

# HW 60

1.  $|x+2| > 9$

$x+2 > 9$  OR  $x+2 < -9$

$x > 7$        $x < -11$

$(-\infty, -11) \cup (7, \infty)$



4.  $|3x+1| \geq 8$

$3x+1 \geq 8$        $3x+1 \leq -8$

$3x \geq 7$        $3x \leq -9$

$x \geq 7/3$        $x \leq -3$

$(-\infty, -3] \cup [7/3, \infty)$



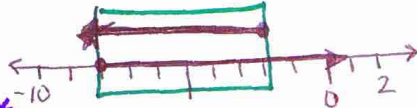
2.  $|x+5| \leq 3$

Shortcut

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

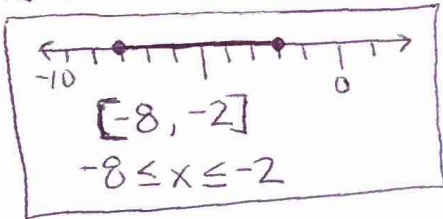
$-8 \leq x \leq -2$

OR  $x+5 \leq 3$  &  $x+5 \geq -3$   
 $x \leq -2$  &  $x \geq -8$



\* Look at notes 12/4 for shortcut \*

answer



5.  $|7x| - 12 \leq 9$

$|7x| \leq 21$

$-\frac{21}{7} \leq \frac{7x}{7} \leq \frac{21}{7}$

$-3 \leq x \leq 3$

$[-3, 3]$



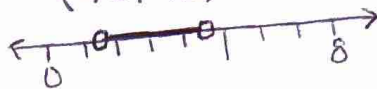
6.  $\frac{3|2x-6|}{3} < \frac{9}{3}$

$|2x-6| < 3$

$-3 < 2x-6 < 3$

$\frac{3}{2} < \frac{2x}{2} < \frac{9}{2}$

$3/2 < x < 9/2$   
 $(3/2, 9/2)$



7.  $\frac{15x+31}{2} > 4 \cdot 2$

$|5x+31| > 8$

$5x+31 > 8$        $5x+31 < -8$

$5x > -23$        $5x < -39$

$x > -11/5$        $x < -11/5$



$(-\infty, -11/5) \cup (11/5, \infty)$

3.  $|6-x| \leq 15$

$-15 \leq 6-x \leq 15$

$-21 \leq \frac{-x}{-1} \leq \frac{9}{-1}$

$21 \geq x \geq -9$

$[-9, 21]$



$$8. \frac{2|3x-6|}{-6} + \frac{6}{-6} \geq \frac{24}{-6}$$

$$\frac{2|3x-6|}{2} \geq \frac{18}{2}$$

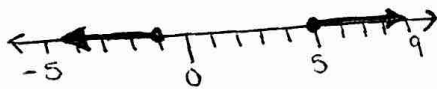
$$|3x-6| \geq 9$$

$$3x-6 \geq 9 \quad 3x-6 \leq -9$$

$$3x \geq 15 \quad 3x \leq -3$$

$$x \geq 5 \quad x \leq -1$$

$$(-\infty, -1] \cup [5, \infty)$$



$$9. (\sqrt{x-4})^2 = 3^2$$

$$x-4=9$$

$$\boxed{x=5}$$

$$10. \left| \frac{x}{7} \right| = 3$$

$$\frac{x}{7} = 3 \quad \frac{x}{7} = -3$$

$$\boxed{x=21 \quad x=-21}$$

$$11. \sqrt{(14-x)^2} = 25$$

$$14-x = \pm 5$$

~~or~~

$$14-x = 5 \quad 14-x = -5$$

$$-x = -9 \quad -x = -19$$

$$\boxed{x=9 \quad x=19}$$

$$12. 100 = \frac{m}{10}$$

$$\boxed{1000 = m}$$

$$13. \frac{-10|x+2|}{-10} = \frac{-70}{-10}$$

$$|x+2| = 7$$

$$x+2=7 \quad x+2=-7$$

$$\boxed{x=5} \quad \boxed{x=-9}$$

$$14. \frac{-8 + \sqrt{5a-5}}{+8} = \frac{-3}{+8}$$

$$\sqrt{5a-5} = 5$$

$$5a-5 = 25$$

$$5a = 30$$

$$\boxed{a=6}$$

$$15. 1 - \frac{\sqrt{-9+x}}{8} = -3$$

$$\frac{-\sqrt{-9+x}}{8} = -3$$

$$\frac{\sqrt{-9+x}}{8} = 3$$

$$\sqrt{-9+x} = 24$$

$$-9+x = 24 \quad -9+x = -24$$

$$\boxed{x=33} \quad \boxed{x=-15}$$

$$16. \frac{7 + 3(x-4)^2}{-7} = \frac{34}{-7}$$

$$3(x-4)^2 = 27$$

$$(x-4)^2 = 9$$

$$x-4 = \pm 3$$

$$x-4 = 3$$

$$x-4 = -3$$

$$\boxed{x=7}$$

$$\boxed{x=1}$$

$$17. 5 < |x+1| < 7$$

$$5 < x+1 < 7$$

$$\boxed{4 < x < 6}$$

$$-5 > x+1 > -7$$

$$\boxed{-6 > x > -8}$$