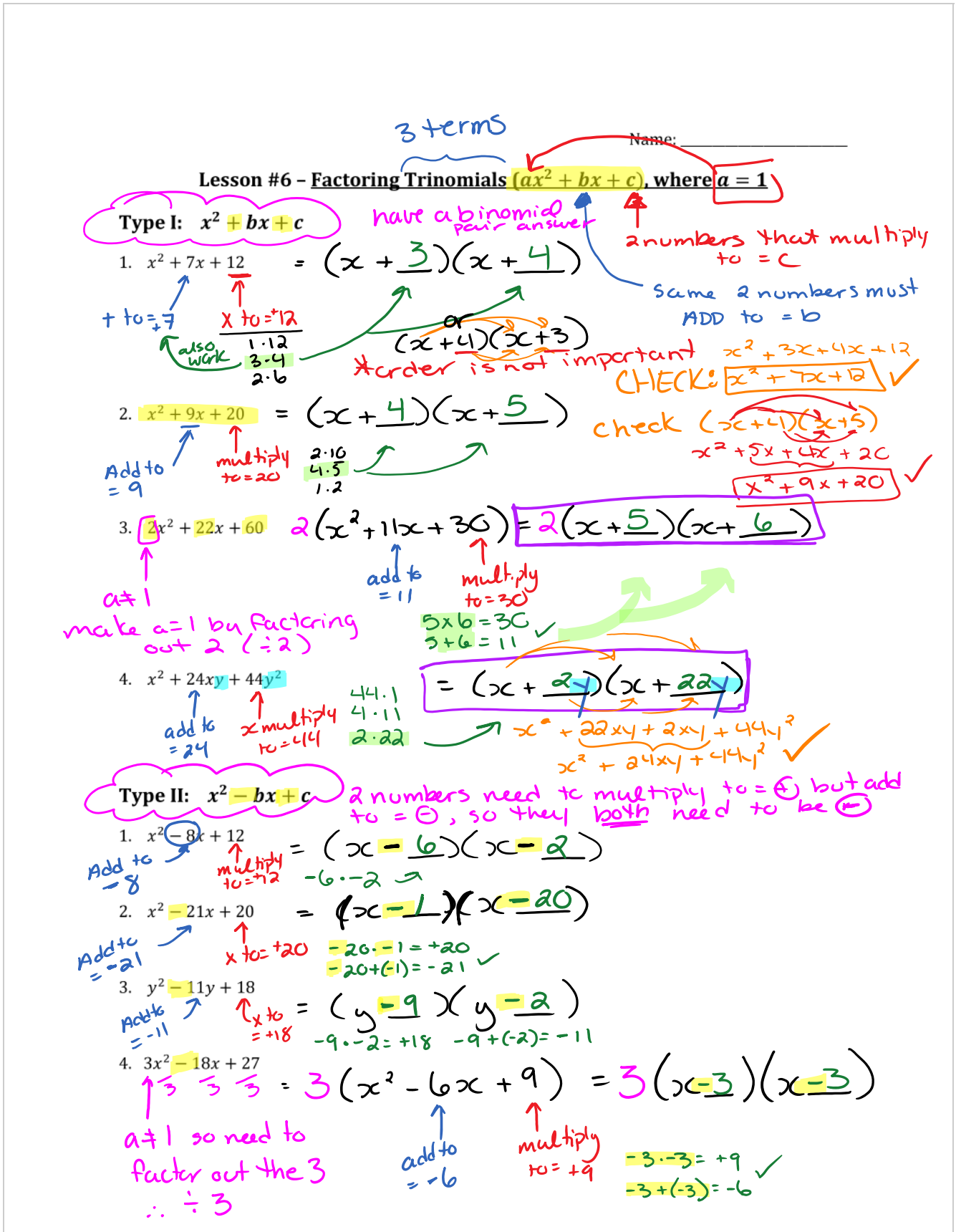
Lesson 6

November 4, 2018 8:05 PM



middle term is + or −

last term is ⊖. 2 numbers that multiply to = ⊖, which means your 2 numbers will be a ⊕ and a ⊖

Type III: $x^2 \pm bx - c$

1. $x^2 + 2x - 24$ = $(x + 2)(x - 24)$

Add to = +2

multiply to = −24

1·24
2·12
3·8
4·6 = +6 · (−4) = −24 ✓
+6 + (−4) = +2

2. $x^2 - 2x - 35$ = $(x - 7)(x + 5)$

add to −2

multiply to = −35

1·35
5·7
5·(−7) = −35 and 5 + (−7) = −2 ✓

3. $x^4 + x^2 - 30$ = $(x^2 - 5)(x^2 + 6)$

your binomial will be x^2

add to = 1

multiply to = −30

(−5)·6 = −30 and (−5) + 6 = 1

−30
1·30
2·15
3·10
5·6

4. $2x^3 - 6x^2 - 20x$

if there is a GCF: 2 factor out

$2x(x^2 - 3x - 10)$

multiply to = −10
add to = −3

−10
1·10
2·5

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

2·(−5) = −10
2 + (−5) = −3

5. $x^2 - x - 90$ = $(x + 9)(x - 10)$

Add to = −1

multiply to = −90

1·90
2·45
3·30
9·10

9·(−10) = −90
9 + (−10) = −1

Homework

ASSIGNMENT # 6
pages 35-38 Questions #189-216

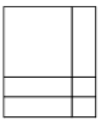
Factoring: $ax^2 + bx + c$ (where a=1) with tiles.

Hint: 3 terms, no common factor, leading coefficient is 1.

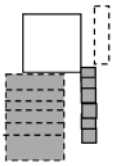
Eg.1. Consider $x^2 + 3x + 2$. The trinomial can be represented by the rectangle below.

Recall, the side lengths will give us the "factors".

$\therefore\ x^2 + 3x + 2 = (x + 1)(x + 2)$



Eg.2. Factor $x^2 - 5x - 6$



Start by placing the "x^2 tile" and the six "-1 tiles" at the corner. Then you can fill in the "x tiles". You'll need one x tile and six –x tiles.

$\therefore\ x^2 - 5x - 6 = (x + 1)(x - 6)$

Factor the following trinomials using algebra tiles.

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

190. $x^2 + 9x + 14$

191. $x^2 - 7x + 6$

192. $x^2 + 9x - 10$

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Factoring: $ax^2 + bx + c$ (where a=1) without tiles.

Did you see the pattern with the tiles?

If a trinomial in the form $x^2 + bx + c$ can be factored, it will end up as $(x + \_\_)(x + \_\_)$.

The trick is to find the numbers that fill the spaces in the brackets.

The Method...
If the trinomial is in the form: $x^2 + bx + c$, look for two numbers that multiply to c, and add to b.

Eg.1.
Factor. $x^2 + 6x + 8$

$(x + \_\_)(x + \_\_)$	What two numbers multiply to +8 but add to +6? 2 and 4
$= (x + 2)(x + 4)$	The numbers 2 and 4 fill the spaces inside the brackets.

Eg.2. Factor. $x^2 - 11x + 18$

$(x + \_\_)(x + \_\_)$	What two numbers multiply to +18 but add to -11? -2 and -9
$= (x - 2)(x - 9)$	The numbers -2 and -9 fill the spaces inside the brackets.

Eg.3. Factor. $x^2 - 7xy - 60y^2$ The y's can be ignored temporarily to find the two numbers. Just write them in at the end of each bracket.

$(x + \_\_y)(x + \_\_y)$	What two numbers multiply to -60 but add to -7? -12 and +5
$= (x - 12y)(x + 5y)$	The numbers -12 and +5 fill the spaces in front of the y's.

Factor the trinomials if possible.

193. $a^2 + 6a + 5$

194. $n^2 + 7n + 10$

195. $x^2 - x - 30$

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Factor the trinomials if possible.

196. $q^2 + 2q - 15$

197. $k^2 + k - 56$

198. $t^2 + 11t + 24$

199. $y^2 - 7y - 30$

200. $g^2 - 11g + 10$

201. $s^2 - 2s - 80$

202. $m^2 - 12m + 27$

203. $x^2 - 27 - 6x$

204. $p^2 + 3p - 54$

205. $2a^2 - 16a + 32$

206. $a^2 - 14a + 45$

207. $6x + 2x^2 - 20$

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Factor the trinomials if possible.

208. $x^4 - 3x^2 - 10$	209. $w^6 + 7w^3 + 12$	210. $p^8 - 4p^4 - 21$
211. $56x + x^2 - x^3$	212. $x^4 + 11x^2 - 80$	213. $x^2 - 3x + 7$
214. $x^2 - 6xy + 5y^2$	215. $x^2 + 5xy - 36y^2$	216. $a^2b^2 - 5ab + 6$

Challenge Question

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

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