Essential Question: How do we solve quadratic equations?
Do Now: Compare and contrast the equations below.
a) $x^{2}+1=10$
b) $x+1=9$

## Think about this to help you...

- Are the equations equivalent?
- Would you solve the equations in the same way?
- Do the equations have the same number of solutions?


## Quadratic Equation:

$\qquad$

Let's look at another quadratic equation. How would you solve $x^{2}-6 x+8=0$ ?


## Examples:

1) $x^{2}-8 x=-16$
2) $x^{2}+5 x=36$
3) $x^{2}-16=0$
4) $4 x^{2}-x=0$
5) $3 x^{2}-6 x-45=0$
6) $5 x^{2}-125=0$

Solving Quadratic Equations by Factoring

1) Rewrite the equation in the form of $a x^{2}+b x+c=0$
2) Factor
3) Set each factor equal to zero and solve (zero product property)
4) Check solution set with the original equation
5) $x(x-2)=35$
6) $x^{2}+5 x-12=8 x-2$

Quadratic Equations can be solved by $\qquad$ and using the property. If the product of two quantities equals zero, at least one of the quantities must equal zero.

## One more question...

The solution set of the equation $x^{2}-4 x-12=0$ is
(1) $\{-6,2\}$
(3) $\{-2,6\}$
(2) $\{-4,3\}$
(4) $\{-3,4\}$

Solve the following quadratic equations.

1. $x^{2}-3 x+2=0$
2. $z^{2}-5 z+4=0$
3. $x^{2}-8 x+16=0$
4. $c^{2}+6 c=-5$
5. $10 m^{2}+10 m=0$
6. $m^{2}-64=0$
7. $3 x^{2}-12=0$
8. $2 x^{2}+20 x=-18$
9. $5 x^{2}-60 x=140$
