Warm Up

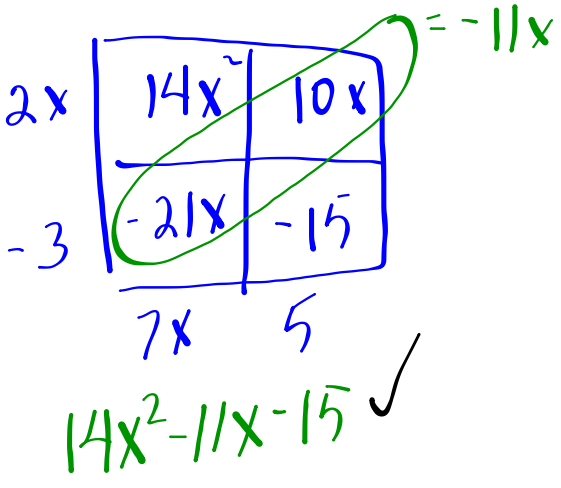
5/28

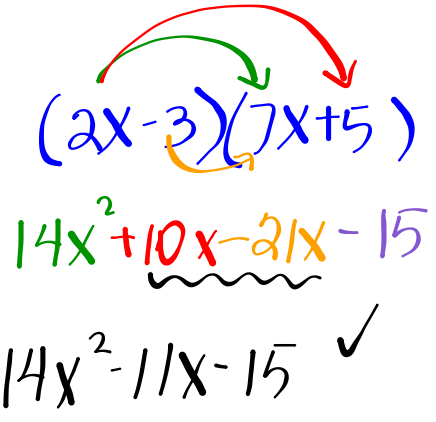
Ariel says that

$$(2x - 3)(7x + 5)$$

is the factored form of $14x^2 - 11x - 15$.

Is he correct? How can you prove it?





Ariel is correct!

Homework Questions?

1. $x^2 + 14x + 13$

   $(x+1)(x+13)$

2. $x^2 - 3x - 10$

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

3. $x^2 - 7x + 12$

   $(x-3)(x-4)$

4. $x^2 - 20x + 36$

   $(x-2)(x-18)$

5. $2x^2 + 5x + 3$

   $(x+1)(2x+3)$

6. $3x^2 - 4x - 4$

   $(3x-2)(x-2)$

7. $5x^2 - 21x - 20$

   $(5x+4)(x-5)$

8. $6x^2 + 7x + 2$

   $(2x+1)(3x+2)$

Do we really need an answer key?

No, we can check that our factoring is correct by expanding the factored form we got!

Equation: $x^2 + 14x + 13$

GCF= 1

a = 1

b = 14

c = 13

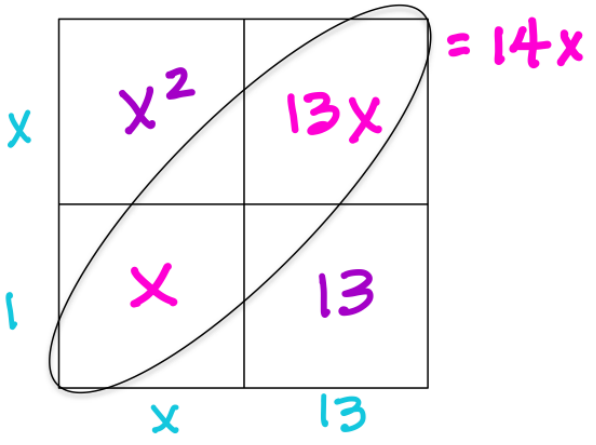
a·c = 13

Factors of a·c	Sum
1, 13	14
-1, -13	-14

There is no real need to find negative factors here because there are no negative terms in the original equation.

Rewrite Equation with 4 terms:

$x^2 + x + 13x + 13$



Factored Form: $(x+1)(x+13)$

Equation: $x^2 - 3x - 10$

GCF= 1

a = 1

b = -3

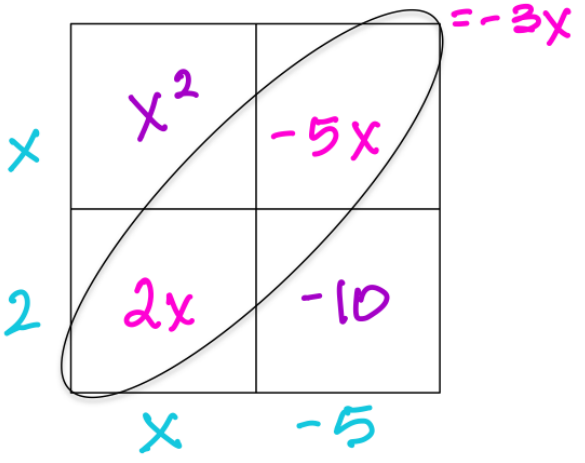
c = -10

a·c = -10

Factors of a·c	Sum
1, -10	-9
-1, 10	9
2, -5	-3
-2, 5	3

Rewrite Equation with 4 terms:

$x^2 + 2x - 5x - 10$



Factored Form: $(x+2)(x-5)$

Equation: $x^2 - 7x + 12$

Rewrite Equation with 4 terms:

$x^2 - 3x - 4x + 12$

GCF= 1

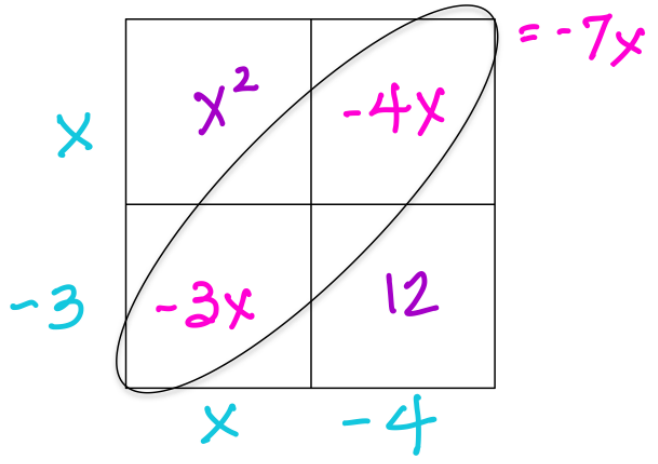
a = 1

b = -7

c = 12

a·c = 12

Factors of a·c	Sum
1, 12	13
-1, -12	-13
2, 6	8
-2, -6	-8
3, 4	7
-3, -4	-7



Factored Form: $(x-3)(x-4)$

Equation: $x^2 - 20x + 36$

Rewrite Equation with 4 terms:

$x^2 - 2x - 18x + 36$

GCF= 1

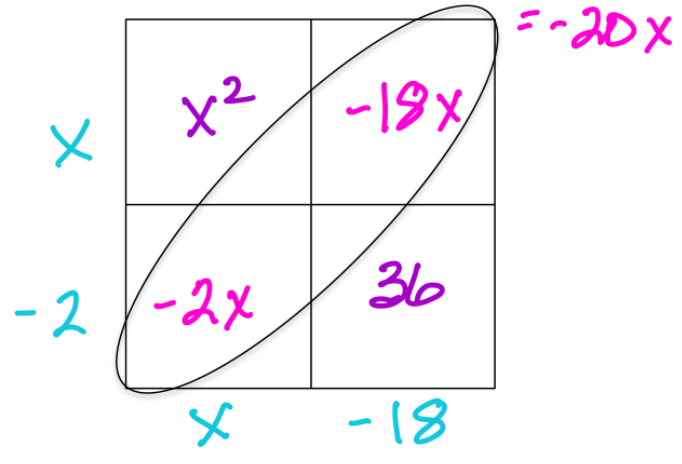
a = 1

b = -20

c = 36

a·c = 36

Factors of a·c	Sum
1, 36	37
-1, -36	-37
2, 18	20
-2, -18	-20
3, 12	15
-3, -12	-15
4, 9	13
-4, -9	-13
6, 6	12
-6, -6	-12



Factored Form: $(x-2)(x-18)$

$ax^2 + bx + c$

Equation: $2x^2 + 5x + 3$

GCF= 1

a = 2

b = 5

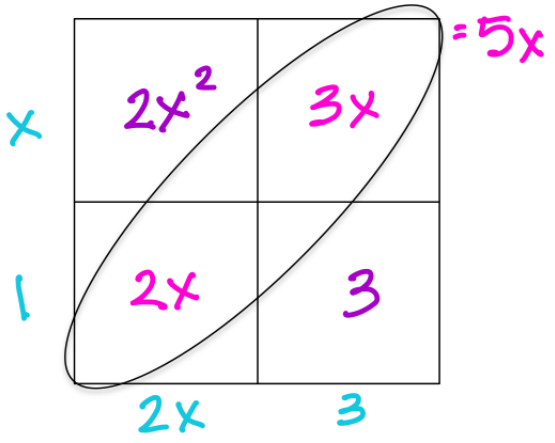
c = 3

a·c = 6

Factors of a·c (6)	Sum = 5
1, 6	7
2, 3	5

Rewrite Equation with 4 terms:

$2x^2 + 2x + 3x + 3$



Factored Form: $(x+1)(2x+3)$

Equation: $3x^2 - 4x - 4$

GCF= 1

a = 3

b = -4

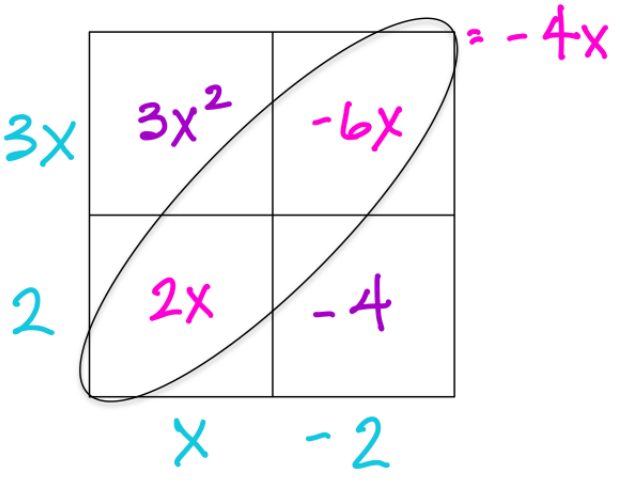
c = -4

a·c = -12

Factors of a·c	Sum
1, 12	-11
-1, 12	11
2, -6	-4
-2, 6	4
3, -4	-1
-3, 4	1

Rewrite Equation with 4 terms:

$3x^2 + 2x - 6x - 4$



Factored Form: $(3x+2)(x-2)$

Equation: $5x^2 - 21x - 20$

GCF= 1

a = 5

b = -21

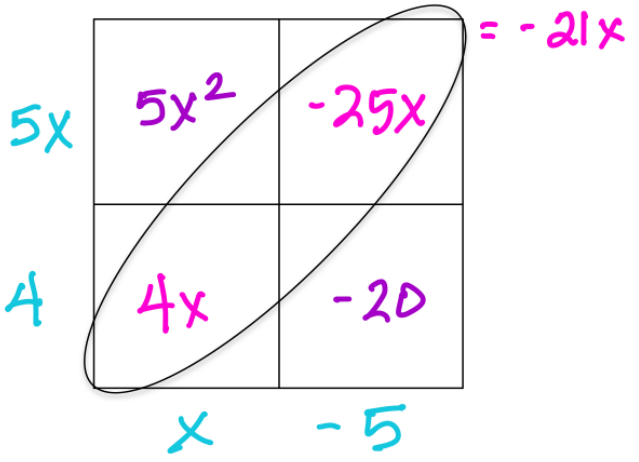
c = -20

a·c = -100

Factors of a·c	Sum
-1, 100	99
1, -100	-99
-2, 50	48
2, -50	-48
-4, 25	21
4, -25	-21
-10, 10	0

Rewrite Equation with 4 terms:

$5x^2 + 4x - 25x - 20$



Factored Form: $(5x+4)(x-5)$

Equation: $6x^2 + 7x + 2$

GCF= 1

a = 6

b = 7

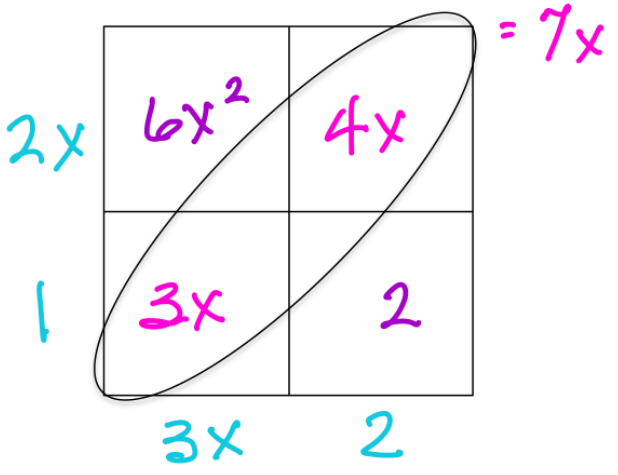
c = 2

a·c = 12

Factors of a·c	Sum
1, 12	13
2, 6	8
3, 4	7

Rewrite Equation with 4 terms:

$6x^2 + 3x + 4x + 2$



Factored Form: $(2x+1)(3x+2)$

What is this GCF for?

GCF= _____

a = _____

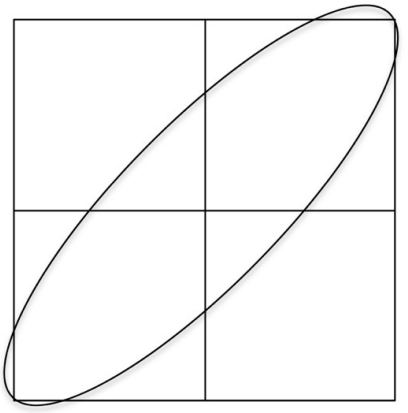
b = _____

c = _____

a·c = _____

Factors of a·c	Sum

Rewrite Equation with 4 terms:



Factored Form:

What if you had this?

$$10x^2 + 35x + 30$$

$$5(2x^2 + 7x + 6)$$

much easier to factor

GCF= 5

a = 2

b = 7

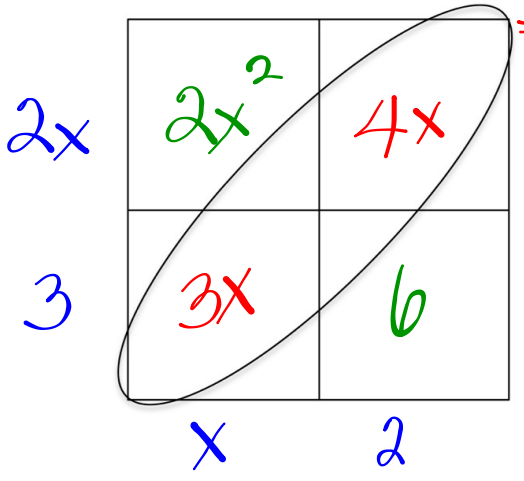
c = 6

a·c = 12

Factors of a·c	Sum
1, 12	13
2, 6	8
3, 4	7

Rewrite Equation with 4 terms:

$2x^2 + 3x + 4x + 6$ $= 7x$ ✔



Factored Form:

$5(2x+3)(x+2)$

can't forget this

Goal Today:

Everyone in your group will be able to factor!

Which group will do the best job?

1. One person will pick a problem from the sheet, and will teach/lead the group in solving it. This person will have the cup on their desk.

2. Everyone will check to make sure they factored correctly.

3. Move the cup clockwise, and the next person will take on the "teacher" role for another problem. Talking through every step.

4. Continue until the end of class when there will be an exit ticket.

Factor the following expressions completely. (Remember to take out a greatest common factor first, if possible.)

1. $x^2 + 3x - 18$	2. $x^2 - 15x + 50$
3. $2x^2 + 5x + 3$	4. $3x^2 - 11x + 6$
5. $x^2 - 6x + 9$	6. $2x^2 + 11x + 12$

7. $3x^2 - 14x - 5$	8. $4x^2 - 20x + 25$
9. $5w^2 + 13w - 6$	10. $7x^2 + 33x - 10$
11. $6x^2 - 15x + 6$	12. $2x^2 + 10x - 28$

Homework

Finish classwork