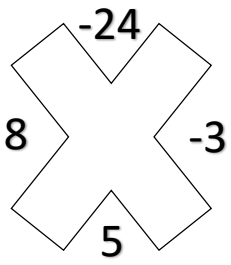
PCFU (C1) HN – Quadratics Review Name _____

1. Use factoring to solve. Show your work.

$$-4w^2 + 5w = -6$$

Step 1: Set the expression equal to 0. *Add 6 to both sides*	$-4w^2 + 5w + 6 = 0$
Step 2: Factor by using the diamond.  *I know that a*c goes into the top of the diamond and b goes into the bottom of the diamond. Then I must find two integers that multiply to the top number and add to the bottom number.* *Then I rewrite the expression by replacing the b value with the two factors that I found above.* $-4w^2 + 8w - 3w + 6$ *Then I factor by grouping by determining the greatest common factor (GCF) of the first two terms and the second two terms.* $-4w(w-2) - 3(w-2)$ *The GCF of the first two terms is -4w. When you divide -4w² +8w by -4w, you are left with w - 2. The GCF of the second two terms is -3. When you divide -3w+6 by -3, you are left with w-2.* *Since the terms in parentheses are the same, you can make them one set of parentheses and put your GCF into another set of parentheses.* $(-4w-3)(w-2)$	$(-4w-3)(w-2) = 0$
Step 3: Solve for w. *I must set each factor equal to zero and solve for w.* $(-4w-3) = 0$ *and* $(w-2) = 0$	$w = \frac{-3}{4}$ *and* $w = 2$

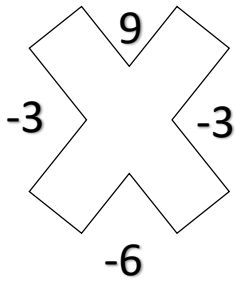
Additional Practice:

1) Use factoring to solve. Show your work.

$$\mathbf{14x^2 - 120 = 64x}$$

2. Complete the square to write this quadratic in vertex form. Show your work.

$$g(x) = 2x^2 - 12x + 22$$

Step 1: Set the expression equal to 0.	$2x^2 - 12x + 22 = 0$
Step 2: Move the constant term to the other side. *Add 22 to both sides*	$2x^2 - 12x = -22$
Step 3: Factor out the leading coefficient.	$2(x^2 - 6x) = -22$
Step 4: Create a perfect square trinomial and add the constant term to both sides. The constant term of the perfect square trinomial = $(\frac{b}{2})^2$ $(\frac{-6}{2})^2 = (-3)^2 = 9$	$2(x^2 - 6x + 9) = -22 + 2(9)$ $2(x^2 - 6x + 9) = -4$
Step 5: Factor the perfect square trinomial by using the diamond.  I know that a*c goes into the top of the diamond and b goes into the bottom of the diamond. Then I must find two integers that multiply to the top number and add to the bottom number. Then I rewrite the expression by replacing the b value with the two factors that I found above. $x^2 - 3x - 3x + 9$ Then I factor by grouping by determining the greatest common factor (GCF) of the first two terms and the second two terms. $x(x - 3) - 3(x - 3)$ The GCF of the first two terms is x. When you divide $x^2 - 3x$ by x, you are left with x - 3. The GCF of the second two terms is -3. When you divide $-3x+9$ by -3, you are left with x-3. Since the terms in parentheses are the same, you can make them one set of parentheses and put your GCF into another set of parentheses. $(x - 3)(x - 3)$	$2(x - 3)^2 = -4$
Step 6: Move the constant term back over. Add 4 to both sides.	$2(x - 3)^2 + 4$

Additional Practice:

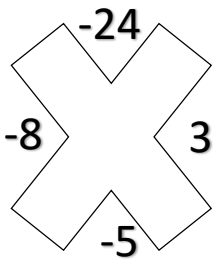
2) Complete the square to write this quadratic in vertex form. Show your work.

$$\boldsymbol{f(x) = 4x^2 + 4x + 36}$$

PCFU (C1) CP – Quadratics Review Name _____

1. Use factoring to solve. Show your work.

$$4w^2 - 5w = 6$$

Step 1: Set the expression equal to 0. Subtract 6 from both sides	$4w^2 - 5w - 6 = 0$
Step 2: Factor by using the diamond.  I know that a*c goes into the top of the diamond and b goes into the bottom of the diamond. Then I must find two integers that multiply to the top number and add to the bottom number. Then I rewrite the expression by replacing the b value with the two factors that I found above. $4w^2 - 8w + 3w - 6$ Then I factor by grouping by determining the greatest common factor (GCF) of the first two terms and the second two terms. $4w(w-2) + 3(w-2)$ The GCF of the first two terms is 4w. When you divide $4w^2$ -8w by 4w, you are left with w - 2. The GCF of the second two terms is 3. When you divide 3w-6 by 3, you are left with w-2. Since the terms in parentheses are the same, you can make them one set of parentheses and put your GCF into another set of parentheses. $(4w+3)(w-2)$	$(4w+3)(w-2) = 0$
Step 3: Solve for w. I must set each factor equal to zero and solve for w. $(4w+3) = 0$ and $(w-2) = 0$	$w = \frac{-3}{4}$ and $w = 2$

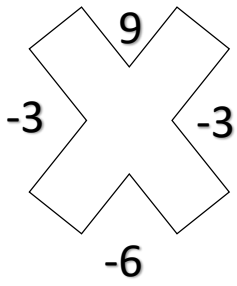
Additional Practice:

1) Use factoring to solve. Show your work.

$$\mathbf{7x^2 - 20 = 31x}$$

2. Complete the square to write this quadratic in vertex form. Show your work.

$$g(x) = x^2 - 6x + 11$$

Step 1: Set the expression equal to 0.	$x^2 - 6x + 11 = 0$
Step 2: Move the constant term to the other side. *Subtract 11 from both sides*	$x^2 - 6x = -11$
Step 3: Create a perfect square trinomial and add the constant term to both sides. The constant term of the perfect square trinomial = $(\frac{b}{2})^2$ $(\frac{-6}{2})^2 = (-3)^2 = 9$	$x^2 - 6x + 9 = -11 + 9$ $x^2 - 6x + 9 = -2$
Step 4: Factor the perfect square trinomial by using the diamond.  I know that a*c goes into the top of the diamond and b goes into the bottom of the diamond. Then I must find two integers that multiply to the top number and add to the bottom number. Then I rewrite the expression by replacing the b value with the two factors that I found above. $x^2 - 3x - 3x + 9$ Then I factor by grouping by determining the greatest common factor (GCF) of the first two terms and the second two terms. $x(x - 3) - 3(x - 3)$ The GCF of the first two terms is x. When you divide x^2 - 3x by x, you are left with x - 3. The GCF of the second two terms is -3. When you divide -3x+9 by -3, you are left with x-3. Since the terms in parentheses are the same, you can make them one set of parentheses and put your GCF into another set of parentheses. $(x - 3)(x - 3)$	$(x - 3)^2 = -2$
Step 5: Move the constant term back over. Add 2 to both sides.	$(x - 3)^2 + 2$

Additional Practice:

2) Complete the square to write this quadratic in vertex form. Show your work.

$$\boldsymbol{f(x) = x^2 + 10x + 18}$$