**Solving Quadratic Equations by Factoring**

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Class: \_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_

Solve the following quadratic equations by factoring. Show all steps and simplify your answers.

 **Open Ended Questions**

1. Solve the quadratic equation: $x^{2}−5x+6=0$

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. Solve the quadratic equation: $x^{2}+4x−12=0$

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3. Solve the quadratic equation: $2x^{2}−8x=0$

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4. Solve the quadratic equation: $x^{2}−9=0$

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5. Solve the quadratic equation: $x^{2}+7x+10=0$

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6. Solve the quadratic equation: $3x^{2}−12x=0$

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 **Multiple Choice Questions**

1. Solve the quadratic equation: $x^{2}−5x+6=0$

a) $x=2$ and $x=3$

b) $x=−2$ and $x=−3$

c) $x=1$ and $x=6$

d) $x=−1$ and $x=−6$

2. Solve the quadratic equation: $x^{2}+4x+4=0$

a) $x=2$

b) $x=−2$

c) $x=4$

d) $x=−4$

3. Solve the quadratic equation: $x^{2}−3x−10=0$

a) $x=5$ and $x=−2$

b) $x=−5$ and $x=2$

c) $x=3$ and $x=−10$

d) $x=−3$ and $x=10$

4. Solve the quadratic equation: $x^{2}−8x+16=0$

a) $x=4$

b) $x=−4$

c) $x=8$

d) $x=−8$

5. Solve the quadratic equation: $x^{2}+6x+9=0$

a) $x=3$

b) $x=−3$

c) $x=6$

d) $x=−6$

6. Solve the quadratic equation: $x^{2}−2x−15=0$

a) $x=5$ and $x=−3$

b) $x=−5$ and $x=3$

c) $x=2$ and $x=−15$

d) $x=−2$ and $x=15$

**Solving Quadratic Equations by Factoring - Answers**

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Class: \_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_

Solve the following quadratic equations by factoring. Show all steps and simplify your answers.

 **Open Ended Questions**

1. Solve the quadratic equation: $x^{2}−5x+6=0$

*To solve the quadratic equation* $x^{2}−5x+6=0$ *by factoring, we look for two numbers that multiply to 6 and add up to -5. These numbers are -2 and -3. Thus, we can write the equation as:*$(x−2)(x−3)=0$*Setting each factor to zero gives us the solutions:*$x−2=0$ *or* $x−3=0$*So,* $x=2$ *or* $x=3$

2. Solve the quadratic equation: $x^{2}+4x−12=0$

*To solve the quadratic equation* $x^{2}+4x−12=0$ *by factoring, we look for two numbers that multiply to -12 and add up to 4. These numbers are 6 and -2. Thus, we can write the equation as:*$(x+6)(x−2)=0$*Setting each factor to zero gives us the solutions:*$x+6=0$ *or* $x−2=0$*So,* $x=−6$ *or* $x=2$

3. Solve the quadratic equation: $2x^{2}−8x=0$

*To solve the quadratic equation* $2x^{2}−8x=0$ *by factoring, we first factor out the greatest common factor, which is 2x:*$2x(x−4)=0$*Setting each factor to zero gives us the solutions:*$2x=0$ *or* $x−4=0$*So,* $x=0$ *or* $x=4$

4. Solve the quadratic equation: $x^{2}−9=0$

*To solve the quadratic equation* $x^{2}−9=0$ *by factoring, we recognize that this is a difference of squares:*$(x−3)(x+3)=0$*Setting each factor to zero gives us the solutions:*$x−3=0$ *or* $x+3=0$*So,* $x=3$ *or* $x=−3$

5. Solve the quadratic equation: $x^{2}+7x+10=0$

*To solve the quadratic equation* $x^{2}+7x+10=0$ *by factoring, we look for two numbers that multiply to 10 and add up to 7. These numbers are 2 and 5. Thus, we can write the equation as:*$(x+2)(x+5)=0$*Setting each factor to zero gives us the solutions:*$x+2=0$ *or* $x+5=0$*So,* $x=−2$ *or* $x=−5$

6. Solve the quadratic equation: $3x^{2}−12x=0$

*To solve the quadratic equation* $3x^{2}−12x=0$ *by factoring, we first factor out the greatest common factor, which is 3x:*$3x(x−4)=0$*Setting each factor to zero gives us the solutions:*$3x=0$ *or* $x−4=0$*So,* $x=0$ *or* $x=4$

 **Multiple Choice Questions**

1. Solve the quadratic equation: $x^{2}−5x+6=0$

a) $x=2$ ***and*** $x=3$

b) $x=−2$ and $x=−3$

c) $x=1$ and $x=6$

d) $x=−1$ and $x=−6$

2. Solve the quadratic equation: $x^{2}+4x+4=0$

a) $x=2$

b) $x=−2$

c) $x=4$

d) $x=−4$

3. Solve the quadratic equation: $x^{2}−3x−10=0$

a) $x=5$ ***and*** $x=−2$

b) $x=−5$ and $x=2$

c) $x=3$ and $x=−10$

d) $x=−3$ and $x=10$

4. Solve the quadratic equation: $x^{2}−8x+16=0$

a) $x=4$

b) $x=−4$

c) $x=8$

d) $x=−8$

5. Solve the quadratic equation: $x^{2}+6x+9=0$

a) $x=3$

b) $x=−3$

c) $x=6$

d) $x=−6$

6. Solve the quadratic equation: $x^{2}−2x−15=0$

a) $x=5$ ***and*** $x=−3$

b) $x=−5$ and $x=3$

c) $x=2$ and $x=−15$

d) $x=−2$ and $x=15$