Solving Quadratic Equations by Factoring – Basics

Objective 1: Solve Quadratic Equations Using ZPP

Zero Product Property (ZPP)

If A and B are real numbers and AB = 0, then A = 0 or B = 0.

It means that if you multiply two or more numbers and the result is zero then at least one number in the product must be zero.

Ex) Solve: $(x-1)(x+3)=0$

Ex) Solve: $x(x+7)(x-4)=0$

Ex) Solve: $6x(x-2)(3x+5)=0$

Pause the video to try this one on your own, then restart when you are ready to check your answer.

Ex) Solve: $9x(x+8)(2x-7)=0$

Exercises:
Solve each equation by zero product property.

1. $(x+5)(x-9)=0$

2. $4k(k+2)(7k-1)=0$

Objective 2: Solve Quadratic Equations using FOIL Factoring

How to Solve Quadratic Equations using FOIL Factoring

1. Gather all terms on one side of the equation if needed.
2. Factor using X method.
3. Apply the Zero Product Property (ZPP).
4. Solve for the variable.

Ex) Solve: $x^2+3x+2=0$

Ex) Solve: $n^2 - 7n = -12$

Ex) Solve: $a^2 - 15 = -2a$

Pause the video to try this one on your own, then restart when you are ready to check your answer.

Ex) Solve: $28 = k^2 - 12k$

Exercises:
Solve each equation by factoring.

1. $a^2 - 13a = -42$

2. $72 = j^2 - j$

Objective 3: Solve Quadratic Equations by Factoring Difference of Squares

How to Solve Quadratic Equations by Factoring Difference of Squares

1. Gather all terms on one side of the equation if needed.
2. Factor. Recall $a^2 - b^2 = (a-b)(a+b)$
3. Apply the Zero Product Property (ZPP).
4. Solve for the variable.

Ex) Solve: $x^2 - 36 = 0$

Ex) Solve: $m^2 = 49$

Pause the video to try this one on your own, then restart when you are ready to check your answer.

Ex) Solve: $81 = t^2$

Exercises:
Solve each equation by factoring.

1. $a^2 = 64$

2. $121 = m^2$

Objective 4: Solve Quadratic Equations with a Greatest Common Factor (GCF)

How to Solve Quadratic Equations with a Greatest Common Factor

1. Gather all terms on one side of the equation if needed.
2. Factor out the GCF.
3. Factor completely.
4. Apply the Zero Product Property (ZPP).
5. Solve for the variable.

Ex) Solve: $x^3 - x = 0$

Ex) Solve: $3x^3 - 3x^2 = 6x$

Pause the video to try this one on your own, then restart when you are ready to check your answer.

Ex) Solve: $5p^3 - 60p = 5p^2$

Exercises:
Solve each equation by factoring.

1. $n^3 = 4n$

2. $3t^3 + 3t^2 = 90t$