Problem of the Week
Problem C and Solution
Have YOU Got a Minute?

Problem

My clock is a perfectly good clock. It keeps exact time. But it only has an hour hand. Today, in the afternoon, I looked at my clock and discovered that the hour hand was $\frac{7}{8}$ of the distance between the "4" and the "5". Determine the exact time (hours, minutes and seconds).

Solution

To solve this problem we note that in one hour, the hour hand travels $\frac{1}{12}$ of a complete revolution while the minute hand travels a complete revolution or 60 minutes.

Since the hour hand is $\frac{7}{8}$ of the distance between the "4" and the "5", the minute hand will travel $\frac{7}{8}$ of a complete revolution or $\frac{7}{8}$ of 60 minutes which is $\frac{7}{8} \times 60$ or $52\frac{1}{2}$ minutes.

Since we want the time in hours, minutes and seconds, we need to convert $\frac{1}{2}$ minute to seconds.

The number of seconds may be obvious but the calculation,
$\frac{1}{2}$ minute $\times \frac{60 \text{ seconds}}{1 \text{ minute}} = 30$ seconds, is provided for completeness.

Therefore, the precise time is 30 seconds after 4:52 p.m. This can be written 4:52:30 p.m. or 16:52:30 using the twenty-four hour clock.