Math Diversion 1093

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> Physical concepts are free creations of the human mind, and
> are not, however it may seem, uniquely determined
> by the external world.
> — Albert Einstein

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Source:  Nursing School Entrance Exam, 2005,
         LearningExpress, p. 52.
Title:  Mixed Rate
 Presenter: Patrick
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1 Problem

If jogging for 1 mile uses 150 calories and fast walking for 1 mile uses 100 calories, a jogger has to go how many times as far as a walker to use the same number of calories?

2 Solution

One equation jumps out at us: The number of calories used by the jogger = the number of calories used by the walker. Let D_J be the distance the jogger must run to use the same number of calories the walker will use in distance D_W.

Setting up the equation, we get

$$D_J \left[\frac{150 \text{ cal}}{\text{mile}}\right] = D_W \left[\frac{100 \text{ cal}}{\text{mile}}\right] . \tag{1}$$

On simplifying, we get

$$D_J = \frac{2}{3} D_W . \tag{2}$$

Thus, the jogger needs to go only two-thirds the distance the walker needs to go to burn-up the same number of calories.