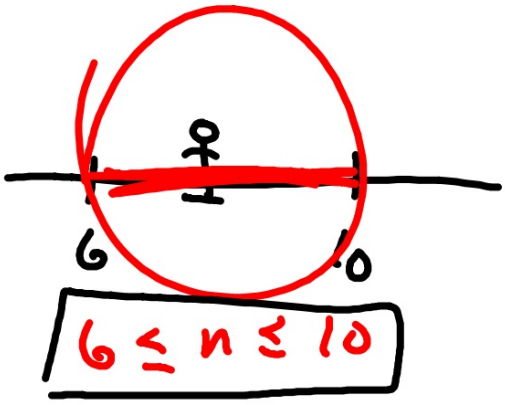
Guid[illegible]tice

1A. $|n - 8| \leq 2$

What could have been inside?
Find each end
Is the distance less or more?
What is in the middle?

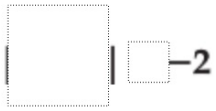
$n - 8 = -2$
$+8 \quad +8$
$n = 6$

$n - 8 = 2$
$+8 \quad +8$
$n = 10$



19. $|-2c-3| > -4$

NS

b.  −2

N S

What could have been inside? :(
Find each end
Is the distance less or more?
What is in the middle?

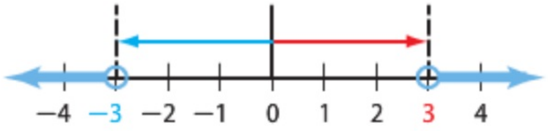
Real-World Example 2 Apply Absolute Value Inequalities

INTERNET A recent survey showed that 65% of young adults watched online video clips. The margin of error was within 3 percentage points. Find the range of young adults who use video sharing sites.

GuidedPractice

2. **CHEMISTRY** The melting point of ice is 0°C. During a chemistry experiment, Jill observed ice melting within 2°C of this measurement. Write the range of temperatures that Jill observed.

2 Absolute Value Inequalities (>) The inequality $|x| > 3$ means that the distance between x and 0 is greater than 3.



Example 3 Solve Absolute Value Inequalities (>)

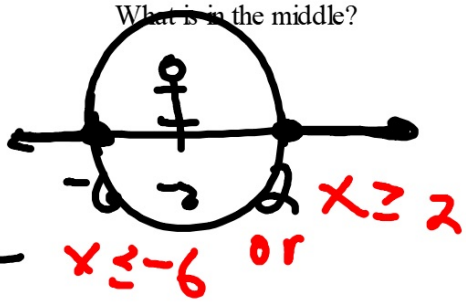
Solve $|3n + 6| \geq 12$. Then graph the solution set.

What could have been inside?
Find each end
Is the distance less or more?
What is in the middle?

distance = 12

$3n+6 = -12$
$-6 \quad -6$
$\frac{3n}{3} = \frac{-18}{3}$
$n = -6$

$3n+6 = 12$
$-6 \quad -6$
$\frac{3n}{3} = \frac{6}{3}$ $n = 2$



5.5 9-29.

p. 314

Solve each inequality. Then graph

3A. $|\square| \square 7$

What could have been inside?
Find each end
Is the distance less or more?
What is in the middle?

3B.

What could have been inside? :(
Find each end
Is the distance less or more?
What is in the middle?