

Notes on Factoring a Difference of Squares

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Name _____ Date _____

* Can you take out GCF?
 * ~~two~~ TWO terms?
 * Subtraction

A difference of squares must have the following:

$x^2(x \cdot x)$, $x^4(x^2 \cdot x^2)$, $x^6(x^3 \cdot x^3)$, $x^8(x^4 \cdot x^4)$

* Both terms perfect squares

- Two terms (Both must be PERFECT SQUARES)
- A subtraction sign in between the two terms OR one term that is positive and one is negative

Steps to take to factor a difference of squares: Example: $8x^2 - 32$

1. Factor out a GCF if there is one. $8(x^2 - 4)$
2. Write the product of two binomials leaving the GCF out in front and one binomial has a plus and one has a minus in between the terms. $8(x+2)(x-2)$
3. The front of each binomial will be the square root of the first term.
4. The back of each binomial will be the square root of the second term.

***The SUM of two squares CANNOT be factored and is PRIME!!!
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Try the following:

1. $m^2 - 36$
 $(m-6)(m+6)$

2. $4a^2 - 9$
 $(2a+3)(2a-3)$

3. $2r^2 - 98$
 $2(r^2 - 49)$
 $2(r-7)(r+7)$

4. $g^2 + 121$
 PRIME

5. $2w^2 - 200$
 $2(w^2 - 100)$
 $2(w+10)(w-10)$

6. $6k^4 - 24k^2$
 $6k^2(k^2 - 4)$
 $6k^2(k+2)(k-2)$

7. $w^4 - 81$
 $(w^2-9)(w^2+9)$
 Another difference of squares
 * Factor Again *
 $(w+3)(w-3)(w^2+9)$

8. $w^4 - 16$
 $(w^2+4)(w^2-4)$
 $(w^2+4)(w-2)(w+2)$