lulumath

Factoring by GCF

Video Notes
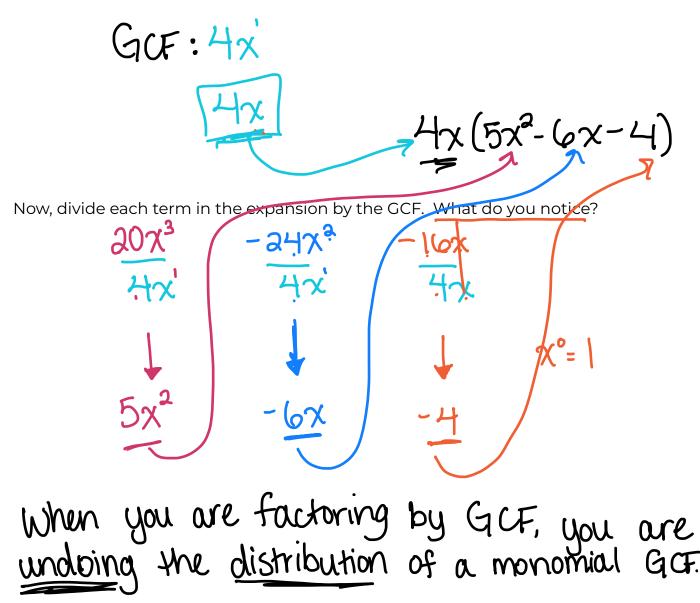
Video Link

Factoring by GCF

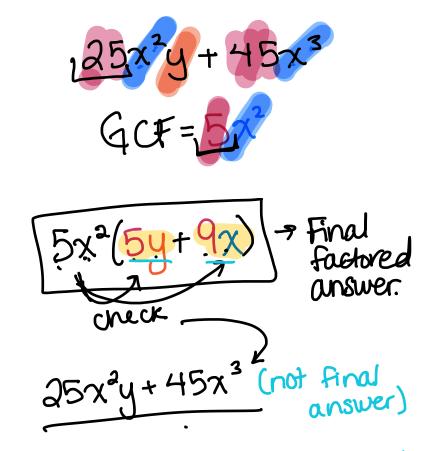Expand the following polynomial expression:

$$4x(5x^2 \cdot 6x - 4)$$

$$20x^3 - 24x^2 - 16x$$

Now, find the GCF of the terms in the expansion above.

GCF: $4x$

$$4x$$

$$4x(5x^2 - 6x - 4)$$

Now, divide each term in the expansion by the GCF. What do you notice?

$$\frac{20x^3}{4x} \qquad \frac{-24x^2}{4x} \qquad \frac{-16x}{4x}$$

$$5x^2 \qquad -6x \qquad -4$$

$$x^0 = 1$$

When you are factoring by GCF, you are undoing the distribution of a monomial GCF.

Factor by GCF:
$25x^2y + 45x^3$:

① Find GCF of all terms

$25x^2y + 45x^3$

$GCF = 5x^2$

② Undo the distributing of GCF.

$5x^2(5y + 9x)$ → Final factored answer.

check

$25x^2y + 45x^3$ (not final answer)
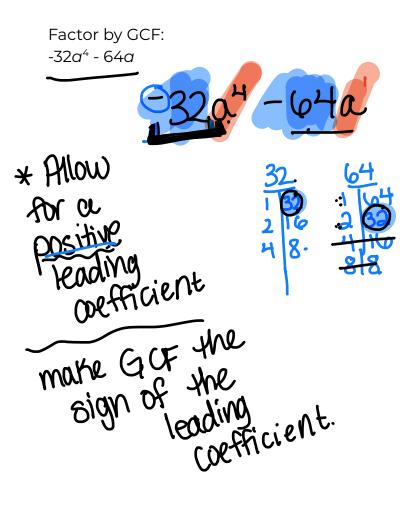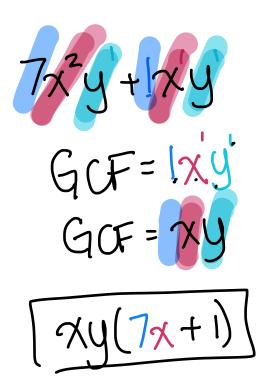
*Note: To make sure you factored out the GREATEST common factor, make sure the terms in the ( ) don't have anything in common.

Factor by GCF:
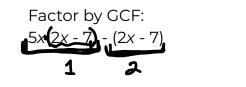$-32a^4 - 64a$

$-32a^4 - 64a$

$GCF = -32a$

* Allow for a positive leading coefficient

32
1 | 32
2 | 16
4 | 8

64
1 | 64
2 | 32
4 | 16
8 | 8

$-32a(1a^3 + 2)$

$$-32a(a^3 + 2)$$

make GCF the sign of the leading coefficient.

Factor by GCF:

$7x^2y + xy$

$$7x^2y + 1xy$$

$$GCF = 1 \cdot x^1 \cdot y^1$$

$$GCF = xy$$

$$\boxed{xy(7x + 1)}$$

Factor by GCF:

$\underbrace{5x(2x - 7)}_{1} - \underbrace{(2x - 7)}_{2}$

$$5x(2x - 7) - (2x - 7)$$

$$GCF = (2x - 7)$$

$$\boxed{(2x - 7)(5x - 1)} \rightarrow \text{Final answer}$$

$$5x(2x-7) - 1(2x-7)$$