

FACTORIZING QUADRATIC EXPRESSIONS

- 1) $x^2 - 49$ when 2 terms: use difference of two squares
 $(x+7)(x-7)$ take square root, signs are different in answer
- 2) $36x^2 - 25$ when 2 terms: use difference of two squares
 $(6x+5)(6x-5)$ take square root, signs are different in answer
- 3) $42x^2 + 30x$ when 2 terms: use GCF
 $6x(7x+5)$ take GCF, always has only one set of parentheses
- 4) $x^2 - 12x + 36$ factors of 36 that add to get 12, signs are the same (1st)
 $(x-6)(x-6) =$ must enter as $(x-6)^2$
- 5) $x^2 + 12x + 27$ factors of 27 that add (2nd SIGN IS +) to get 12,
 $(x+9)(x+3)$ signs are the same (first sign)
- 6) $x^2 + 5x + 4$ factors of 4 that add (2nd SIGN IS +) to get 5,
 $(x+1)(x+4)$ signs are the same (first sign)

EASY WAY TO GET FACTORS:

FACTORS 72

Write Factors: 1 and 72

then double the left column
and half the right column



EASY WAY TO GET FACTORS

DOUBLE	HALF
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1	72
---	----

2	36
---	----

4	18
---	----

8	9
---	---

can't half 9 then we try 3

3	24
---	----

6	12
---	----

ALWAYS TRY 2, 3, 5, 7 ON
THE LEFT-HAND SIDE IF YOU CAN'T

7) $x^2 + 17x + 72$ factors of 72 that add to get 17,

$(x+9)(x+8)$ signs are the same (first sign)

EASY WAY TO GET FACTORS

DOUBLE	HALF
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1	42
---	----

2	21
---	----

can't half 21 then we try 3

3	14
---	----

6	7
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ALWAYS TRY 2, 3, 5, 7 ON
THE LEFT-HAND SIDE IF YOU CAN'T
HALF THE RIGHT

8) $x^2 + 23x + 42$ factors of 42 that add to get 23,

$(x+21)(x+2)$ signs are the same (first sign)

EASY WAY TO GET FACTORS

DOUBLE	HALF
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1	30
---	----

2	15
---	----

can't half 15 then we try 3

3	10
---	----

6	5
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ALWAYS TRY 2, 3, 5, 7 ON
THE LEFT-HAND SIDE IF YOU CAN'T
HALF THE RIGHT

9) $x^2 - 11x + 30$ factors of 30 that add to get 11,

$(x-5)(x-6)$ signs are the same (first sign)

10) $x^2 - 14x + 45$ factors of 45 that add to get 13,

$(x-9)(x-5)$ signs are the same (first sign)

11) $x^2 + 18x + 80$ factors of 80 that **add** to get 18,

$(x-9)(x-5)$ signs are the same (first sign)

12) $x^2 - 12x - 28$ factors of 28 that **subtract** to get 12,

$(x-14)(x+2)$ signs are different (higher number gets 1st sign from problem)

13) $x^2 + 2x - 35$ factors of 35 that **subtract** to get 2,

$(x+7)(x-5)$ signs are different (higher number gets 1st sign from problem)

14) $10x^2 + 25x$ when 2 terms: use GCF

$5x(2x+5)$ take GCF, always has only one set of parentheses

15) $x^2 + 5x - 36$ factors of 36 that **subtract** to get 5,

$(x-4)(x+9)$ signs are different (higher number gets 1st sign from problem)

18) $x^2 - 64$ when 2 terms: use difference of two squares

$(x+8)(x-8)$ take square root, signs are different in answer

19) $v^2 - 121$ when 2 terms: use difference of two squares

$(x+11)(x-11)$ take square root, signs are different in answer

20) $x^2 - 9x - 36$ factors of 36 that **subtract** to get 9,

$(x-12)(x+3)$ signs are different (higher number gets 1st sign from problem)