Distributive Property Encyclopedia Article

Distributive Property

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Distributive Property

The distributive property states that the **multiplication** "distributes" over **addition**. Thus a x (b + c) = a x b + a x c and (b + c) x a = b x a + c x a for all real or **complex numbers** a, b, and c.

The distributive property is behind the common multiplication **algorithm**. For example, 27 x 4 means 4 x (2 tens + 7 ones). To complete the multiplication, you use the distributive property: 4 x (20 + 7) = (4 x 20) + (4 x 7) = 80 + 28 = 108.

We use the distributive property more than once in carrying out such computations as (3x + 4)(x + 2). Thus (3x + 4)(x + 2) = (3x + 4)x + (3x + 4)2 where 3x + 4 is "distributed over" x + 2 and then (3x + 4)x + (3x + 4)2 = $3x^2$ + 4x) + (6x + 8) = $3x^2$ + 10x + 8 where x and 2 are "distributed" over 3x + 4.