Name: Key

UNIT 2 STUDY GUIDE

PART ONE: Solving Absolute Value Equations. Check your work by substituting your answers back in!

Steps to Solving Absolute Value Equations:

1. Isolate Absolute Value Sign
2. Check… is the Absolute Value Sign equal to a negative?
   a. If Yes… No Solution! You are done!
   b. If No, Split the equations into two.
      i. One positive and One Negative
3. Solve the two equations
4. Check your answers by substituting the solutions back in.
5. State your final answers.

1. $|3x| = 27$

$\frac{3x}{3} = \frac{27}{3}$ $\quad$ $\frac{3x}{3} = \frac{-27}{3}$

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

Check your work!

$|3(9)| = 27$ $\quad$ $|3(-9)| = 27$

$|27| = 27$ $\quad$ $|-27| = 27$

$27 = 27$ ✓ $\quad$ $27 = 27$ ✓

2. $|r - 9| = 21$

$r - 9 = 21$ $\quad$ $r - 9 = -21$

$+9 \quad +9$ $\quad$ $+9 \quad +9$

$\boxed{r = 30}$ $\quad$ $\boxed{r = -12}$

Check your work!

$|r - 9| = 21$ $\quad$ $|r - 9| = 21$

$|30 - 9| = 21$ $\quad$ $|-12 - 9| = 21$

$|21| = 21$ $\quad$ $|-21| = 21$

$21 = 21$ ✓ $\quad$ $21 = 21$ ✓

3. $|10 - 10k| = 50$

$10 - 10k = 50$ $\quad$ $10 - 10k = -50$

$-10 \quad -10$ $\quad$ $-10 \quad -10$

$\frac{-10k}{-10} = \frac{40}{-10}$ $\quad$ $\frac{-10k}{-10} = \frac{-60}{-10}$

$\boxed{k = -4}$ $\quad$ $\boxed{k = 6}$

Check your work!

$|10 - 10k| = 50$ $\quad$ $|10 - 10k| = 50$

$|10 - 10(-4)| = 50$ $\quad$ $|10 - 10(6)| = 50$

$|10 + 40| = 50$ $\quad$ $|10 - 60| = 50$

$|50| = 50$ $\quad$ $|-50| = 50$

$50 = 50$ ✓ $\quad$ $50 = 50$ ✓

4. $|6-3x| = -9$

Check your work!

No solution!

Absolute value equations cannot = negative numbers

5. $|3v-9|-1=2$

$+1 \quad +1$

$|3v-9|=3$

$3v-9=3$

$+9 \quad +9$

$\frac{3v}{3}=\frac{12}{3}$

$\boxed{v=4}$

$3v-9=-3$

$+9 \quad +9$

$\frac{3v}{3}=\frac{6}{3}$

$\boxed{v=2}$

Check your work!

$|3v-9|-1=2$

$|3(4)-9|-1=2$

$|12-9|-1=2$

$|3|-1=2$

$2=2$ ✓

$|3v-9|-1=2$

$|3(2)-9|-1=2$

$|6-9|-1=2$

$|-3|-1=2$

$3-1=2$

$2=2$ ✓

6. $\frac{8|6c-9|}{8}=\frac{72}{8}$

$|6c-9|=9$

$6c-9=9$

$+9 \quad +9$

$\frac{6c}{6}=\frac{18}{6}$

$\boxed{c=3}$

$6c-9=-9$

$+9 \quad +9$

$\frac{6c}{6}=\frac{0}{6}$

$\boxed{c=0}$

Check your work!

$8|6c-9|=72$

$8|6(3)-9|=72$

$8|18-9|=72$

$8|9|=72$

$8\cdot 9=72$

$72=72$ ✓

$8|6c-9|=72$

$8|6(0)-9|=72$

$8|0-9|=72$

$8|-9|=72$

$8\cdot 9=72$

$72=72$ ✓

7. $3|2x+3|+4=79$

$-4 \quad -4$

$\frac{3|2x+3|}{3}=\frac{75}{3}$

$|2x+3|=25$

$2x+3=25$

$-3 \quad -3$

$\frac{2x}{2}=\frac{22}{2}$

$\boxed{x=11}$

$2x+3=-25$

$-3 \quad -3$

$\frac{2x}{2}=\frac{-28}{2}$

$\boxed{x=-14}$

Check your work!

$3|2x+3|+4=79$

$3|2(11)+3|+4=79$

$3|22+3|+4=79$

$3|25|+4=79$

$3\cdot 25+4=79$

$75+4=79$

$79=79$ ✓

$3|2x+3|+4=79$

$3|2(-14)+3|+4=79$

$3|-28+3|+4=79$

$3|-25|+4=79$

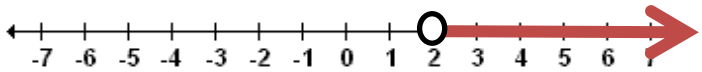
$3\cdot 25+4=79$

$75+4=79$

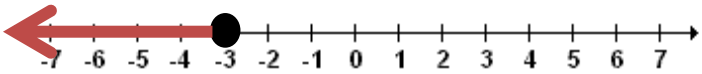
$79=79$ ✓

PART TWO: Write an inequality to represent each graph.

Inequality

8. 

8. $x > 2$

9. 

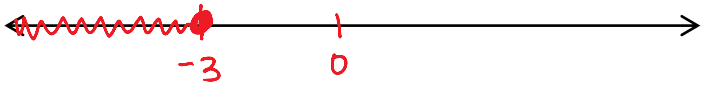
9. $x \leq -3$

10.

10. All real solutions

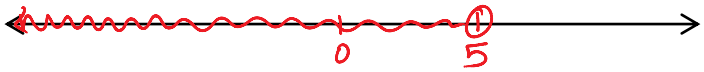
PART THREE: Graph the following inequalities.

11. $x \leq -3$

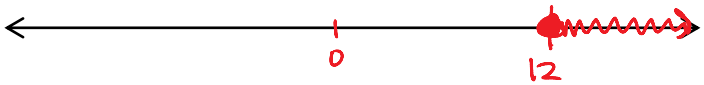


12. $5 > x$

$x < 5$



13. $x \geq 12$

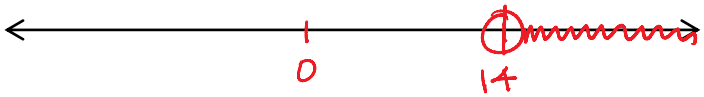


PART FOUR: Solve and graph the following inequalities.

14. $x - 4 > 10$

$+4 \quad +4$

$\boxed{x > 14}$



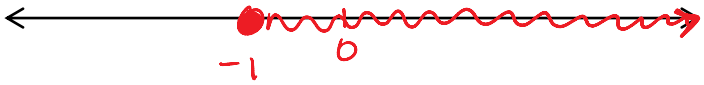
15. $-9 \leq 3r - 6$

$+6 \quad +6$

$\frac{-3}{3} \leq \frac{3r}{3}$

$-1 \leq r$

$\boxed{r \geq -1}$



16. $-m + 3 - 12m \geq -75$

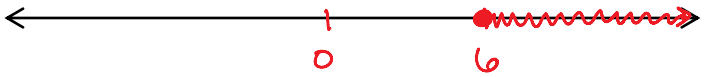
$-13m + 3 \geq -75$

$-3 \quad -3$

Divide by negative FLIP SIGN

$\frac{-13m}{-13} \geq \frac{-78}{-13}$

$m \leq 6$



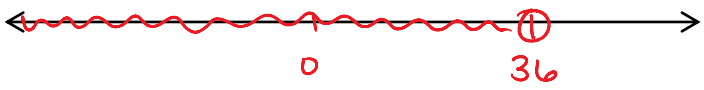
PART FOUR (continued): Solve and graph the following inequalities.

17. $\frac{1}{3}x - 4 < 8$

$+4 \quad +4$

$3 \cdot \frac{1}{3}x < 12 \cdot 3$

$\boxed{x < 36}$



18. $-4(2-4n) > 72 + 16n$

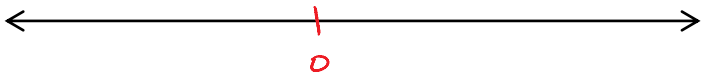
$-8 + 16n > 72 + 16n$

$-16n \quad -16n$

$-8 > 72$

FALSE

NO SOLUTION $\emptyset$



19. $v + 5 - 8v \le 7(1 - v)$

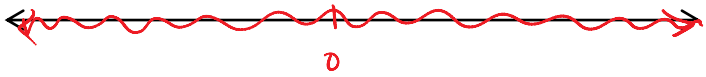
$-7v + 5 \le 7 - 7v$

$+7v \qquad +7v$

$5 \le 7$

True

All Real Solutions $\mathbb{R}$



PART FIVE: Self Reflect

On a scale of 1-5 (1 = I need to study more!! … 5=I am going to ACE this test)… how do you feel about…

✓ Solving Absolute Value Equations	1	2	3	4	5
✓ Solving Linear Inequalities	1	2	3	4	5
✓ Graphing Linear Inequalities	1	2	3	4	5

What are you going to do to prepare for the test to make sure you are ready?!

STUDY, STUDY, STUDY :)