

Factor simply  
means to  
UNDISTRIBUTE!

## Greatest Common (GCF) Factor

### Steps:

1. Factor each term down to prime numbers ex: 1, 2, 3, 5, 7, 11, 13, 17...
2. Find the Common Factors
3. Pull out the common factors
4. Ask yourself "What's left?"
5. Set up factors as GCF (what's left?)

- If the leading coefficient is negative you MUST pull out the negative with the GCF. Watch out for the sign changes!

Example:

$$4n^3m^2 + n^3$$

$$2 \cdot \cancel{2} \cancel{n} \cancel{n} \cancel{n} m m + \cancel{n} \cancel{n} \cancel{n}$$

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$$n^3 (4m^2 + 1)$$

Example:

$$-3r + 3r^4pq^4$$

$$-3 \cdot 1r + 3 \cdot 1r^3pq^4$$

$$-3r(1 - 1r^3pq^4)$$

Example:

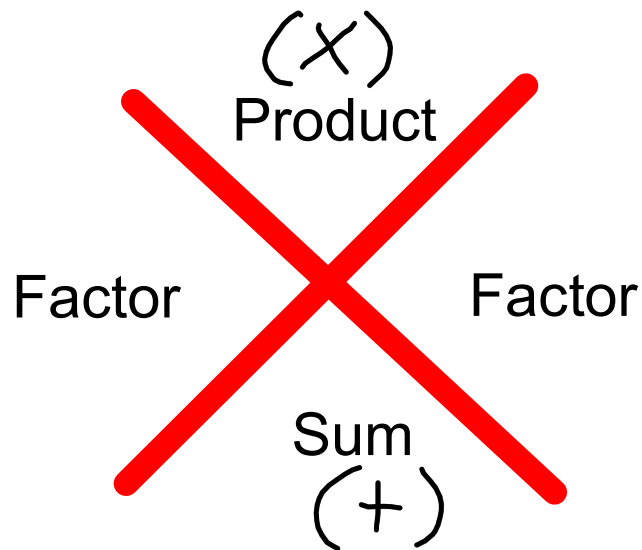
$$\ominus 12r^6 + 8r^7 - 12r^9$$

$$- \underbrace{2 \cdot 2 \cdot 3}_{\text{prime factors of } 12} \underbrace{r \cdot r \cdot r \cdot r \cdot r \cdot r}_{r^6} + \underbrace{2 \cdot 2 \cdot 2}_{\text{prime factors of } 8} \underbrace{r \cdot r \cdot r \cdot r \cdot r \cdot r \cdot r}_{r^7} - \underbrace{2 \cdot 2 \cdot 3}_{\text{prime factors of } 12} \underbrace{r \cdot r \cdot r \cdot r \cdot r \cdot r \cdot r \cdot r \cdot r}_{r^9}$$

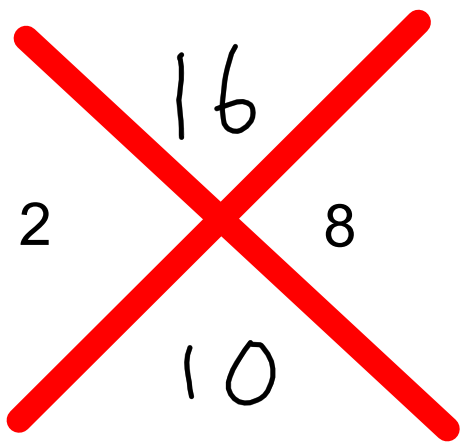
$$-4r^6(3 - 2r + 3r^3)$$

**DIAMOND PUZZLES**

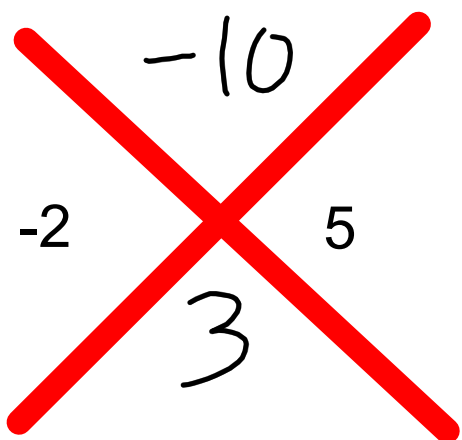
**PUZZLE THAT MAKES YOU  
MULTIPLY & ADD FACTORS**



Example:

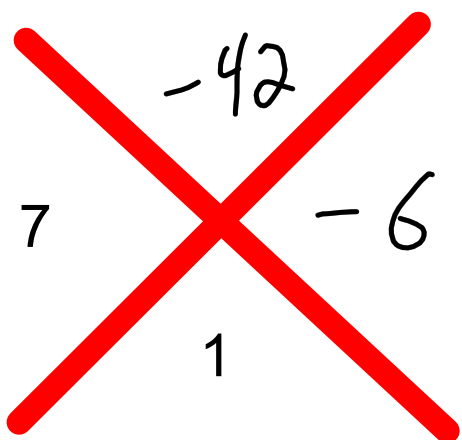


Example:





Example:



Example:

A diamond-shaped diagram with four numbers: 20 at the top, -5 on the left, -4 on the right, and -9 at the bottom. The entire diagram is crossed out with a large red X.