Solving Equations by Factoring:
allows us to solve equations of degree 2 and higher using skills we've previously learned

Steps:
1. make sure the equation is equal to zero; if not, make it equal to zero
2. factor the equation like we have done previously (GCF, Reverse FOIL, slide & divide)
3. set each factor (or set of parentheses) equal to zero
4. solve each equation for x

Example 1:
Solve by factoring.
$2x^2 + 18x + 28 = 0$
Step 1: Equal to 0? = yes
Step 2: Factor. Is there a GCF? - yes Factor. Since there is just x^2, find the factors of last that add to be the middle.
Step 3: Set each parentheses equal to 0.
Step 4: Solve.

Example 2:
Solve by factoring.
$x^2 - 36 = 5x$
Step 1: Equal to 0 - no.
Step 2: Factor. No GCF. No coefficient on x^2 so factors of last that add to be middle.
Step 3: Set each parentheses = to 0
Step 4: Solve.

Example 3:
Solve by factoring.
$2x^2 - 5x - 12 = 0$
Step 1 - done.
Step 2 - no GCF. Factor with slide & divide.
Step 3 - set each parentheses = 0
Step 4 - solve.

Example 5:
Solve by factoring.
$a^2 - 24a = -144$
Step 1 - set = to 0
Step 2 - factor - no GCF factors of last that add up to middle
Step 3 - set each parentheses
Step 4 - solve
Since roots are the same, the vertex is also the root.

Example 6:
Solve by factoring.
$3x^2 - 7x - 20 = 0$
Step 1 - done
Step 2 - factor. No GCF, so slide and divide.
Step 3 - set each parentheses = 0
Step 4 - solve.