

Achar/MF/MFP Name: _____ Date: _____
Worksheet 7-6: Factoring Trinomials

For a trinomial of the form $x^2 + bx + c$, the factors are of the form $(x+m)(x+n)$, where $m+n=b$ and $mn=c$.
 Therefore: $x^2 + bx + c = x^2 + (m+n)x + (mn) = (x+m)(x+n)$
 To factor a trinomial means writing $x^2 + bx + c$ as $(x+m)(x+n)$.

How do we find m and n to factor the trinomial?
 We need to find two factors when multiplied equals c but added to b .

Example 1:
 Factor each trinomial.
 (Hint: Find two factors of c when added together equals b . Watch for the signs)

(a) $x^2 + 5x + 6$ $b=5$ $c=6$ $m=2$ $n=3$
 $= (x+2)(x+3)$

(b) $a^2 - 3a - 18$ $b=-3$ $c=-18$ $m=-6$ $n=3$
 $= (a-6)(a+3)$

(c) $y^2 - 8y + 15$ $b=-8$ $c=15$ $m=-3$ $n=-5$
 $= (y-3)(y-5)$

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1. Factor $x^2 + 6x + 8$ $b=6$ $c=8$ $m=2$ $n=4$
 $= (x+2)(x+4)$

2. Factor $a^2 - 13a + 36$ $b=-13$ $c=36$ $m=-9$ $n=-4$
 $= (a-9)(a-4)$

3. Factor $y^2 - 2y - 24$ $b=-2$ $c=-24$ $m=6$ $n=-4$
 $= (y-6)(y+4)$

4. Factor $x^2 + 7x + 12$ $b=7$ $c=12$ $m=3$ $n=4$
 $= (x+3)(x+4)$

5. Factor $a^2 - 9a + 18$ $b=-9$ $c=18$ $m=-6$ $n=-3$
 $= (a-6)(a-3)$

6. Factor $y^2 + 7y - 18$ $b=7$ $c=-18$ $m=9$ $n=-2$
 $= (y+9)(y-2)$

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Worksheet 7-7: Factoring Trinomials in the form $ax^2 + bx + c$

1. Factor $x^2 + 13x + 12$ $b=$ $c=$ $m=$ $n=$

2. Factor $a^2 - 8a + 15$ $b=$ $c=$ $m=$ $n=$

3. Factor $y^2 - 7y - 30$ $b=$ $c=$ $m=$ $n=$

4. Factor $x^2 + 11x + 28$ $b=$ $c=$ $m=$ $n=$

5. Factor $a^2 - 11a + 24$ $b=$ $c=$ $m=$ $n=$

6. Factor $y^2 + 2y - 35$ $b=$ $c=$ $m=$ $n=$

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IMPORTANT NOTE: $(x+a)(x+a) = (x+a)^2$ and $(x-a)(x-a) = (x-a)^2$

7. Factor $x^2 + 14x + 49$ $b=$ $c=$ $m=$ $n=$

8. Factor $a^2 - 10a + 25$ $b=$ $c=$ $m=$ $n=$

9. Factor $y^2 + 8y + 16$ $b=$ $c=$ $m=$ $n=$

10. Factor $x^2 - 2x + 1$ $b=$ $c=$ $m=$ $n=$

11. Factor $a^2 - 4$ $b=$ $c=$ $m=$ $n=$

12. Factor $y^2 - 64$ $b=$ $c=$ $m=$ $n=$

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Hint: Factoring Trinomials

Factor.

1. $x^2 + 12x + 32$ 2. $y^2 - 4y - 45$ 3. $a^2 - 17a + 70$
 4. $x^2 + x - 72$ 5. $y^2 - 4y + 4$ 6. $a^2 + 6a + 9$
 7. $x^2 - 18x + 81$ 8. $y^2 - 121$ 9. $a^2 - 36$

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