

Student Learning Outcome Checklist:

F&PC Math 10 - Factors and Products

Name _____

3.1	Determine prime factors, greatest common factors, and least common multiples of whole numbers	
	Determine Prime Factorization of 3600	Determine Prime Factorization of 3780
	<p>$3600 = 2 \cdot 2 \cdot 2 \cdot 2 \cdot 3 \cdot 3 \cdot 5 \cdot 5$</p>	<p>$3780 = 2 \cdot 2 \cdot 3 \cdot 3 \cdot 3 \cdot 5 \cdot 7$</p>
	Determine greatest common factors of 3600 and 3780	Determine least common multiple of 3600 and 3780
	<p>$3600 = 2 \cdot 2 \cdot 2 \cdot 2 \cdot 3 \cdot 3 \cdot 5 \cdot 5$ $3780 = 2 \cdot 2 \cdot 3 \cdot 3 \cdot 3 \cdot 5 \cdot 7$</p> <p>GCF = $2 \cdot 2 \cdot 3 \cdot 3 \cdot 5$ $= 180$</p>	<p>$3600 = 2^4 \cdot 3^2 \cdot 5^2$ $3780 = 2^2 \cdot 3^3 \cdot 5 \cdot 7$</p> <p>LCM = $2^4 \cdot 3^3 \cdot 5^2 \cdot 7$ $= 75600$</p>

3.2	Identify perfect squares and perfect cubes, then determine square roots and cube root with and without calculator	
	Show how to determine the square root of 1296 without a calculator.	Show how to determine the cube root of 1728 without a calculator.
	<p>$1296 = 2 \cdot 2 \cdot 2 \cdot 2 \cdot 3 \cdot 3 \cdot 3 \cdot 3$ $= (2 \cdot 2 \cdot 3 \cdot 3)(2 \cdot 2 \cdot 3 \cdot 3)$ $= (36)(36)$ $\therefore \sqrt{1296} = 36$</p>	<p>$1728 = 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 3 \cdot 3 \cdot 3$ $= (2 \cdot 2 \cdot 3)(2 \cdot 2 \cdot 3)(2 \cdot 2 \cdot 3)$ $= (12)(12)(12)$ $\therefore \sqrt[3]{1728} = 12$</p>

3.3	Model and record factoring a polynomial	
Use algebra tiles to factor $3x^2 + 9x - 3$	Algebraically factor $3x^2 + 9x - 3$	
<p>3 groups of $x^2 + 3x - 1$</p> <p>$3x^2 + 9x - 3$ $= 3(x^2 + 3x - 1)$</p>	$3x^2 + 9x - 3$ $= 3(x^2 + 3x - 1)$	

3.4	Explore factoring polynomials with algebra tiles	
3.5	Use models and algebraic strategies to multiply binomials and to factor trinomials of the form $x^2 + bx + c$	
Use algebra tiles to factor $x^2 + 6x + 8$	Algebraically factor $x^2 - 5x - 14$	
<p>$x^2 + 6x + 8 = (x + 4)(x + 2)$</p>	$x^2 - 5x - 14$ $= (x - 7)(x + 2)$ <p style="text-align: right;"> $-7 \times 2 = -14$ $-7 + 2 = -5$ </p>	

3.6	Extend the strategies for multiplying binomials and factoring trinomials. $ax^2 + bx + c$	
Use algebra tiles to factor $2x^2 + 5x + 3$	Algebraically factor $3x^2 + 7x - 6$	
<p>$2x^2 + 5x + 3 = (2x + 3)(x + 1)$</p>	$3x^2 + 7x - 6$ $= 3x^2 + 9x - 2x - 6$ $= (3x^2 + 9x) - (2x + 6)$ $= 3x(x + 3) - 2(x + 3)$ $= (x + 3)(3x - 2)$ <p style="text-align: right;"> $mn = 3(-6)$ $= -18$ $\underline{9} \times \underline{-2} = -18$ $\underline{9} + \underline{-2} = 7$ </p>	

3.7 Extend the strategies for multiplying binomials to multiplying polynomial	
Multiply $(3x - 2)(x^2 - 4x + 5)$	Multiply $(2m^2 - 3n)^2$
$3x(x^2 - 4x + 5) - 2(x^2 - 4x + 5)$ $= 3x^3 - 12x^2 + 15x - 2x^2 + 8x - 10$ $= 3x^3 - 14x^2 + 23x - 10$	$(2m^2 - 3n)(2m^2 - 3n)$ $= 2m^2(2m^2 - 3n) - 3n(2m^2 - 3n)$ $= 4m^4 - 6m^2n - 6m^2n + 9n^2$ $= 4m^4 - 12m^2n + 9n^2$

3.8 Special factoring patterns—perfect square trinomial, difference of squares	
Factor $4m^2 + 12mn + 9n^2$	Factor $9a^2 - 16b^2$
$mn = 4(9) = 36$ $\underline{6 \times 6} = 36$ $\underline{6 + 6} = 12$ $4m^2 + 6mn + 6mn + 9n^2$ $= 2m(2m + 3n) + 3n(2m + 3n)$ $= (2m + 3n)(2m + 3n)$ $= (2m + 3n)^2$	$9a^2 - 16b^2$ $= (3a)^2 - (4b)^2$ $= (3a + 4b)(3a - 4b)$

<p>KEY WORDS</p> <ul style="list-style-type: none"> • Prime factor • Prime factorization • Composite • Factor tree • Greatest common factor • Least common multiple 	<ul style="list-style-type: none"> • Perfect square • Perfect cube • Square root • Cube root • Factors • Polynomial • Factored fully • Expand • Distributive property 	<ul style="list-style-type: none"> • Descending order • Ascending order • Coefficients • Zero principle • Factoring by decomposition • Perfect square trinomial • Difference of squares
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Put a check in the right hand column if the Assignment is completed and marked from the back of the textbook.

Date	Topic	Assignment	Complete
	3.1 Factors and Multiples of Whole Numbers	p. 140 For each of the questions that have multiple parts, pick 2 #3, 6, 11,19	
	3.2 Perfect Squares, Perfect Cubes, and Their Roots	p. 146 #4-6ac,7-8a,9,10	
	3.3 Common Factors of a Polynomial	p.155 #3, 4 ,7-10(pick 2 of each), 12, 16 (pick 2), 17	
	3.5 Polynomials of the Form $x^2 + bx + c = 0$	p. 166 #4,6,7, 9-15ac,19,20	
	3.6 Polynomials of the Form $ax^2 + bx + c = 0$	p.177#5-13ac, 14, 18-19ac or if you were in class: p.177 #5-6ac, 10a, 13ac, 18-19ac	
	3.7 Multiplying Polynomials	p.186#4-5a,7,8,13,15 or if you were in class: p. 186 #4-5a, 7ai, 8a, 13a, 15f	
	3.8 Difference of Squares	p. 194 #12, 15,	
	3.8 Perfect Square Trinomials	p. 194 #5,10aceg, 13,20 Factoring Worksheet	
	Review	p.198 #1-4c, 6-7a, 9,10, 19d, 23,25ad,29a,30a, 32-33c, 35	
	Group Review		