OCTOBER 19, 2017

UNIT 2:   FACTORS AND PRODUCTS

SECTION 3.8:
FACTORING SPECIAL
POLYNOMIALS

K. Sears
NUMBERS, RELATIONS AND FUNCTIONS 10

Warm Up

Factor each of the following:

$25a^2 - 9b^2$

$$(5a + 3b)(5a - 3b)$$

$81w^{16} - 1$

$$(9w^8 + 1)(9w^8 - 1)$$

$$(9w^8 + 1)(3w^4 + 1)(3w^4 - 1)$$

$100x^2 - 140xy + 49y^2$

$$(10x - 7y)^2$$

① GCF $5x(2x^2y + 3x - 7)$

② Perfect Squares $9x^2 + 12x + 4 =$
$$(3x + 2)^2$$

③ Diffence of Squares $49b^2 - 81$
$$(7b - 9)(7b + 9)$$

④ Decomposition $6x^2 - 17xy + 5y^2$ M 30
(Hard Trinomials) $6x^2 - 2xy - 15xy + 5y^2$ A -17
                    N -15
                       -2
$$2x(3x - y) - 5y(3x - y)$$
$$(3x - y)(2x - 5y)$$

⑤ Simple Trinomials $f^2 + 17f + 16$ M 16
$$(f + 1)(f + 16)$$ A 17
                          N , 16

$$4a^2 + 20a + 24$$
$$4(a^2 + 5a + 6)$$ M 6
                      A 5
$$4(a + 3)(a + 2)$$ N 3 2

WHAT'S THE POINT OF TODAY'S LESSON?

We will continue working on the NRF 10 Specific Curriculum Outcome (SCO) "Algebra and Numbers 5" OR "AN5" which states:

"Demonstrate an understanding of common factors and trinomial factoring."

What does THAT mean???

SCO AN5 means that we will:

* determine the common factors in the terms of a polynomial and express the polynomial in factored form
* factor a polynomial that is a "difference of squares" and explain why it is a special case of trinomial factoring where b = 0
* identify and explain errors in a polynomial factorization
* factor a polynomial and verify by multiplying the factors
* explain, using examples, the relationship between multiplication and factoring of polynomials
* generalize and explain strategies used to factor a trinomial
* express a polynomial as a product of its factors

Quiz

- Multiplying polynomials

- Factoring - GCF

            - simple trinomials

UNIT 2 – FACTORS AND PRODUCTS   NAME: _____
Quiz – Sections 3.7, 3.3 & 3.5
K. Sears $\overline{15}$ DATE:_____

1. Expand and simplify where necessary. **(5)**

   a) $3x(2x-5)$ b) $(y+4)(y-10)$ c) $(d-6)^2$

   $6x^2 - 15x$ $y^2 - 10y + 4y - 40$ $(d-6)(d-6)$
                                $y^2 - 6y - 40$ $d^2 - 6d - 6d + 36$
                                                     $d^2 - 12d + 36$

2. Factor. **(10)**

   a) $8a^2 + 16a$ b) $-5m^3n^2 + 10m^2n - 35mn$

   $8a(a+2)$ $-5mn(m^2n - 2m + 7)$

   c) $v^2 + 4v - 12$ M -12 d) $4f^2 - 20f - 56$
                      A   4 $4(f^2 - 5f - 14)$ M $= -14$
   $(v+6)(v-2)$ N $+6 -2$ $4(f-7)(f+2)$ A -5
                                                            N $-7 +2$

Review - Factoring.pdf

Factoring Review   Name_____

Math 10 (Numbers, Functions and Relations 10)

Factor the common factor out of each expression.

1) $20r^5 + 4r^2 - 40$ 2) $-5x^3 - 5x^2 - 5x$

3) $12n^5 - 48n^2 + 42n$ 4) $-56a^7 + 48a^6 + 16a^3$

Factor each completely.

5) $x^2 + x - 56$ 6) $6n^2 - 6n - 120$

7) $4k^2 - 24k - 28$ 8) $x^2 - 3x - 18$

9) $b^2 - 7b - 8$ 10) $a^2 + 13a + 30$

11) $30n^2 - 24n - 72$ 12) $5x^2 - 21x - 54$

13) $16n^2 - 164n + 288$ 14) $54x^2 - 90x$

15) $4x^2 + 6x$ 16) $6n^2 - 5n + 1$

17) $4r^2 + 7r - 2$ 18) $4n^2 - 4n - 35$

19) $6v^2 - 14v$

Answers to Math 10 (Numbers, Functions and Relations 10)

1) $4(5r^5 + r^2 - 10)$	2) $-5x(x^2 + x + 1)$	3) $6n(2n^4 - 8n + 7)$	4) $8a^3(-7a^4 + 6a^3 + 2)$
5) $(x+8)(x-7)$	6) $6(n-5)(n+4)$	7) $4(k+1)(k-7)$	8) $(x-6)(x+3)$
9) $(b-8)(b+1)$	10) $(a+3)(a+10)$	11) $6(5n+6)(n-2)$	12) $(5x+9)(x-6)$
13) $4(n-8)(4n-9)$	14) $18x(3x-5)$	15) $2x(2x+3)$	16) $(3n-1)(2n-1)$
17) $(r+2)(4r-1)$	18) $(2n+5)(2n-7)$	19) $2v(3v-7)$	

Homework

Worksheet: Factoring Review
#1 - 40

Bonus

Completely factor the following:

$$9\left(x^2-1\right)^4 + 8\left(x^2-1\right)^3$$

* Bonus Questions are due BEFORE homeroom begins!!!

2.11 Exercise — Factoring Review

B You must be able to recognize which skills must be used to factor a polynomial. When you factor the following polynomials, always check for a common factor first. There are at least two expressions that cannot be factored. Can you find others?

1. $3a^2 + 6a$	2. $2x - 8xy$	3. $36a^3 - 4a^2$
4. $25a^4 - 9y^4$	5. $x^2 + 7x + 12$	6. $3a^2 - 3b^2$
7. $y^2 - 11y + 28$	8. $16x^2 - 8x + 1$	9. $a^2 - ab - 56b^2$
10. $4x^2 - 11x + 6$	11. $-1 + 9k^2$	12. $1 + 18y + 32y^2$
13. $2y^2 - 8y^3$	14. $x^2 + 6x + 8$	15. $56x^2 + 9x - 2$
16. $-16 - 9x^2$	17. $16 - 28x + 10x^2$	18. $m^4 - 16$
19. $8 - 14y + 5y^2$	20. $-(1 - a^4)$	21. $m^4 - 5m^2 - 36$
22. $6a^2 + 5a + 1$	23. $x^4 - y^4$	24. $p^2 - 2pq - 63q^2$
25. $m^4 + 3m^2 - 4$	26. $x^2 - xy$	27. $x^2 + 3xy - x$
28. $a^2 - 144$	29. $3a^2 - 36a + 36$	30. $(a + b)^2 - c^2$
31. $-a^2 - 2ab - b^2$	32. $x^3 + 5x^2 - 6$	33. $x^4 + 18x^2 + 32$
34. $m^4 - 9m^2 - 112$	35. $x^8 - 1$	36. $2y^2 - 2y - 24$
37. $2x^2 - 8$	38. $4y^2 + 8y - 60$	39. $m^4 - 16$
40. $2x^2 - 16x + 32$	41. $x^3 - xy^2$	42. $x^4 - 5x^2 + 4$
43. $-48 - 3y^2$	44. $x^2y^3z - 2xy^2$	
45. $(x - y)^2 - (x + y)^2$	46. $9(a + b)^2 - (a - b)^2$	
47. $(a - b)^2 - 16(a + 2b)^2$	48. $25(2x + 1)^2 - (9x - 1)^2$	
49. $4(x - y)^2 - 16(x + y)^2$	50. $25(x + 2y)^2 - 9(x - 2y)^2$	

SOLUTIONS

Attachments

Review - Factoring.pdf

Worksheet - Factoring Review.doc