

Application: Science

Dimensional analysis (also called Factor-Label Method or Unit Factor Method) is a problem-solving method that uses the fact that any number of expressions can be multiplied by one without changing its value. You can string any number of units together. We can solve problems by writing down what you need to find, then setting it equal to the information that you are given. The problem is solved by multiplying the given data and its units by the appropriate unit factors so that only the desired units are present at the end.

How many seconds are in 2.0 years?

Answer: Using proportional reasoning, you can calculate the following:

$$\begin{aligned} \text{? seconds} &= \frac{2.0 \text{ years}}{1} \times \frac{365 \text{ days}}{1 \text{ year}} \times \frac{24 \text{ hour}}{1 \text{ day}} \times \frac{60 \text{ min}}{1 \text{ hour}} \times \frac{60 \text{ seconds}}{1 \text{ min}} \\ &= 6.3 \times 10^7 \text{ seconds (to 2 significant figures)} \end{aligned}$$