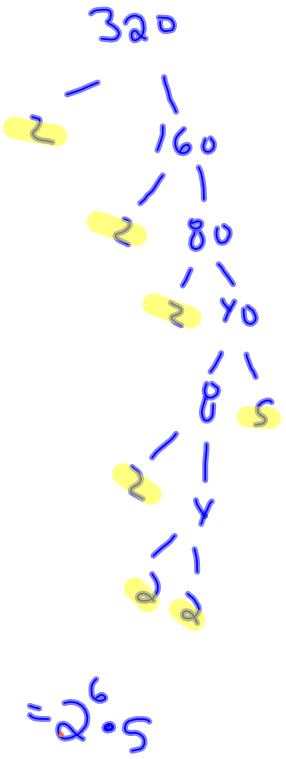
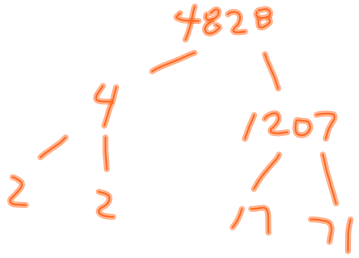
1) Determine the LCM & GCF for

320 and 4828



$= 2^6 \cdot 5$



$= 2^2 \cdot 17 \cdot 71$

Greatest Common Factor: (Lowest common Power of a Prime Factor)

$= 2^2 = 4$

Least Common Multiple

$= 2^6 \cdot 5 \cdot 17 \cdot 71$

$= 386\,240$

3.3 Common Factors of a Polynomial

LESSON FOCUS Model and record factoring a polynomial.

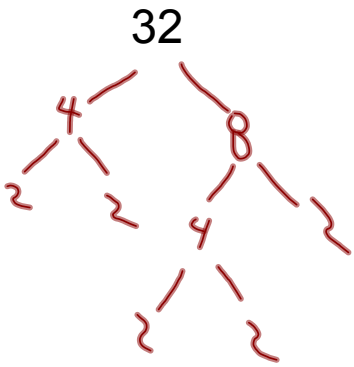
Compare multiplying and factoring in arithmetic and algebra.

In Arithmetic	In Algebra
Multiply factors to form a product. $(4)(7) = 28$	*Expand* an expression to form a product. $3(2 - 5a) = 6 - 15a$
Factor a number by writing it as a product of factors. $28 = (4)(7)$	*Factor* a polynomial by writing it as a product of factors. $6 - 15a = 3(2 - 5a)$

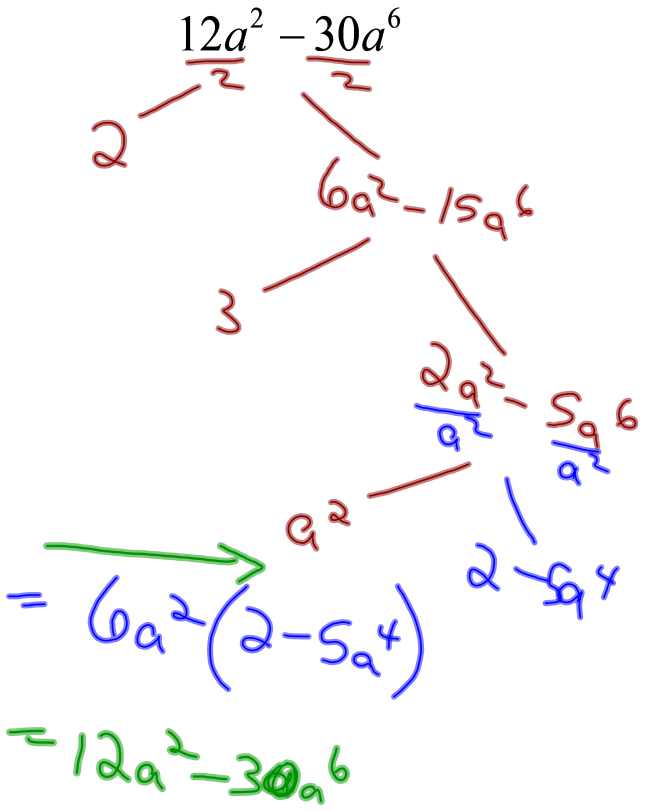
Factoring is the same as the process of PRIME FACTORIZATION...
Only it is done using algebra skills!!

Determine the prime factorization for each of the following...

32



$12a^2 - 30a^6$



Factoring: The process of expressing a polynomial as the product of it's factors.

We will now examine a variety of factoring techniques

I. Greatest Common Factor

Factor each binomial.

a) $6n + 9$

$3(2n+3)$

b) $6c + 4c^2$

$= 2c(3+2c)$

Example 2 Factoring Trinomials

Factor the trinomial $5 - 10z - 5z^2$.

$= 5(1 - 2z - z^2)$

OR

$= -5(-1 + 2z + z^2)$

Example 3 Factoring Polynomials in More than One Variable

Factor the trinomial. Verify that the factors are correct.

$-12x^3y - 20xy^2 - 16x^2y^2$

$4xy(-3x^2 - 5y - 4xy)$

Factor each of the following:

$9m^4n^2 - 6m^3n^3$

$3m^3n^2$

$3m^3n^2(3m - 2n)$

~~$3m(3m^3n^2 - 2m^2n^3)$~~

Not GCF

$42s^3t^2 - 14s^2t - 77s^4$

$= 7s^2(6st^2 - 2t - 11s^2)$

Get the idea....let's make things a little more interesting...

$\frac{w^2}{w} = w^1$ $\frac{(a+3)^4}{(a+3)^3} = (a+3)^1$

Factor each of the following:

$30w^5 - 24w^3$ → $14x(a-7) - 2(a-7)$

$6w^3(5w^2 - 4)$ $2(a-7)(7x-1)$

Let $\approx = x-3$

$3x^2(x-3)+24y(x-3)-15(x-3)$

$3x^2 \approx +24y \approx -15 \approx$

$3 \approx (x^2+8y-5)$

$3(x-3)(x^2+8y-5)$

$5w^3(2w-1)^3-(2w-1)^5$

$(2w-1)^3$ $(2w-1)^3$

$(2w-1)^3\left[5w^3-(2w-1)^5\right]$

Checkpoint...do you really understand??

Completely factor each of the following polynomials:

$9 + 8b^2$

$-32n^9 + 32n^6 + 40n^5$

$-10y^7 + 6y^{10} - 4y^{10}x - 8y^8x$

$30y^4z^3x^5 + 50y^4z^5 - 10y^4z^3x$

$3a(2a + 5b) - 7b(2a + 5b)$

$6w^3(5a-3)^2 + 4w(5a-3)^6$

Practice Problems:

Pg. 155

9, 10, 12, 14, 15b, 16, 19