Math (F&P) 10

Polynomial Review

Name: *Key

Learning Goal	Beginning	Developing	Proficient	Sophisticated
I will be able to find LCM/GCF using prime factorization				
I will be able to show the multiplication of polynomials				
I will be able to show the factoring of polynomials				

Learning Goal #1: I will be able to determine the prime factors of a number

1. Write the prime factorization of 35 700

$= 2^2 \cdot 3 \cdot 5^2 \cdot 7 \cdot 17$

2. Write the prime factorization of 5463

$= 3^2 \cdot 607$

3. Write the prime factorization of 325

$= 5^2 \cdot 13$

4. Write the prime factorization of 348

$= 2^2 \cdot 3 \cdot 29$

5. What is the LCM of 14 and 30?

$LCM_{(14,30)} = 2 \cdot 3 \cdot 5 \cdot 7$
$= 210$

6. What is the LCM of 58 and 124?

$LCM_{(58,124)} = 2^2 \cdot 29 \cdot 31$
$= 3596$

7. What is the LCM of 125 and 175?

$LCM_{(125,175)} = 5^3 \cdot 7$
875

8. What is the LCM of 40, 60, and 100?

$40 = 2 \cdot 2 \cdot 2 \cdot 5$

$60 = 2 \cdot 2 \cdot 3 \cdot 5$

$100 = 2 \cdot 2 \cdot 5 \cdot 5$

$LCM_{(40,60,100)} = 2^3 \cdot 3 \cdot 5^2 = 600$

9. What is the GCF of 483 and 575?

$483 = 3 \cdot 7 \cdot 23$

$575 = 5 \cdot 5 \cdot 23$

$GCF_{(483,575)} = 23$

10. What is the GCF of 663 and 910?

$663 = 3 \cdot 13 \cdot 17$

$910 = 2 \cdot 5 \cdot 7 \cdot 13$

$GCF_{(663,910)} = 13$

11. What is the GCF or 66, 495, and 2541?

$66 = 2 \cdot 3 \cdot 11$

$495 = 3 \cdot 3 \cdot 5 \cdot 11$

$2541 = 3 \cdot 7 \cdot 11 \cdot 11$

$GCF_{(66,495,2541)} = 33$

Learning Goal #2: I will be able to show the multiplication of polynomials

1. Multiply the ~~below~~ polynomials. Be sure to show ALL YOUR WORK!

   a. $5x(9x^3y^2 - 11y^4 + 3)$

   $45x^4y^2 - 55xy^4 + 15x$

   b. $(y - 8)(2y^2 - 3y + 14)$

   $2y^3 - 3y^2 + 14y - 16y^2 + 24y - 112$

   $2y^3 - 19y^2 + 38y - 112$

   c. $4(a - 5)(a^3 + 2ab - 2) - (c + 12)$

   $(4a - 20)(a^3 + 2ab - 2) - c - 12$

   $4a^4 + 8a^2b - 8a - 20a^3 - 40ab + 40 - c - 12$

   $4a^4 - 20a^3 + 8a^2b - 40ab - 8a - c + 28$

2. Calculate the area of the below shape:

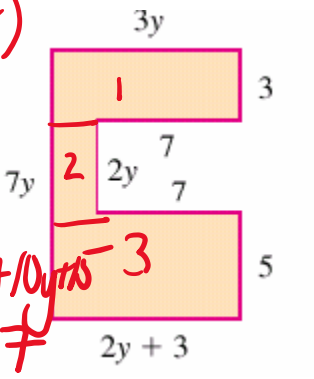
Area = l x w

$= (4x+3)(2x+2)$

$= 8x^2 + 8x + 6x + 6$

$= 8x^2 + 14x + 6$

3. Calculate the area of the below shape:



Shape 1 $= (3)(3y) = 9y$

Shape 2 $= (7y-3-5)(2y+3-7)$

$= (7y-8)(2y-4)$

$= 14y^2 - 28y - 16y + 32$

$= 14y^2 - 44y + 32$

Shape 3 $= (2y+3)(5)$

$= 10y + 15$

$\text{Area}_{TOTAL} = 9y + 14y^2 - 44y + 32 + 10y + 15$

$= 14y^2 - 25y + 47$

4. Draw algebra tiles to show the below multiplication:

a. $(x + 3)(x - 10)$

factors

$x^2 - 7x - 30$

two pair 3x's

□ = 1

■ = -1

x =

-x =

b. $(3m + 7)(m^2 - 3m + 6)$

$3m^3 - 9m^2 + 18m + 7m^2 - 21m - 42$

$3m^3 - 2m^2 - 3m - 42$

5. Multiply (use ~~DISTRIBUTIVE~~ PROPERTY)

a. $(x + 5)(x - 12)$ $x^2 - 12x + 5x - 60 = x^2 - 7x - 60$

b. $(2y + 2)(4y - 1)$ $8y^2 - 2y + 8y - 2 = 8y^2 + 6y - 2$

c. $(5 - y)(3 - y)$ $15 - 5y - 3y + y^2 = y^2 - 8y + 15$

d. $(4 + p)^2$

$(4+p)(4+p) = 16+4p+4p+p^2$

$= 16+8p+p^2$

Learning Goal #3: I will be able to show the factoring of polynomials

1. Which of the following trinomials can be represented by a rectangle? Explain HOW you would prove this.

a. $4c^2 + 33c + 8$ — $4c^2+32c+1c+8$; $4c(c+8)+1(c+8)$; $(4c+1)(c+8)$

b. $4c^2 + 21c + 3$ — 12 X

c. $4c^2 + 13c + 8$ — 32 X

d. $4c^2 + 4c + 15$ — 60 X

2. Factor: $24b^2 + 50b - 14$

$2(12b^2+25b-7)$ (84)

$2[12b^2+21b+4b-7]$ can't factor

$2[3b(4b+7)+1(\quad)$

3. Factor: $4 - 9z - 13z^2$

$-1(13z^2+9z-4) \rightarrow -1(13z^2+13z-4z-4)$

$-1[13z(z+1)-4(z+1)]$

$-1(13z-4)(z+1)$

4. Factor: $8m^2 - 34mn + 33n^2$ — 264

264 | 12 · 22 | 34

$(4m-11n)(2m-3n)$

$8m^2-12mn-22mn+33n^2$

$4m(2m-3n)-11n(2m-3n)$

$(4m-11n)(2m-3n)$

5. $4x^2 - 25$

$(2x+5)(2x-5)$

6. $16xm^2n^3 - 12m^3 - 16m + 4m^3$

$16xm^2n^3 - 8m^2 - 16m \rightarrow 8m(2xmn^3-m-2)$

7. $x^2 - x - 20$

$(x+4)(x-5)$