Absolute Value Equations

1. Solve the equation to get the absolute value by itself.
2. Change the (+) inside the absolute value to −(−)
3. Write the sentence that represents the problem.
4. Graph
   - always a closed dot
   - jumps above # line
   - NO rays or line segments
5. Write the solution

$-3|y+4|-7=-15$

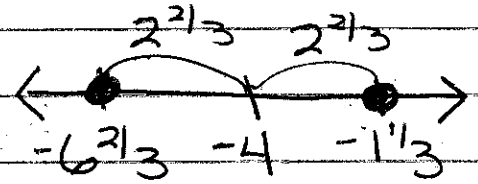
$+7 \quad +7$

$\frac{-3|y+4|}{-3} = \frac{-8}{-3}$

$|y+4| = 2\frac{2}{3}$

$|y-(-4)| = 2\frac{2}{3}$

The distance between y and -4 is $2\frac{2}{3}$ units.



$y = -6\frac{2}{3}$ and $-1\frac{1}{3}$

Absolute Value Inequalities

1. Solve the inequality so the absolute value is by itself.
   - When you multiply or divide by a negative flip the inequality symbol.
2. Change the (+) inside absolute value to − (−)
3. Write the sentence
4. Graph
   - dots can be open or closed
   - AND - line segment
   - OR - rays in opposite directions.
5. Write the solution

$-8 < -|z-6| + 12$

$-12 \quad -12$

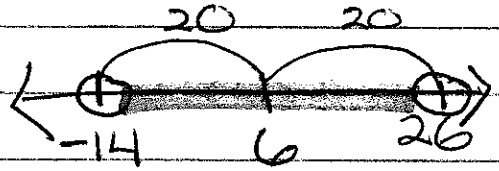
$-20 < -|z-6|$

$-1 \quad -1$

$20 > |z-6|$

$|z-6| < 20$

The distance between z + 6 is less than 20 units. AND



$-14 < z < 26$

$$-2|a+9| + 8 = 12$$
$$-8 \quad -8$$

$$\frac{-2|a+9|}{-2} = \frac{4}{-2}$$

$$|a+9| = -2$$

no solution

* absolute value of any # is positive so it can NEVER equal a negative *