Name: _____ Date: _____ **Unit 1 Homework**

Absolute Value Equations Homework

Directions: Be sure to show all work, communicate your thought process, and justify your reasoning. Remember to check that your answers are complete, correct, and reasonable.

Write and solve an equation to determine each unknown number.

1. The absolute value of the quotient of a number and 9 is 12.
2. The absolute value of a number is -17.
3. The difference of 8 and the absolute value of twice a number is -22.
4. Three less than the absolute value of the product of a number and 6 is 138.

Solve each equation. Be sure to identify any extraneous solutions.

5. $2 - |r - 1| = 3r + 4$

6. $-8|2b + 1| = -24$

7. $3|-4x + 12| - 5 = 103$

8. $10 - 2|3f + 5| = 4f - 10$

9. $10 - 10|-8k + 4| = 10$

10. $|3x + 2| - 4x = 5$

11. a. Let j and k be any negative real numbers, and m and n be any positive real numbers where n>m. Cross off all of the equations that are absolutely invalid in the real number system.

$j*|k| = m$ $m + |j - k| = n$ $n*|k+m| = j$ $n*|k| = m - j$

b. Choose any equation you crossed off, and explain your thought process as to why you decided to cross it off.

c. ***Just for fun!*** Create any equation using the letters j, k, m, and n that is valid in the real number system.

Looking Ahead:

Try solving this absolute value inequality. Graph your solution on a number line.

$|3x - 9| + 1 > 28$

Selected Solutions

1. $|x/9| = 12$; $x = -108$, $x = 108$

3. $8 - |2x| = -22$; $x = -15$, $x = 15$

5. $r = -1.5$

7. $x = -12$ & $x = -6$

9. $k = ½$