

FACTORING POLYNOMIALS

A polynomial is

Circle all expressions that are polynomials. Cross out all expressions that are not polynomials. Explain why an expression is not a polynomial.

| | | |
|--------------------------|--------------------------------------|------------------------------|
| $5x^9 - 8$ | $\frac{3^{-9}}{5} x^3 + \frac{2}{3}$ | $-17x^4 + x^3 - \frac{2}{x}$ |
| $\sqrt{9}x + 7$ | $\pi^3 x^2$ | $\sqrt{-25a^3}$ |
| $-a^5 + 8b^2 - bcd^{-8}$ | 1 | $ab^2 - ab^4$ |

What is factoring?

- Factoring is a procedure that takes a number or an algebraic expression and expresses it as a product of its two or more factors.
- Factoring is the inverse process of distributing

| Distributing | Factoring |
|--------------|-----------|
| | |

- Steps involved in factoring polynomials: (Simple factoring)
 1. Identify the greatest common factor.
 2. Put the gcf in front of brackets.
 3. Place a quotient of the original polynomial and the gcf inside the brackets.

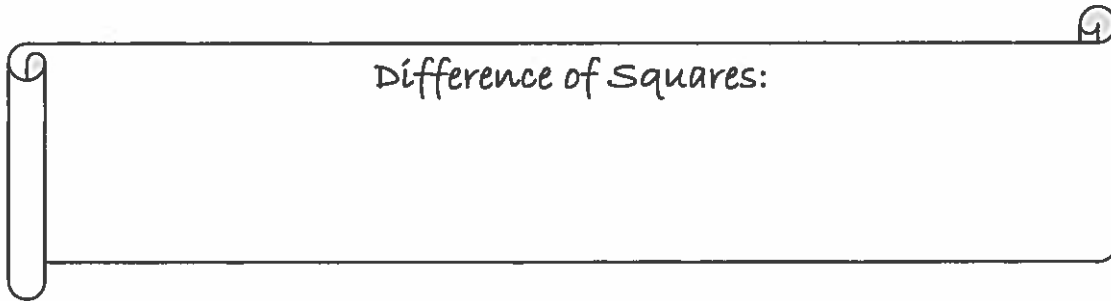
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PRACTICE FACTORING BY ISOLATING THE GREATEST COMMON FACTOR:

| | | | |
|---|-------------------------------------|----|----------------------------|
| 1 | $48x^2 - 64x =$ | 9 | $13x^3 + 39x^2 + 26 =$ |
| 2 | $-42xy^6 + 7xy^3 - x^2y^3 =$ | 10 | $35a^2 + 7 =$ |
| 3 | $121a^2 + 33a =$ | 11 | $0.5y^6 + 1.5xy^2 - 5.0 =$ |
| 4 | $-12m^5n^4 - 18m^3n^4 =$ | 12 | $-8b^3 + 24b^2 =$ |
| 5 | $2xyz^2 - xyz^3 =$ | 13 | $10x^2 + xy^2 =$ |
| 6 | $\frac{1}{3}x^4 + \frac{2}{3}x^3 =$ | 14 | $abc^2 + ab^3c^3 - abc =$ |
| 7 | $-25x^2 - 15 =$ | 15 | $14c^5 + 35c^4 =$ |
| 8 | $pr^2 + 3r^2 - p^2r^3 + 9r =$ | 16 | $81x^2 - 3 =$ |

Make 2 questions and solve them:

FACTORIZING USING THE DIFFERENCE OF SQUARES FORMULA



- **Factoring using the above formula is possible for binomials in which both terms are perfect squares and one is subtracted from the other.**

Example 1:

Example 2:

Example 3:

Example 4:

PRACTICE FACTORING BINOMIALS USING THE DIFFERENCE OF SQUARES FORMULA:

| | | | |
|-----------|---------------------|-----------|---------------------|
| 1 | $81x^2 - 144y^2 =$ | 13 | $100x^2 - 324y^2 =$ |
| 2 | $-x^2 + 169 =$ | 14 | $9x^2 - y^2 =$ |
| 3 | $121x^2 - y^2 =$ | 15 | $49x^4 - 100y^6 =$ |
| 4 | $25a^2 - 225c^2 =$ | 16 | $16x^2 + 121y^2 =$ |
| 5 | $64m^2 - 100n^2 =$ | 17 | $-9a^2 + 144b^4 =$ |
| 6 | $-289x^2 + 49y^2 =$ | 18 | $64 - p^2 =$ |
| 7 | $4x^2 - 16y^2 =$ | 19 | $x^2 - y^8 =$ |
| 8 | $16x^4 - 81z^4 =$ | 20 | $18x^2 - 72y^2 =$ |
| 9 | $a^2 - 441d^2 =$ | 21 | $50x^2 - 96z^2 =$ |
| 10 | $-36c^2 - 36d^4 =$ | 22 | $48a^2 - 75b^2 =$ |
| 11 | $196x^2 - 256y^2 =$ | 23 | $242x^2 - 128y^2 =$ |
| 12 | $a^2x^2 - b^2c^2 =$ | 24 | $300m^2 - 108n^2 =$ |