

Lesson 7.2- SWBAT solve quadratic equations by cross multiplying  
 Kick off- Solve each of the following:

1)  $x^2 + 3x = 0$   
 $x(x+3) = 0$   
 $x=0$  |  $x+3=0$   
 $x=0$  |  $x=-3$

2)  $a^2 - 36a = 0$   
 $a(a-36) = 0$   
 $a=0$  |  $a-36=0$   
 $a=0$  |  $a=36$

3)  $y^2 = 16$   
 $y^2 - 16 = 0$   
 $(y+4)(y-4) = 0$   
 $y+4=0$  |  $y-4=0$   
 $y=-4$  |  $y=4$

4)  $x^2 - x = 6$   
 $x^2 - x - 6 = 0$   
 $(x+2)(x-3) = 0$   
 $x+2=0$  |  $x-3=0$   
 $x=-2$  |  $x=3$

When two ratios (fractions) are set equal to each other they form a proportion.  
 To solve a proportion, you must cross multiply!! (then factor and solve!)

Examples:

1)  $\frac{6}{9} = \frac{4}{x}$   
 $6x = 36$   
 $x = 6$

2)  $\frac{3}{y} = \frac{9}{y+2}$   
 $2(y+2) = 9y$   
 $2y+4 = 9y$   
 $-2y \quad -2y$   
 $4 = 7y$   
 $\frac{4}{7} = y$

3)  $\frac{x^2+4}{x^2} = \frac{5}{x}$   
 $5x^2 = x(x^2+4)$   
 $5x^2 = x^3 + 4x$   
 $-5x^2 \quad -5x^2$   
 $0 = x^3 - 5x^2 + 4x$   
 $0 = x(x^2 - 5x + 4)$   
 $(x^2 - 1x - 4x + 4)$   
 $x(x-1) - 4(x-1)$   
 $x(x-4)(x-1) = 0$   
 $x=0$  |  $x-4=0$  |  $x-1=0$   
 $x=4$  |  $x=1$

4)  $\frac{x+2}{x^2+1} = \frac{x-2}{3}$

9)  $\frac{k+3}{3} = \frac{8}{k-2}$   
 $24 = (k+3)(k-2)$   
 $k^2 - 2k + 3k - 6$   
 $24 = k^2 + k - 6$   
 $-24 \quad -24$   
 $0 = k^2 + k - 30$   
 $0 = (k-5)(k+6)$   
 $k-5=0$  |  $k+6=0$   
 $k=5$  |  $k=-6$