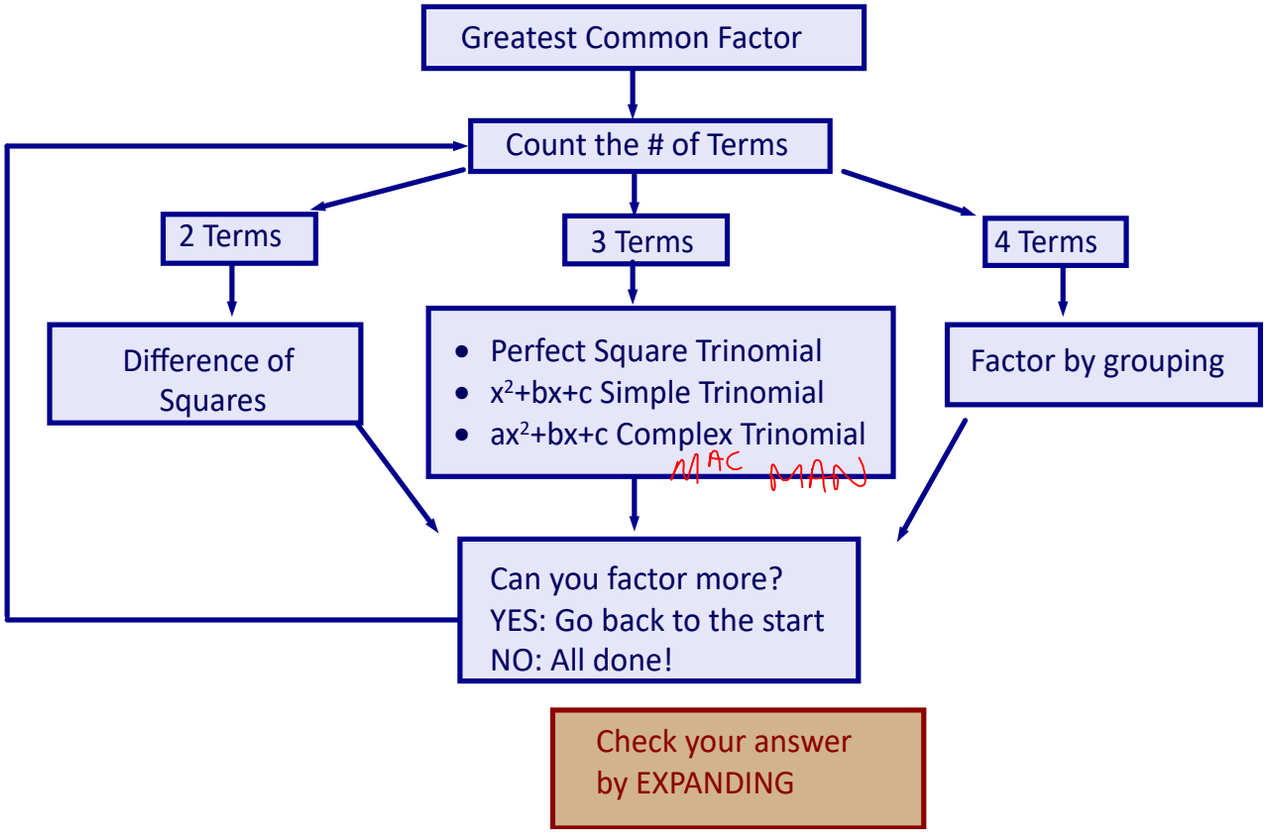
4.9 More Factoring - Putting it All Together

Factoring Decision Tree



Nov 6-9:37 AM

Ex. 1 Factor, if possible.

a) $x^2 - 2x - 15$

$= (x - 5)(x + 3)$

b) $16x^2 - 49y^2z^4$

$4x$ $7y^2z^2$

$= (4x + 7yz^2)(4x - 7yz^2)$

c) $15x^2 + 27x - 6$

$= 3(5x^2 + 9x - 2)$

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

M^{AC} -10

A 9

N $10, -1$

	x	2
$5x$	$5x^2$	$10x$
-1	$-1x$	-2

d) $9x^2 - 42xy + 49y^2$

$3x$ $7y$ $\times 2$ $42xy$ ✓

$= (3x - 7y)^2$

e) $3x^2 + 7x - 12$

"Prime"

M^{AC} -36

A 7

N ?

36

1, 36

2, 18

3, 12

4, 9

6, 6

f) $3x^2 - 18x + 24$

$= 3(x^2 - 6x + 8)$

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

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Ex. 2 Factor, if possible.

a) $8x^2 + 10xy - 3y^2$

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

M AC -24
A 10
N -2, 12

	$4x$	$-y$
$2x$	$8x^2$	$-2xy$
$3y$	$12xy$	$-3y^2$

b) $20x^2+100xy+125y^2$

$= 5(4x^2+20xy+25y^2)$

$\hookrightarrow 2x$ $\hookrightarrow 5y$

$= 5(2x+5y)^2$

c) $6x^3+6x^2-8x-8$

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

$= 2(3x^2-4)(x+1)$

	x	1
$3x^2$	$3x^3$	$3x^2$
-4	$-4x$	-4

d) $(x+2)^2-9$

a^2-9
$=(a-3)(a+3)$

$=[x+2-3][x+2+3]$

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

e) $x^2 + 7x - 10$

"Prime"

M -10
A 7
N

10
1, 10
2, 5

f) $121w^2 - 144$

$11w$ 12

$=(11w+12)(11w-12)$

Ex. 3 Factor, if possible.

a) $3k^2+12k-36$

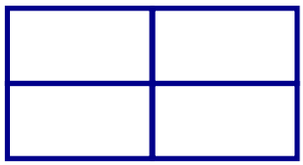
$=3(k^2+4k-12)$

$=3(k+6)(k-2)$

M -12
A 4
N $6,-2$

b) $4mn+3m+12n+9$

$=(m+3)(4n+3)$



	$4n$	3
m	$4mn$	$3m$
3	$12n$	9

c) $16h^2-16h+4$

$=4(4h^2-4h+1)$

$\hookrightarrow 2h$ $\hookrightarrow 1$

$=4(2h-1)^2$

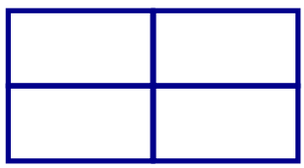
d) $2x^2-7xy-6y^2$

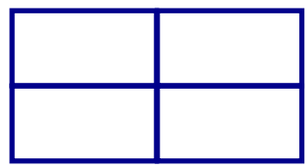
$=$

PRIME

M^{AC} -12
A -7
N ?

12
1, 12
2, 6
3, 4





e) w^4-16

w^2 4

$=(w^2+4)(w^2-4)$

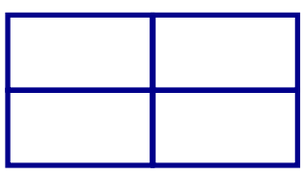
$=(w^2+4)(w-2)(w+2)$

f) $12x^2-15x+3$

$=3(4x^2-5x+1)$

$=3(4x-1)(x-1)$

M^{AC} 4
A -5
N $-4,-1$



	x	-1
$4x$	$4x^2$	$-4x$
-1	$-1x$	1

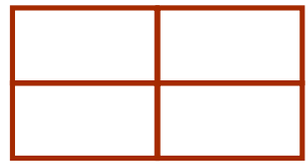
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Ex. 3 The area of a rectangular swimming pool is represented by $A = 10x^2 + 11x - 6$.

a) Determine an expression for the length and width of the pool.

AKA

Factor the expression



b) Determine the length and width of the pool if x=5m.

Sub $x=5$ into factored form

c) Determine the area of the pool if x=5m.

Sub $x=5$ into original (or factored) and get final answer

Nov 6-10:04 AM