

These are some algebra skills which I expect you've seen before – but a brush-up is always good. These are things we'll be doing all the time in our calculations, and you'll need to be able to do them fluently.

Due at the beginning of class Thursday, September 8. Write your solutions on separate paper (no ragged edges, please) with multiple pages stapled. Have it ready to turn in at the beginning of class.

1. Simplify by combining like terms; use the distributive property if needed.

Don't neglect to distribute the subtraction when a parenthesized quantity is subtracted.

- $(x^2 + 4) - (x - 6)$
- $(3x^2 + 3x + h - 1) - (x^2 + 3x - 1)$
- $y^2 + 2yz + z^2 + y + z - (y^2 + y)$
- $(2x + 3z^2 + 4) - 5(x - z) + 7(x^2 + z^2)$

2. *Expand* the following products or powers.

Remember that positive integer powers are really just a kind of product.

- $(x + 3)(x - 5)$
- $(t^2 - 9t + 1)(3t - 4)$
- $(x + 2)(x + 3)(x - 5)$
- $(x + y)^2$
- $(a + 2)^3$

3. Factor out the greatest common factor:

- $2j^3 - 8j^2$
- $2xh + h^2 - 4h$
- $-3x^2h + 3xh^2 - h^3$
- $x^2 + 2xy + 2xz$

4. Simplify (by cancelling a common factor).

If the numerator and denominator have no factor in common, leave the expression as it is.

- $\frac{x(x-1)}{xz}$
- $\frac{qr^2}{q+qr^2}$
- $\frac{qr^2}{r^2+qr^2}$
- $\frac{t^2-4t}{t^6+8t}$
- $\frac{x^2h-x^2}{h-1}$