Algebra 1 Notes

Date:

9.6 Factor Quadratic Equations When the Leading Coefficient IS NOT 1 **VOCABULARY:**

- Standard Form of a Quadratic Equation $Ax^2 + Bx + C = 0$ Where A B, C are real numbers; and A = 0
- Factoring is a lot more work when a≠1

Example 1 Factor when a and c are prime number other than 1

- 1) Identify a, b, and c. a = 2 b = 15 and c = 7
- 2) Write 2 sets of ()'s. One for each factor.

- 5) What are the factors of 2 and 7? Put them under the numbers
- 6) Draw brackets (multiply INNER TERMS, OUTER TERMS, and their sum must be B!
- 7) **CHECK** by Multiplying the factors

$$(2x+1)(x+7) = 2x^2+14x+x+7 = 2x^2+15x+7$$

CHECK POINT: Factor and Check by mentally multiplying

2) $2x^2 - 11x + 5 = (2x - 1)(x - 5)$	3) $5x^2 + 2x - 3 = (5x - 3)(x + 1)$
OR (x-s)(2x-1)	Signs or (x+1)(5x-3)
3×=3= =9×	TIP: FACTUR GCF
4) $3x^2 - 8x - 3 = (3x+1)(x-3)$	5) $5x^2 + 55x + 150$ $5(x^2 + 11x + 30)$
1.3 1.3 OR (X-3)(3X+1)	Keep FACTORI NG
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Algebra 1 Notes...

Example 6 Factor when the leading coefficient is negative (-a)

Steps to Factor :

$$-2x^{2}-11x-5=\frac{-1(2x^{2}+11x+5)}{2x\cdot 5=10x}$$

$$-1(2x+1)(x+5)$$



- 1) Identify a, b, and c. $a = \frac{-\lambda}{b}$ b= $\frac{-11}{b}$ and c= $\frac{-5}{b}$
- OR

2) Always factor out -1 when the leading coefficient is negative.

-1 (X+5) (2x+1)

- 3) Factor
- 4) Always **CHECK** by Mentally multiplying the factors !!!!!!!!!!!!!!

$$(x+5)(2x+1) = (2x^2 + 11x + 5) = -2x^2 - 11x - 5$$

Example 7 Factor when a and c are NOT prime numbers

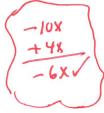
Steps to Factor: $10x^{2} + 19x + 6 = \underbrace{(5 \times 2)}_{2 \cdot 5} \underbrace{(5 \times 2)}_{2 \cdot 3}$

19XV 4 4X

- 1) Write 2 sets of ()'s. One for each factor. FILIN WHAT YOU KNOW
- 2) What are the factors of 10 and 6? Put them under the numbers
- 3) Draw brackets
- 4) Factor by guess and check.
- 5) Always CHECK by Mentally multiplying the factors !!!!!!!!!!!!!!!

Example 8 Solve Quadratic Equation by Factoring

Factor: $5x^2 - 6x - 8 = (5x + 4)(x - 2)$



Solve:

-4 -4 5x = -4 5 X=-4/s OR-.8

X=2

Check:

 $C: 5(\frac{-4}{5})^{2} - ((\frac{-4}{5}) - 8 = 0$ $0 = 0 \checkmark$

 $\Rightarrow X = \frac{-4}{5} \text{ or } -.8$ $C!, 5(2)^{2} - 6(2) - 8 = 0$ 20 - 12 - 8 = 0 $0 = 0 \sqrt{\frac{-4}{5}}$