

Topic: Greatest common factor of polynomials

Question: Factor the polynomial in the numerator and simplify the resulting expression.

$$\frac{10x^2y^2 - 5xy^3}{5}$$

Answer choices:

- A $x(2xy - xy^2)$
- B $2x(y^2 - xy)$
- C $xy^2(2x - y)$
- D $y^2(2x^2 - x)$



Solution: C

We can see that each term in the numerator has a factor of 5, a factor of x , and a factor of y^2 , and that there is no other factor which is shared by both terms, so the greatest common factor is $5xy^2$. Now we'll factor the numerator and then simplify.

$$\frac{10x^2y^2 - 5xy^3}{5}$$

$$\frac{5xy^2(2x - y)}{5}$$

$$xy^2(2x - y)$$



Topic: Greatest common factor of polynomials

Question: If you factor this polynomial by first taking out the greatest common factor, what would that factor be?

$$3s^4t^2v^2 - 6s^3tv + 15s^2t^3v^3$$

Answer choices:

A $3s^2tv$

B $3s^2t^2v$

C $3s^2tv^2$

D $3s^3tv$



Solution: A

If we start with

$$3s^4t^2v^2 - 6s^3tv + 15s^2t^3v^3$$

and look for common factors, we can see that

- 3 is the greatest common factor of 3, -6 , and 15.
- s^2 is the greatest common factor of s^4 , s^3 , and s^2 .
- t is the greatest common factor of t^2 , t , and t^3 .
- v is the greatest common factor of v^2 , v , and v^3 .

Putting them together gives a greatest common factor of $3s^2tv$. The problem doesn't ask for this, but factoring out $3s^2tv$ gives

$$(3s^2tv)(s^2tv - 2s + 5t^2v^2)$$



Topic: Greatest common factor of polynomials

Question: If you factor this polynomial by first taking out the greatest common positive factor, what would that factor be?

$$36x^3y^5z^3 + 9x^3y^3z^4 - 18x^2y^4z^3$$

Answer choices:

- A $9x^3y^3z^2$
- B $9x^3y^5z^2$
- C $9x^2y^2z^2$
- D $9x^2y^3z^3$



Solution: D

If we start with

$$36x^3y^5z^3 + 9x^3y^3z^4 - 18x^2y^4z^3$$

and look for common factors, we can see that

- 9 is the greatest common factor of 36, 9, and -18 .
- x^2 is the greatest common factor of x^2 and x^3 .
- y^3 is the greatest common factor of y^3 , y^4 , and y^5 .
- z^3 is the greatest common factor of z^3 and z^4 .

Putting them together gives a greatest common factor of $9x^2y^3z^3$. The problem doesn't ask for this, but factoring out the $9x^2y^3z^3$ gives

$$(9x^2y^3z^3)(4xy^2 + xz - 2y)$$

