Correct from last day:  Factoring Worksheet #1-30

MCF 3MI                          **Factoring Practice**

*Copy each question in your workbook.  Then, factor the following, completely.*

1. $7x^2y - 28x^3y^2 + 21x^2y^3$
2. $x^2 - 7x + 12$
3. $x^2 - 23x + 76$
4. $m(2x-1) - 5(1-2x)$
5. $2x^2 + 17x + 35$
6. $x^2 + 4x - 12$
7. $x^2 - 9x + 14$
8. $5y^2 + 27y - 18$
9. $4x^3 + 16x^2 - 84x$
10. $x^2 + 19x + 18$
11. $5x^2 + 4x - 1$
12. $8m^3 - 2m^2n - 21mn^2$
13. $x^2 + 5x - 14$
14. $4y^2 + 12yz + 9z^2$
15. $10x^4 + 21x^2 + 8$
16. $12x^2 + 26x - 10$
17. $x^2 + 4xy - 32y^2$
18. $5x^2 + 18x - 8$
19. $10x^2 + x - 21$
20. $x^2 + 4xy - 21y^2$
21. $4x^2 - 15x + 9$
22. $8x^2 - 14x - 15$
23. $8x^2 - 22xy - 21y^2$
24. $9x^2 - 18x - 135$
25. $4x^2 - 16x + 15$
26. $5x^2 - 19x + 12$
27. $3x^2 + 16x - 12$
28. $14y^2 + 77y - 147$
29. $16x^2 - 72xy + 81y^2$
30. $6a^4 - 21a^2 - 45$

1. $7x^2y - 28x^3y^2 + 21x^2y^3$

$= 7x^2y(1 - 4xy + 3y^2)$

12. $8m^3 - 2m^2n - 21mn^2$

$= m(8m^2 - 2mn - 21n^2)$

$= m(8m^2 - 14mn + 12mn - 21n^2)$

$= m(2m(4m-7n) + 3n(4m-7n))$

$= m(4m-7n)(2m+3n)$     168

12  14

15. $10x^4 + 21x^2 + 8$     P: 80
                            S: 21

$= 10x^4 + 5x^2 + 16x^2 + 8$

$= 5x^2(2x^2+1) + 8(2x^2+1)$

$= (2x^2+1)(5x^2+8)$

1 | 80
2 | 40
3 |
4 | 10
5 | 16

29. $16x^2 - 72xy + 81y^2$

$= 16x^2 - 36xy - 36xy + 81y^2$

$= 4x(4x - 9y) - 9y(4x - 9y)$

$= (4x - 9y)(4x - 9y)$     1296

-36 ; 36

**Answers to Factoring Practice:**

1. $7x^2y\left(1-4xy+3y^2\right)$
2. $(x-4)(x-3)$
3. $(x-19)(x-4)$
4. $(2x-1)(m+5)$
5. $(2x+7)(x+5)$
6. $(x+6)(x-2)$
7. $(x-7)(x-2)$
8. $(5y-3)(y+6)$
9. $4x(x+7)(x-3)$
10. $(x+18)(x+1)$
11. $(5x-1)(x+1)$
12. $m(2m+3n)(4m-7n)$
13. $(x+7)(x-2)$
14. $(2y+3z)(2y+3z)$ **
15. $\left(5x^2+8\right)\left(2x^2+1\right)$
16. $2(3x-1)(2x+5)$
17. $(x+8y)(x-4y)$
18. $(5x-2)(x+4)$
19. $(5x-7)(2x+3)$
20. $(x+7y)(x-3y)$
21. $(4x-3)(x-3)$
22. $(4x+3)(2x-5)$
23. $(4x+3y)(2x-7y)$
24. $9(x-5)(x+3)$
25. $(2x-3)(2x-5)$
26. $(5x-4)(x-3)$
27. $(3x-2)(x+6)$
28. $7(2y-3)(y+7)$
29. $(4x-9y)(4x-9y)$ **
30. $3\left(2a^2+3\right)\left(a^2-5\right)$

## EXPAND these questions.
### (These represent the background to today's lesson.)

a)  $(x-5)^2$         b)  $(2x+3)^2$        c)  $(8x-6)^2$        d)  $(3x-4y)^2$

$$=(x-5)(x-5) \qquad =(2x+3)(2x+3) \qquad =(8x-6)(8x-6) \qquad =9x^2-24xy+16y^2$$
$$=x^2-5x-5x+25 \qquad =4x^2+6x+6x+9 \qquad =64x^2-48x-48x+36$$
$$=x^2-10x+25 \qquad =4x^2+12x+9 \qquad =64x^2-96x+36$$

e)  $(x-3)(x+3)$         f)  $(5x-4)(5x+4)$        g)  $(2x-9y)(2x+9y)$

$$= x^2+3x-3x-9 \qquad =25x^2+20x-20x-16 \qquad =4x^2+18xy-18xy-81y^2$$
$$= x^2-9 \qquad =25x^2-16 \qquad =4x^2-81y^2$$

## Today's Learning Goal(s):

By the end of the class, I will be able to:
a)  factor a "Perfect-Square Trinomial".
b)  factor a "Difference of Squares".

# 2.5 Factoring Quadratic Expressions: **Special Cases**

MCF 3MI

Date: ____Oct. 4/19____
(**Every** lesson)

Ex.1  Factor completely (over the integers).

a)  $x^2+12x+36$         b)  $9x^2-12x+4$        c)  $25x^2-70x+49$

$$= (x+6)^2 \qquad = (3x-2)^2 \qquad = (5x-7)^2$$

Note: The above examples are all "perfect-square trinomials".
*They can be recognized by:*

**The first and last numbers are perfect squares, and must be POSITIVE.**
**If you square root the first and last number, then multiply them together and double the answer, you will get the middle term.**

Ex.2  Factoring a "Difference of Squares".

*They can be recognized by:*

**There are ONLY 2 terms, and MUST have a SUBTRACTION SIGN.**
**BOTH numbers are perfect squares (so you can take their square root).**
**All variables must have EVEN numbered exponents (so you can cut them in half).**

a) $x^2 - 1$         b) $x^2 - 81$         c) $4x^2 - 9y^2$         d) $4 - 9x^2$

$= (x+1)(x-1)$      $= (x-9)(x+9)$      $= (2x-3y)(2x+3y)$      $= (2-3x)(2+3x)$

Ex.3  Factor completely (over the integers).

a) $12 - 48x^2$      b) $25y^6 - 100$      c) $4xy - 16xy^3$      d) $-8x^2 + 24x - 18$

$= 12(1-4x^2)$      $= 25(y^6-4)$      $= 4xy(1-4y^2)$      $= -2(4x^2-12x+9)$

$= 12(1-2x)(1+2x)$   $= 25(y^3-2)(y^3+2)$   $= 4xy(1-2y)(1+2y)$   $= -2(2x-3)^2$

$b_2)$ $25y^6 - 100$

$= (5y^3-10)(5y^3+10)$

$= 5(y^3-2)5(y^3+2)$

$= 5 \cdot 5 (y^3-2)(y^3+2)$

$= 25(y^3-2)(y^3+2)$

Assigned Practice: pp. 115-116 # 3, 4abde, 11
**READ pp. 118-119**
pp. 120-121 # 9, 13, 16, 18

*The Unit Summative is Wednesday!!*
*Work ahead on the next day's work as well!!*

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