

The other day, I stepped on the weighing scale after a long time (which included a 10-day-pigging-out vacation so I was a little apprehensive in the first place). When I saw the figure displayed, my head spun for a minute. What the...? How is it possible? I got down from the scale, tapped it here and there a bit — willing it to be sensible — and with my heart drumming in my ears, got on again. Still the same darned figure! Really now!

And then it struck me. It was showing me my weight in pounds instead of the usual kilograms I like to see it in (weight in double digits is so much more reassuring!). The constriction in my chest relaxed and I breathed again. I remembered I had converted it to pounds to check the weight of my check-in luggage before leaving for my vacation. I have half a mind to sue those weighing scale manufacturers — the confusion caused by offering the feature of both units is hazardous to the health of people, an outcome which is in direct contrast to the intended use of the instrument.

What happened with me is just one example of the tons of heartaches caused by multiple units used. But since there is no running away from the reality that various units of measurement are used for the same physical quantity, you will occasionally need to convert one to the other. Let us learn how to do it quickly and efficiently through the use of some examples similar to GMAT questions.

Example 1: Jodie runs her Prius 90 miles in two hours. In how many seconds, does she cover 132 feet? (Given 1 mile = 5280 feet)

Solution: The solution involves two steps: First one makes the units consistent and second one solves for time. We know Jodie covers 90 miles in 2 hours so her speed is 45 mph. We need to convert her speed from miles/hour to feet/second because distance is given in feet and the answer needs the time in seconds.

$$\text{Speed} = \frac{45 \text{ miles}}{1 \text{ hour}} = \frac{45 \times 5280 \text{ feet}}{3600 \text{ seconds}} = 66 \text{ feet/second}$$

Replace a mile by 5280 feet (because 1 mile = 5280 feet) and 1 hour by 3600 seconds (1 hour has 60 x 60 = 3600 seconds) in the expression. We get Jodie's speed in feet/sec. Now, to solve the question, we simply use the Time-Speed-Distance formula which is,

$$\text{Time Taken} = \frac{\text{Distance}}{\text{Speed}} = \frac{132 \text{ feet}}{66 \text{ feet/sec}} = 2 \text{ sec}$$

The solution to the above problem comes naturally to most people. They may not follow these same steps but nevertheless, they do not find it intimidating. In that respect, I haven't added any value yet. But what is important here is the procedure because it can be helpful in solving problems that are a little spooky for some. Let me explain by taking a trickier example:

Example 2: Julia drives at a speed of 132 feet/sec. How many miles away is she from her home, if it will take her 2 hours to reach home? (Given 1 mile = 5280 feet)

Solution: Here we have Julia's speed in feet/sec and we need to convert it to miles/hour because the distance asked is in miles and the time taken is in hours.

Given 1 mile = 5280 feet, it follows that 1 foot = 1/5280 miles.

We know that 1 hour = 3600 seconds, which implies that 1 second = 1/3600 hours.

Making the desired replacements in the expression, we get:

$$\text{Julia's Speed} = \frac{132 \text{ feet}}{1 \text{ sec}} = \frac{132 \times 1/5280 \text{ miles}}{1/3600 \text{ hour}} = 90 \text{ miles/hour}$$

Replace a foot by 1/5280 miles and 1 sec by 1/3600 hour (Same procedure as in the solution above.)

Using the Time-Speed-Distance formula, we get

$$\text{Distance} = \text{Speed} \times \text{Time} = 90 \text{ miles/hr} \times 2 \text{ hrs} = 180 \text{ miles}$$

There's your answer!

Don't get lost in the conversion. This simple one-step method will not let you down.