Notes: Factoring Trinomials when a = 1

QUESTIONS	NOTES:

$$ax^2 + bx + c$$

Trinomials can be written as a product of two binomials

ax^2	___x
___x	c

STEPS to Factoring:

1. Use a M/S table to split the middle term:
   M = factors that multiply to the 'c' term
   S = sum of the factors that add to the 'b' term
2. Fill in box and work backwards using GCF to find factors

Examples:

$x^2 + 8x + 12$ a = 1 b = 8 c = 12

M	S
6 x 2 = 12	6 + 2 = 8

	x	+6
x	x^2	6x
+2	2x	12

← GCF

FACTORS: $(x+2)(x+6)$

$a^2 - 9a + 20$ a = 1 b = -9 c = 20

M	S
-5 x -4 = 20	-5 + -4 = -9

	a	-5
a	a^2	-5a
-4	-4a	20

← GCF

FACTORS: $(a-5)(a-4)$

$x^2 + 3x - 18$ a = 1 b = 3 c = -18

-18	3
M	S
6 x -3 = -18	6 + -3 = 3

	x	+6
x	x^2	6x
-3	-3x	-18

GCF

FACTORS: $(x-3)(x+6)$

$x^2 - 6x - 42$ a = 1 b = -6 c = -42

-42	-6
M	S
1 x -42	1 + -42 = -41
-1 x 42	-1 + 42 = 41
2 x -21	2 + -21 = -19
-2 x 21	-2 + 21 = 19
3 x -14	3 + -14 = -11
-3 x 14	-3 + 14 = 11
6 x -7	6 + -7 = -1
-6 x 7	-6 + 7 = 1

x^2	
	-42

FACTORS: NOT FACTORABLE

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Name_____

Factoring Trinomials (a = 1)

Date_____ Period____

Factor each completely.

1) $b^2 + 8b + 7$

$(b + 7)(b + 1)$

2) $n^2 - 11n + 10$

$(n - 10)(n - 1)$

3) $m^2 + m - 90$

$(m - 9)(m + 10)$

4) $n^2 + 4n - 12$

$(n - 2)(n + 6)$

5) $n^2 - 10n + 9$

$(n - 1)(n - 9)$

6) $b^2 + 16b + 64$

$(b + 8)^2$

7) $m^2 + 2m - 24$

$(m + 6)(m - 4)$

8) $x^2 - 4x + 24$

Not factorable

9) $k^2 - 13k + 40$

$(k - 5)(k - 8)$

10) $a^2 + 11a + 18$

$(a + 2)(a + 9)$

11) $n^2 - n - 56$

$(n + 7)(n - 8)$

12) $n^2 - 5n + 6$

$(n - 2)(n - 3)$