$5p^2 + 20p - 225$

$5(p$

sign of big

signs diff

$5(p^2 + 4p - 45)$

Simple tri.

$5(x-5)(x+9)$

X	+
-45	4

$-1, +45$

$-3, +15$

$-5, +9$

See next page

Homework SOLUTIONS

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Questions: 10, 13, 15ab, 21ce

maybe ~~19 and 20~~

10. Copy and complete.

a) $(w + 3)(w + 2) = w^2 + \square w + 6$ Multiply Add

b) $(x + 5)(x + \square) = x^2 + \bigcirc x + 10$ Multiply Add

c) $(y + \bigcirc)(y + \square) = y^2 + 12y + 20$ Multiply Add

2 10

+ 20 + 12

+1, +20
+2, +10
+4, +5

13. Find and correct the errors in each expansion.

a) $(r-13)(r+4) = r(r+4) - 13(r+4)$
$= r^2 + 4r - 13r + 52$
$= r^2 - 9r + 52$

$r^2+4r-13r-52$

$r^2 - 9r - 52$

b) $(s-15)(s-5) = s(s-15) + 15(s+5)$
$= s^2 - 15s + 15s + 75$
$= s^2 + 75$

$s^2 - 5s - 15s + 75$

$s^2 - 20s + 75$

15. Factor. Check by expanding.

a) $12 + 13k + k^2$

$k^2 + 13k + 12$

$(k+1)(k+12)$

b) $-16 - 6g + g^2$

$g^2 - 6g - 16$

$(g-8)(g+2)$

c) $60 + 17y + y^2$

$y^2 + 17y + 60$

$(y \quad)(\quad)$

d) $72 - z - z^2$

$z^2 - z - 72$

19. Find an integer to replace □ so that each trinomial can be factored. How many integers can you find each time?

a) $x^2 + \square x + 10$

b) $a^2 + \square a - 9$

c) $t^2 + \square t + 8$

9
6

X
8
1, 8
2, 4

d) $y^2 + \square y - 12$

e) $h^2 + \square h + 18$

f) $p^2 + \square p - 16$

20. Find an integer to replace □ so that each trinomial can be factored. How many integers can you find each time?

a) $r^2 + r + \square$

b) $h^2 - h + \square$

c) $b^2 + 2b + \square$

d) $z^2 - 2z + \square$

e) $q^2 + 3q + \square$

f) $g^2 - 3g + \square$

21. Factor.

c) $4x^2 + 4x - 48$

$4(x^2 + x - 12)$

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

e) $-5n^2 + 40n - 35$

$-5(n^2 - 8n + 7)$

$-5(n-7)(n-1)$

OR

$+5(n+7)(n+1)$

a) $4y^2 - 20y - 56$

b) $-3m^2 - 18m - 24$

d) $10x^2 + 80x + 120$

f) $7c^2 - 35c + 42$

Factoring Trinomials

#1 $x^2 - 17x + 42$ (larger, same)

$(x-3)(x-14)$

$\frac{x}{+42}$ $\frac{+}{-17}$

$-1, -42$
$-2, -21$
$-3, -14$ ✓
$-6, -7$

#2 $x^2 - 17x - 38$

$(x-19)(x+2)$

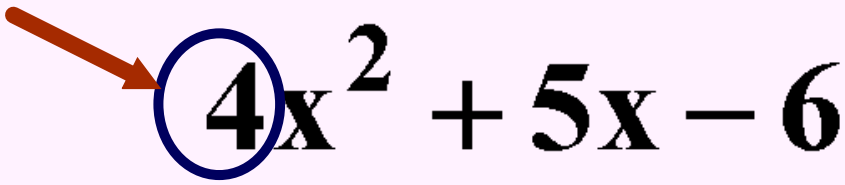
$\frac{x}{-38}$ $\frac{+}{-17}$

#3 $4x^2 + 5x - 6$ New Method

What do you notice ??

DECOMPOSITION

If there is a *numerical coefficient* in front of x^2, then we use a method for factoring called *DECOMPOSITION.*



Hard Trinomials

- has three terms with the form...

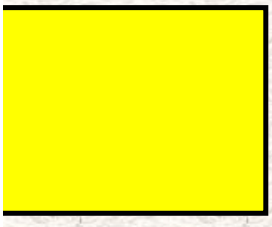
$$ax^2 + bx + c$$

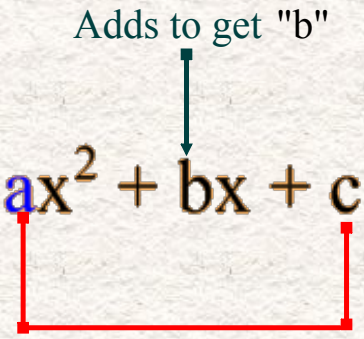
- a hard trinomial has an "a" value **not equal to 1**.

- we use a method of decomposition to factor them.

DECOMPOSITION METHOD

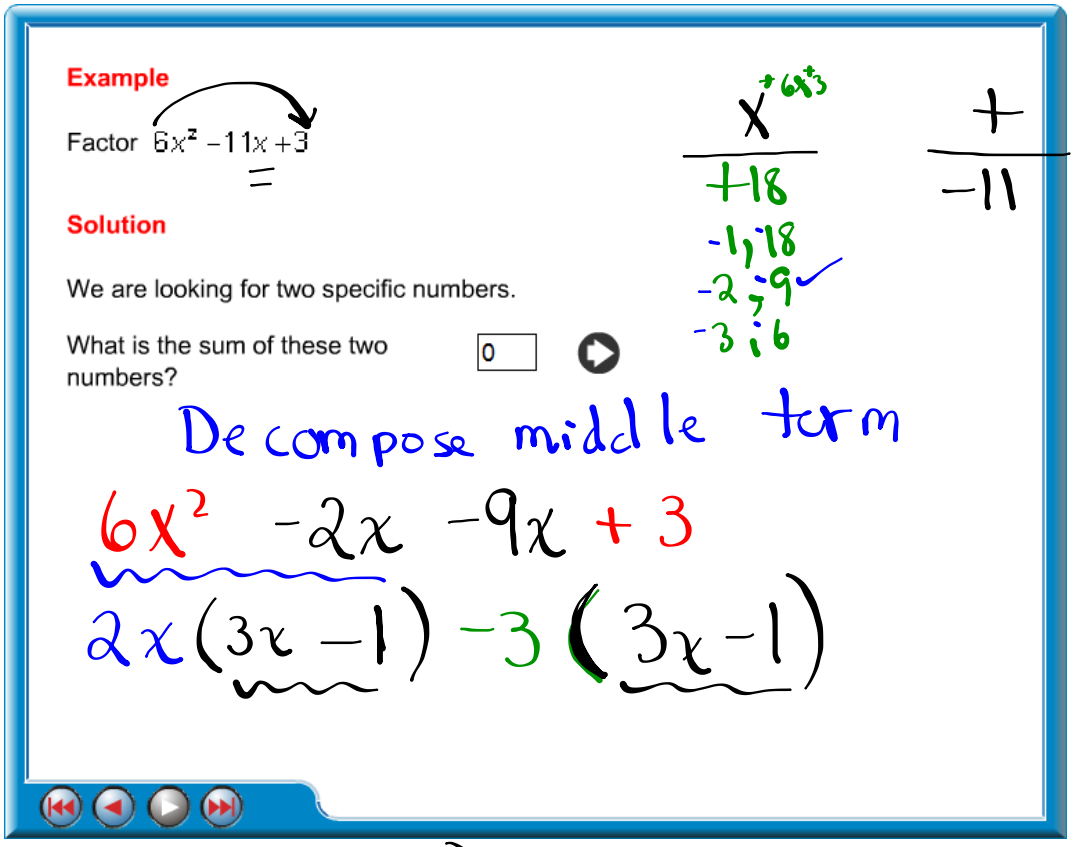
- here's how it goes... "What two numbers?"





- once you find the two numbers, use them to break the MIDDLE TERM into two pieces (decomposition).

- then, factor by grouping.



x^{+6x^3} $+$

$+18$ -11

$-1, 18$

$-2, 9$ ✓

$-3, 6$

Decompose middle term

$6x^2 - 2x - 9x + 3$

$2x(3x-1) - 3(3x-1)$

$(3x-1)(2x-3)$

Multiply

$4x^2+5x-6$

$4x^2 + 8x - 3x - 6$

$4x(x+2) - 3(x+2)$

$(x+2)(4x-3)$

$\_ + \_ = 5$

$4 \times -6 = -24$

$-1, +24$

$-2, +12$

$-3, +8$ ✓

$-4, +6$

$n^2 + 7n + 12$ $\quad \frac{\times}{+12} \quad \frac{+}{+7}$

$+3, +4$

$n^2 + 3n + 4n + 12$

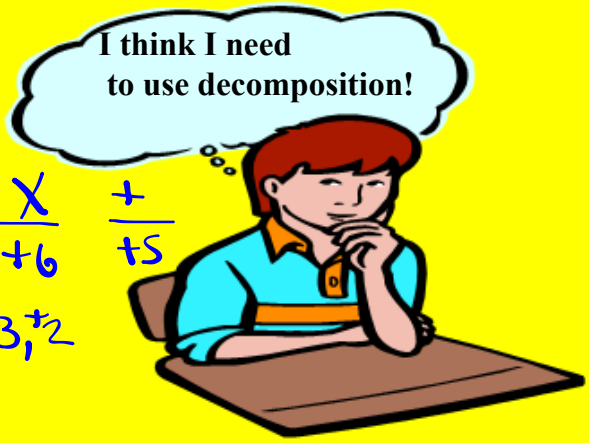
$n(n+3) + 4(n+3)$

$(n+3)(n+4)$

Always check the following when you are asked to factor:

1) G.C.F (# and Letters) {if not....}
2) Simple Trinomial
3) Hard Trinomial ...

Factor Completely!



1. $2x^2+5x+3$

$\frac{X}{+6}$ $\frac{+}{+5}$

$+3, +2$

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

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

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

Factor Completely!

$\times$: -30 $\quad$ $+$: $+13$

- $-1, +30$
- $-2, +15$ ✓
- $-3, +10$

2. $10x^2+13x-3$

$10x^2 - 2x + 15x - 3$

$2x(5x-1) + 3(5x-1)$

$(5x-1)(2x+3)$

★ 4. $2x^2+6x+4$ ★

$2(x^2+3x+2)$

Simple trinomial

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

3.6 Polynomials of the Form $ax^2 + bx + c$

Homework

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Questions: ~~8~~, 13, ~~15~~, ~~19~~