CCSS	Advanced	Algebra	4
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Quadratic Formula Review

Name	<del>)</del>	

1. Factor the polynomial  $f(x) = x^2 + 8x - 20$  and use the factors to find the x-intercepts of the function.

> (x+10)(x-2)X=-10, X=2

Explain why you can't factor  $g(x) = x^2 + 8x - 1$ . How could you solve the equation,  $x^2 + 8x - 1 = 0$ ? 2.

Con't multiply to be -1 & add = 8. Use completing the gause" (CTS)

- The Quadratic Formula  $(ax^2 + bx + c = 0, x = \frac{-b \pm \sqrt{b^2 4ac}}{2a})$  is a shortcut for a long process of solving 3. Quadratic Equations that CANNOT BE FACTORED (full mathematics of the shortcut). To use the shortcut, you follow three steps:
  - Make the equation to be solved in the form  $ax^2 + bx + c = 0$  it is essential to have the equation
  - Identify the values of a, b and c from the equation (these are the coefficients on the  $x^2$  term, the x term and the constant coefficient.
  - Use a calculator to evaluate  $x = \frac{-b + \sqrt{b^2 4ac}}{2a}$  and  $x = \frac{-b \sqrt{b^2 4ac}}{2a}$  to determine the solutions.

Use the Quadratic Formula to solve each equation below:

x2-3x-19=0

$$-3\pm\sqrt{65}$$

b. 
$$x^{2}-4x-2=0$$

$$\chi = \frac{4 + \sqrt{(-4)^{2} - 4(1)(-2)}}{2(1)}$$

$$\frac{4 + \sqrt{16 + 8}}{2}$$

$$4 + \sqrt{2}$$

$$4 + \sqrt{2}$$

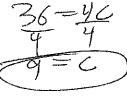
$$\begin{array}{c}
 3 \pm \sqrt{1-3} \\
 2 \\
 3 \pm \sqrt{9+78} \\
 2 \\
 3 \pm \sqrt{85} \\
 7
 \end{array}$$

All of the above examples, have 2 solutions. Is it possible for a Quadratic Equation to have only 1 4. solution? Explain why or why not. How could using the Quadratic Formula give you only one solution?

Yes, if b²-lac=0. The Jo=0, and +0=-0. If b²-lac>0, there on I solutions because of the positive & regative Square rux

The equation  $x^2 + 6x + c = 0$  has only one solution. What must be true about c? How do you know? 5.

62-4(1)·C=0 36-4C



6. Show that  $4x^2 + 4x = -1$  has only one solution.

$$4x^{2}+4x+1=0$$

$$4^{2}-4(4)(1)$$

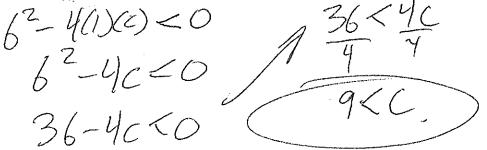
$$16-16=0$$

$$16-16=0$$

7. Is it possible that a Quadratic Equation has zero real solutions? Explain why or why not. How could using the Quadratic Formula give you no real solutions?

Yes, if b2-4ac < 0. Con't take the Squere noot of a negative using real numbers. The solutions are traginary

8. The equation  $x^2 + 6x + c = 0$  has no real solutions. What must be true about c? Be specific:



9. For each Quadratic Equation below, determine whether the equation has 2 real solutions, 1 real solution or no real solutions?

solution or no real solutions?

a. 
$$x^2 = 7x - 2$$

b.  $-10x^2 + 60x - 90 = 0$ 

c.  $0.25x^2 = 3.11x - 18.2$ 
 $25x^2 - 3.11x + 18.7$ 
 $25x^2 - 3.11x + 18.7$ 
 $3600 - 3600$ 
 $3,11^2 - 4(.25)(.8.7)$ 
 $49 - 8$ 
 $41$ 
 $25010$ 
 $3600 - 3600$ 
 $3,11^2 - 4(.25)(.8.7)$ 
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10. Show that the quadratic function  $f(x) = x^2 + 1$  has NO REAL ROOTS.

$$x^2+1=0$$
  $x=\pm i$  = Not real