

Lesson 9-5

Example 1

Find the greatest common factor of the monomials.

a. $6c$ and $24cd$

b. $21x^2y^3$ and $28x^3y^2$

Solution

- a. Write the factors of $6c$. $(2 \cdot 3)(c)$
Write the factors of $24cd$. $(2^3)(3)(c)(d)$

The GCF of $6c$ and $24cd$ is $(2)(3)(c) = 6c$.

- b. Write the factors of $21x^2y^3$. $(3)(7)(x^2)(y^3)$
Write the factors of $28x^3y^2$. $(2^2)(7)(x^3)(y^2)$

The GCF of $21x^2y^3$ and $28x^3y^2$ is $(7)(x^2)(y^2)$, or $7x^2y^2$.

Example 2**Factor each polynomial.**

a. $8z - 40$

b. $44r^3s - 66rs$

Solution

- a.**
- Find the GCF of each term of
- $8z - 40$
- .

factors of $8z$: $(2^3)(z)$

factors of 40 : $(2^3 \cdot 5)$

The GCF is $2^3 = 8$.

$$\begin{aligned} 8z - 40 &= 8 \cdot z - 8 \cdot 5 && \text{Use the Distributive Property.} \\ &= 8(z - 5) \end{aligned}$$

So, $8z - 40 = 8(z - 5)$.

- b.**
- Find the GCF of each term of
- $44r^3s - 66rs$
- .

factors of $44r^3s$: $(2^2 \cdot 11)(r^3)(s)$

factors of $66rs$: $(2 \cdot 3 \cdot 11)(r)(s)$

The GCF is $(2 \cdot 11)(r)(s) = 22rs$. Use the GCF to rewrite the polynomial.

$$\begin{aligned} 44r^3s - 66rs &= (22rs)(2r^2) - (22rs)(3) \\ &= 22rs(2r - 3) \end{aligned}$$

So, $44r^3s - 66rs = 22rs(2r - 3)$.

Example 3

Factor $3(r + 6) + r(r + 6)$.

Solution

$3(r + 6) + r(r + 6) = (3 + r)(r + 6)$ Use the distributive property to factor out the chunk $(r + 6)$.

So, $3(r + 6) + r(r + 6) = (3 + r)(r + 6)$.

