

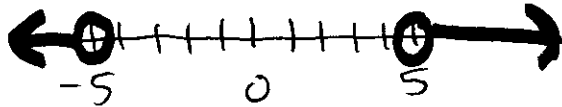
Day 9

1.5 Solve Absolute Value Inequalities

$$|x| > 5$$

$$x > 5 \text{ or } x < -5$$

 $6, 7, 8, \dots \quad -8, -7, -6$



Greater OR or Greater than or = to

$$> \quad \geq$$

then you rewrite the inequality as an "OR" problem

(ex) Solve and Graph. $|2x - 3| \geq 7$ ^{Flip} _{opposite}

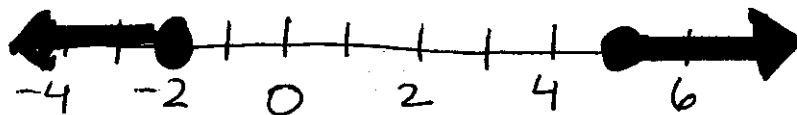
$$2x - 3 \geq 7 \quad \text{OR} \quad 2x - 3 \leq -7$$

$+3 \quad +3 \qquad \qquad \qquad +3 \quad +3$

$$2x \geq 10 \qquad \qquad \qquad 2x \leq -4$$

$\div 2 \qquad \qquad \qquad \div 2$

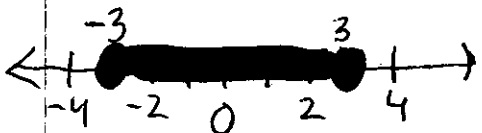
$$x \geq 5 \quad \text{OR} \quad x \leq -2$$



$$|x| \leq 3$$

$$-3 \leq x \leq 3$$

"Between"



same as writing

$$x \geq -3 \quad \text{and} \quad x \leq 3$$

Less Than OR Less Than or = to
 $< \quad \text{or} \quad \leq$ "AND"

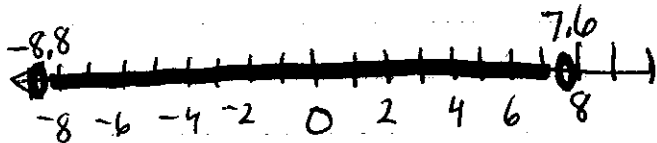
$$\textcircled{\text{ex 2}} \quad |5x+3| - 7 < 34$$

$$|5x+3| < 41$$

$$-41 < 5x+3 < 41$$

$$\frac{-44}{5} < \frac{5x}{5} < \frac{38}{5}$$

$$-8.8 < x < 7.6$$



$$\textcircled{\text{ex}} \quad |2x-5| > 3$$

↑
Greater

Flip change
↓ ↓

$$2x-5 > 3 \quad \text{OR} \quad 2x-5 < -3$$

$$\textcircled{\text{ex}} \quad -2|x+1| + 5 \geq -3$$

$$\frac{-2|x+1|}{-2} \geq \frac{-8}{-2}$$

$$|x+1| \leq 4$$

$$-4 \leq x+1 \leq 4$$

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

$$-5 \leq x \leq 3$$

"And"
"Between"
less than

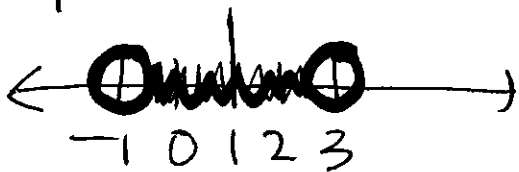
ex) $5|2x+1| - 3 \leq 7$
 $\frac{5}{5}|2x+1| \leq \frac{10}{5}$
 $|2x+1| \leq 2$

$-2 \leq 2x+1 \leq 2$

ex) $-3|7m-8| < 5$
 $|7m-8| > -\frac{5}{3}$

$7m-8 > -\frac{5}{3}$ OR $7m-8 < \frac{5}{3}$

p.36 Tolerance



compound inequality

$-1 < x < 3$

absolute value inequality

$|x - \text{middle}| < \text{Tolerance (distance to middle)}$

shaded between $<$ or \leq
 shaded opposite directions $>$ or \geq

$|x-1| < 2$

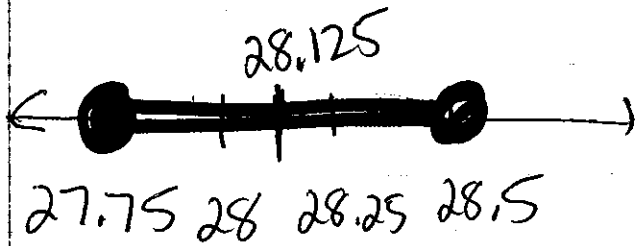
$-2 < x-1 < 2$
 $+1 \quad +1 \quad +1$

$-1 < x < 3$

Quick v #6

$$27.75 \leq C \leq 28.5$$

\leq
Between
closed
circles



$$|X - 28.125| \leq .375$$

$28.5 - 28.125$
Big - middle #

$$\text{middle \#} \left(\frac{27.75 + 28.5}{2} \right)$$

p. 37

(58) length of 36.80 mm with a tolerance of 0.05 mm

$$|X - 36.80| \leq .05$$

$$\begin{array}{ccc} -.05 & \leq & X - 36.80 & \leq & .05 \\ +36.80 & & +36.80 & & +36.80 \end{array}$$

$$36.75 \leq X \leq 36.85$$

p. 36-37 (18-23, 25, 27, 31-36, 55, 59, 60)