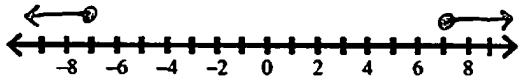
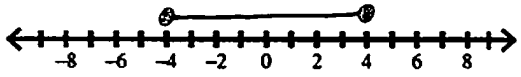
Name: Key	Date:
Topic:	Class:

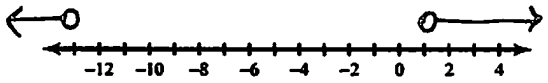
Main Ideas/Questions	Notes
Absolute Value Inequalities	**CASE 1** — GREATER THAN/GREATER THAN OR EQUAL TO **Example:** $\|x\| \geq 7$ $x \geq 7$ $x \leq -7$  **Interval Notation:** $(-\infty, -7] \cup [7, \infty)$
	CASE 2 — LESS THAN/LESS THAN OR EQUAL TO **Example:** $\|x\| \leq 4$ $x \leq 4$ $x \geq -4$  **Interval Notation:** $[-4, 4]$
What does this mean?	Absolute value inequalities are compound inequalities, too!
STEPS TO SOLVE Absolute Value Inequalities	① **ISOLATE** the absolute value expression. ② **CREATE TWO CASES.** Use the "KISS" Method (Keep it, switch, switch) to set up the two cases. ③ **SOLVE** both inequalities. ④ **GRAPH** your solutions and write your answer in interval notation.

Directions: Solve, graph, and write each solution in inteval notation.

1. $|x+6| > 7$

$x+6 > 7$ or $x+6 < -7$

$x > 1$ or $x < -13$



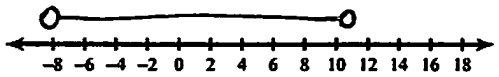
Interval Notation: $(-\infty, -13) \cup (1, \infty)$

2. $|2v-3| < 19$

$2v-3 < 19$ and $2v-3 > -19$

$2v < 22$ and $2v > -16$

$v < 11$ and $v > -8$



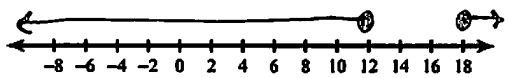
Interval Notation: $(-8, 11)$

3. $\left|-5+\frac{k}{3}\right| \geq 1$

$-5+\frac{k}{3} \geq 1$ or $-5+\frac{k}{3} \leq -1$

$-15+k \geq 3$ or $-15+k \leq -3$

$k \geq 18$ or $k \leq 12$



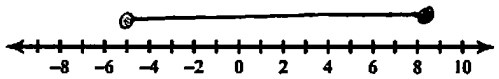
Interval Notation: $(-\infty, 12] \cup [18, \infty)$

4. $|7-4n| \leq 27$

$7-4n \leq 27$ and $7-4n \geq -27$

$-4n \leq 20$ and $-4n \geq -34$

$n \geq -5$ and $n \leq 8.5$



Interval Notation: $[-5, 8.5]$

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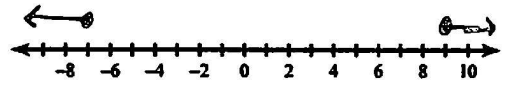
5. $\frac{|q-1|}{4} \geq 2$

$|q-1| \geq 8$

$q-1 \geq 8$ $\quad$ $q-1 \leq -8$

$q \geq 9$ or $q \leq -7$



Interval Notation: $(-\infty, -7] \cup [9, \infty)$

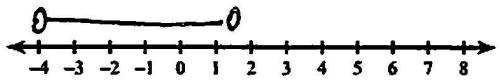
6. $|8a+10|+3<25$

$|8a+10| < 22$

$8a+10 < 22$ $\quad$ $8a+10 > -22$

$8a < 12$ $\quad$ $8a > -32$

$a < \frac{3}{2}$ and $a > -4$



Interval Notation: $(-4, \frac{3}{2})$

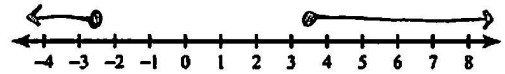
7. $-10|2r-1| \leq -60$

$|2r-1| \geq 6$

$2r-1 \geq 6$ $\quad$ $2r-1 \leq -6$

$2r \geq 7$ $\quad$ $2r \leq -5$

$r \geq \frac{7}{2}$ or $r \leq -\frac{5}{2}$



Interval Notation: $(-\infty, -\frac{5}{2}] \cup [\frac{7}{2}, \infty)$

8. $9|3-k|-5 \geq 67$

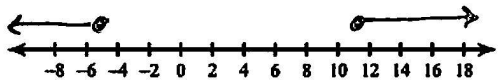
$9|3-k| \geq 72$

$|3-k| \geq 8$

$3-k \geq 8$ $\quad$ $3-k \leq -8$

$-k \geq 5$ $\quad$ $-k \leq -11$

$k \leq -5$ or $k \geq 11$



Interval Notation: $(-\infty, -5] \cup [11, \infty)$

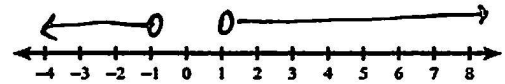
9. $6|-5n|+7>37$

$6|-5n| > 30$

$|-5n| > 5$

$-5n > 5$ $\quad$ $-5n < -5$

$n < -1$ $\quad$ $n > 1$



Interval Notation: $(-\infty, -1) \cup (1, \infty)$

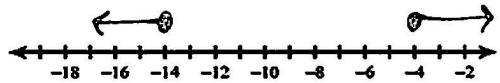
10. $-1-4|x+9| \leq -21$

$-4|x+9| \leq -20$

$|x+9| \geq 5$

$x+9 \geq 5$ $\quad$ $x+9 \leq -5$

$x \geq -4$ or $x \leq -14$



Interval Notation: $(-\infty, -14] \cup [-4, \infty)$

11. $3|8x+5|-9 \geq 24$

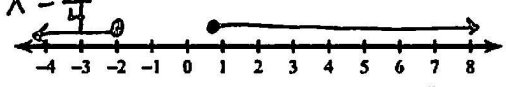
$3|8x+5| \geq 33$

$|8x+5| \geq 11$

$8x+5 \geq 11$ $\quad$ $8x+5 \leq -11$

$8x \geq 6$ $\quad$ $8x \leq -16$

$x \geq \frac{3}{4}$ $\quad$ $x \leq -2$



Interval Notation: $(-\infty, -2] \cup [\frac{3}{4}, \infty)$

12. $4|9-3n|-9<75$

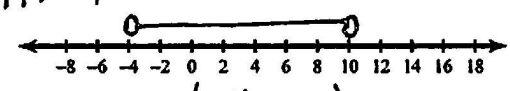
$4|9-3n| < 84$

$|9-3n| < 21$

$9-3n < 21$ $\quad$ $9-3n > -21$

$-3n < 12$ $\quad$ $-3n > -30$

$n > -4$ and $n < 10$



Interval Notation: $(-4, 10)$

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