Problem of the Week
Problem B and Solution
Running Low on Gas

Problem

Driving home from a meeting late one evening, Ming notices that her gas gauge is showing that a mere $\frac{1}{10}$ of a tank remains. Luckily, just then she spots a 24-hour gas station. She has just enough money to add 20 litres of gas to the tank, bringing her gas tank up to $\frac{1}{2}$ full.

(a) Given that the gas tank went from $\frac{1}{10}$ full to $\frac{1}{2}$ full, determine the fraction of the tank filled by the gas that Ming added. HINT: Use equivalent fractions.

(b) The fraction of the tank you found in part (a) holds 20 L. How many litres are there in $\frac{1}{10}$ of a full tank?

(c) Given what you discovered in part (b), what is the full capacity, in litres, of Ming's gas tank?

Solution

(a) Since $\frac{1}{2} = \frac{5}{10}$ and Ming started with $\frac{1}{10}$ of a tank, the gas Ming added filled

$$\frac{5}{10} \text{ of a tank} - \frac{1}{10} \text{ of a tank} = \frac{4}{10} \text{ of a tank.}$$

(b) Since $\frac{4}{10}$ of a tank holds 20 litres, $\frac{1}{10}$ of a tank holds $20 \div 4 = 5$ litres.

(c) Since $\frac{1}{10}$ of a tank holds 5 litres, the full capacity of Ming's tank is $10 \times 5 = 50$ litres.