KEY

3.4-> SOLVING MULTI-STEP INEQUALITIES

**Undo addition and subtraction first, then multiplication and division.

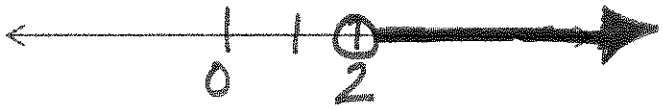
Solve each inequality, and graph your solution.

1. $7 + 6a > 19$

$-7 \quad -7$

$\frac{6a}{6} > \frac{12}{6}$

$a > 2$



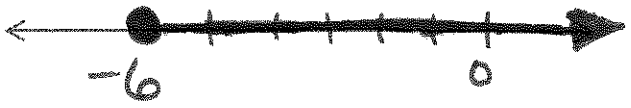
2. $-3x - 4 \leq 14$

$+4 \quad +4$

$\frac{-3x}{-3} \leq \frac{18}{-3}$

FLIP

$x \geq -6$



3. $5 < 7 - 2t$

$-7 \quad -7$

$\frac{-2}{-2} < \frac{-2t}{-2}$

FLIP

$1 < t$

$t > 1$

4. $16 - 2c < 14$

$-16 \quad -16$

$\frac{-2c}{-2} < \frac{-2}{-2}$

FLIP

$c > 1$

5. $-4 \leq \frac{x}{4} + 6$

$+6 \quad +6$

$(4)\,2 \leq \frac{x}{4}(4)$

$8 \leq x$

$x \geq 8$

Using Distributive Property:

6. $2(t+2) - 3t \geq -1$

$2t + 4 - 3t \geq -1$

$-t + 4 \geq -1$

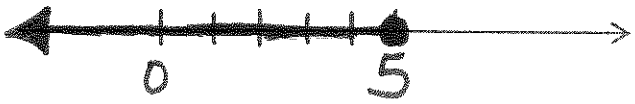
$-4 \quad -4$

$-t \geq -5$

FLIP

$\frac{-t}{-1} \leq \frac{-5}{-1}$

$t \leq 5$



7. $4p + 2(p+7) < 8$

$4p + 2p + 14 < 8$

$6p + 14 < 8$

$-14 \quad -14$

$\frac{6p}{6} < \frac{-6}{6}$

$p < -1$

8. $15 \leq 5 - 2(4m+7)$

$15 \leq 5 - 8m - 14$

$15 \leq -8m - 9$

$+9 \quad +9$

$24 \leq -8m$

FLIP

$\frac{24}{-8} \geq \frac{-8m}{-8}$

$m \leq -3$

9. $-3(x-1) > 8$

$-3x + 3 > 8$

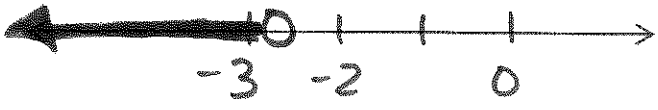
$-3 \quad -3$

$-3x > 5$

FLIP

$\frac{-3x}{-3} < \frac{5}{-3}$

$x < -2\frac{2}{3}$



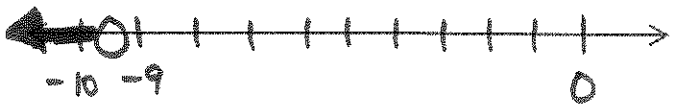
3.4 Notes KEY

10. $\frac{1}{2}(2d+3) < -8$

$d + 1.5 < -8$

$-1.5 \quad -1.5$

$d < -9.5$



Variables on Both Sides:

11. $6z - 15 < 4z + 11$

$-4z \quad -4z$

$2z - 15 < 11$

$+15 \quad +15$

$\frac{2z}{2} < \frac{26}{2}$

$z < 13$

12. $8x - 6 < 3x + 12$

$-3x \quad -3x$

$5x - 6 < 12$

$+6 \quad +6$

$\frac{5x}{5} < \frac{18}{5}$

$x < 3\frac{3}{5}$

3.4 Notes KEY

Word Problems:

13. Four times a number less 6 is greater than 2 times the number plus 8. For what numbers is this true?

$4x - 6 > 2x + 8$

$-2x \quad -2x$

$2x - 6 > 8$

$+6 \quad +6$

$\frac{2x}{2} > \frac{14}{2}$

$x > 7$

14. Alex's telephone company charges $10 a month plus $.05 per minute. Alex wants his monthly bill to be under $30. What is the greatest number of minutes he can talk?

$10 + .05m < 30$

$-10 \quad -10$

$.05m < 20$

$\frac{.05m}{.05} < \frac{20}{.05}$

$m < 400$

Up to 400 minutes