

The Physical Units of Equations of a Geometric Progression

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Abstract

Newton's equation $F=ma$ and Einstein's equation $E=mc^2$ are the first two equations of an infinite geometric progression of equations. This is revealed when the physical units (kilograms, meters, and seconds) of these two equations are compared.

$G_1, G_2, G_3, G_4, G_5, G_6$, etc. are each a variable of each of the equations of the geometric progression

$$F = \text{force} = (\text{kg } m_1) / (\text{sec}^2)$$

$$m_1 = \text{meters}$$

$$m = \text{mass} = \text{kg}$$

$$a = \text{acceleration} = m_1 / (\text{sec}^2)$$

$$\text{kg} = \text{kilogram}$$

$$\text{sec} = \text{seconds}$$

$$E = \text{energy} = (\text{kg } m_1^2) / (\text{sec}^2)$$

c = the speed of light in a vacuum

$$A_1 = \text{the first dimension} = m_1$$

$$A_2 = \text{the second dimension} = m_1$$

$$A_3 = \text{the third dimension} = m_1$$

$$A_4 = \text{the fourth dimension} = \text{time} = \text{seconds}$$

$$A_5 = \text{the fifth dimension}$$

$$A_6 = \text{the sixth dimension}$$

etc.

$$G_1 = F = ma = (\text{kg}m_1)/(\text{sec}^2) = (\text{kg}A_1)/(A_4^2) \quad (1)$$

$$G_2 = E = mc^2 = (\text{kg}m_1^2)/(\text{sec}^2) = (\text{kg}A_1A_2)/(A_4^2) \quad (2)$$

$$G_3 = (\text{kg}m_1^3)/(\text{sec}^2) = (\text{kg}A_1A_2A_3)/(A_4^2) \quad (3)$$

$$G_4 = (\text{kg}m_1^3 \text{sec})/(\text{sec}^2) = (\text{kg}A_1A_2A_3A_4)/(A_4^2) \quad (4)$$

$$G_5 = (\text{kg}m_1^3 \text{sec}A_5)/(\text{sec}^2) = (\text{kg}A_1A_2A_3A_4A_5)/(A_4^2) \quad (5)$$

$$G_6 = (\text{kg}m_1^3 \text{sec}A_5A_6)/(\text{sec}^2) = (\text{kg}A_1A_2A_3A_4A_5A_6)/(A_4^2) \quad (6)$$

etc.

When you compare the physical units mass, distance, and time used in Newton's equation, $F=ma$, to the physical units in Einstein's equation, $E=mc^2$, they reveal a remarkable similarity in the use of physical units. In fact, they seem to be the first two steps in an infinite geometric progression of equations from the physical units point of view. For example, going from equation 1 to equation 2, there is a step of m_1 (meters). The step means that if you multiply equation 1 by meters (m_1), you get the same units that are in equation 2.

$$G_1=F=ma=(kgm_1)/(\text{sec}^2)=(kgA_1)/(A_4^2) \quad (1)$$

$$G_2=E=mc^2=(kgm_1^2)/(\text{sec}^2)=(kgA_1A_2)/(A_4^2) \quad (2)$$

If you take another step beyond equation 2, you get equation 3. What does this equation 3 represent? It represents the physical units of the third step or equation in an infinite geometric progression of equations. This is revealed when the physical units of these equations are taken into account. These equations are as profound as the first two are.

What the actual variables are in these equations, I would like to know. You get the units for the fourth equation by multiplying the third equation by the fourth dimension, which is seconds (sec). You get the units for the fifth equation by multiplying the units of the fourth equation by the fifth dimension, which is designated as A_5 . You get the units of the sixth equation by multiplying the units of the fifth equation by the

sixth dimension, which is designated as A_6 . All this leads to an infinite geometric progression of the physical units of the equations of this geometric progression.

Since we have the physical units that are used in these equations, we should be able to figure out what the variables are in these equations of this geometric progression.