Name "Teacher" Pd 1/2 Date Novem 12 2018 **Section 2P5**

Are you smarter than a 5th grader?

Ex. What two numbers add to be 5 but when multiplied your answer is 6?

Ans: 2 and 3 because $2 + 3 = 5$ and $2(3) = 6$

1) What two numbers add to be 2 but when multiplied your answer is 1?

$1+1=2 \quad 1(1)=1$

2) What two numbers add to be 8 but when multiplied your answer is 15?

$5+3=8 \quad 5(3)=15$

3) What two numbers add to be 14 but when multiplied your answer is 48?

$6+8=14 \quad 6(8)=48$

4) What two numbers add to be −4 but when multiplied your answer is 4?

$-2(-2)=4 \quad (-2)(-2)=4$

must be 2 (−) #s to have (−) sum & (+) product

5) What two numbers add to be −6 but when multiplied your answer is −7?

$-7+1=-6 \quad -7(-1)=-7$

6) What two numbers add to be 2 but when multiplied your answer is −8?

$-2+4=2 \quad -2(4)=-8$

7) What two numbers add to be 9 but when multiplied your answer is −52?

$13+(-4)=9 \quad 13(-4)=-52$

Bigger # is positive b/c sum is (+)

8) What two numbers add to be 0 but when multiplied your answer is −9?

$-3+3=0 \quad -3(3)=-9$

9) What two numbers add to be −5 but when multiplied your answer is −6?

$-6+1=-5 \quad 1(-6)=-6$

* bigger # is (−) b/c sum is (−)

10) What two numbers add to be 20 but when multiplied your answer is −44?

$-2+22=20 \quad -2(22)=-44$

**Key Idea:

- When your product is negative, your addition has the sign of the bigger number.
- If your product is positive but your addition is negative, both numbers must be negative.

Factoring Trinomials into the Product of Binomials

- A quadratic trinomial is in the form $ax^2 + bx + c$.
- quadratic means highest exponent is 2 trinomial means 3 Terms
- When $a = 1$, we can factor by reverse FOIL, reverse box method, or reverse rockets.
  ↳ leading coefficient

Reverse FOIL/Rockets	Reverse Box Method
$x^2 + 11x + 24$ $x^2 + \underset{\text{O}}{3x} + \underset{\text{I}}{8x} + \underset{\text{L}}{24}$ F We need to find the like terms. What 2 numbers will multiply to 24 and add to 11? $8 + 3 = 11$ $\quad 8 \cdot 3 = 24$ So what are the binomials whose product is the trinomial? $(x + 8)(x + 3)$ Check by FOILing or shooting rockets. $(x+8)(x+3)$ $x^2 + 3x + 8x + 24$	$x^2 + 10x + 16$ $(8x + 2)($ X | 2 X: x^2 | $2x$ 8: $8x$ | 16 We need to find the like terms. What 2 numbers will multiply to 16 and add to 10? $8 \cdot 2 = 16$ $\quad 8 + 2 = 10$ $4 \cdot 4 = 16$ $\quad 5 + 5 = 10$ $5 \cdot 2 = 10$ So what are the binomials whose product is the trinomial? Make sure they fit your box. $(x+2)(x+8)$ typo, make +20
Ex. $x^2 + \|x - 6$ $x^2 - 2x + 3x - 6$ $(x-2)(x+3)$ -6 You Try $x^2 - 2x - 80$ $(x-10)(x+8)$ -80 $-40 \cdot 2 = -80$ $-10 \cdot 8 = -80$	Ex. $x^2 - 9x + 20$ $x^2 - 5x - 4x + 20$ $(x-5)(x-4)$ $+20$ You Try $x^2 - 7x + 10$ X | -2 X: X^2 | $-2x$ -5: $-5x$ | 10 $(x-5)(x-2)$ 10 $1 \cdot 10$ $-2 \cdot -5$ need both negative to add to -7