Unit 3 Bare Necessities - Factoring

Factor Using GCF

Find the largest term that divides every term in the polynomial and divide it out.
**Always look for it before doing anything else on factoring problem!

All Together!!

EX1. $45x^2 - 25x$

EX2. $-18a^5b^4c + 12a^4b^2c^2 - 30a^3b^2$

You Try!!

1. $21w^3 - 35w$

2. $-24x^6 - 4x^4 + 12x^3 + 8x^2$

Factor Difference of Squares

$a^2 - b^2 = (a+b)(a-b)$

All Together!!

EX3. $h^2 - 100$

You Try!!

3. $9x^2 - 64$

4. $2x^2 - 50$

Factor Trinomials

- first term times last term
- find numbers that multiply to that but also add to middle term
- replace middle term with numbers
- split in half and factor GCF from both sides
- what is in parentheses must match, that is one factor and GCFs make other factor

All Together!!

EX 3. $g^2 + 5g - 24$

EX4. $6x^2 - 19x + 10$

You Try!!

5. $x^2 - x - 56$

6. $3x^2 + 4x - 15$

7. $n^2 + n - 42$

8. $2g^2 - 10g - 72$

Zeroes From Factors

To find zeroes from factors:
- set factors equal to zero and solve for x
- exponent of the factor is the multiplicity

To write factors from zeroes:
- work backwards to make factor equal to zero
- multiplicity is the exponent of the factor

All together!!

EX5. Find the zeroes of:

$f(x) = 3x(x-5)^4(x+2)$

EX6. Write the polynomial given zeroes:

$x = 5$ mult: 3, $x = -1$ mult:9, $x = 2$ mult: 1

You try!!
Find the zeroes and their multiplicities:

9. $f(x) = (x+8)^2(x-5)^2(x+1)$

10. $f(x) = 4(x+3)(2x-1)$

11. $f(x) = (x-300)^{95}$

12. $f(x) = -2x^2(x+5)(x+2)^4$

Write the polynomial using the given zeroes:

13. $x = -9$ mult: 3, $x = 2$ mult: 2

14. $x = 0$ mult: 5, $x = -1$ mult: 1, $x = -7$ mult: 1