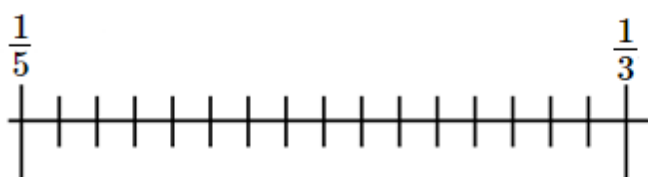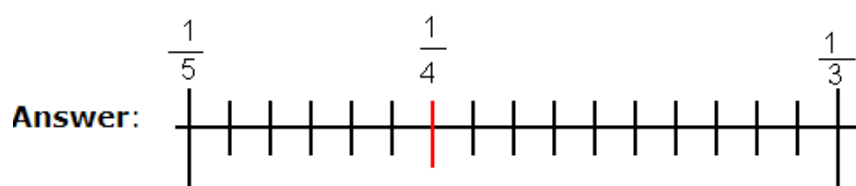Day 3 Extension

Pride of Place

Age 11 to 14 Short
Challenge Level ★★

The fractions $\frac{1}{3}$ and $\frac{1}{5}$ have been placed on the number-line shown.

At which position should the fraction $\frac{1}{4}$ be placed?

Answer:

$$\frac{1}{5} \qquad\qquad \frac{1}{4} \qquad\qquad\qquad\qquad \frac{1}{3}$$

Using a common denominator

$$\begin{array}{ccc}
\dfrac{1}{5} & \dfrac{1}{4} & \dfrac{1}{3} \\[6pt]
\dfrac{12}{60} & \dfrac{15}{60} & \dfrac{20}{60}
\end{array}$$

The distance from $\dfrac{12}{60}$ to $\dfrac{20}{60}$ is $\dfrac{8}{60}$

There are 16 intervals on the diagram so two make $\dfrac{1}{60}$

The distance from $\dfrac{12}{60}$ to $\dfrac{15}{60}$ is $\dfrac{3}{60}$ so go along 6 intervals

Finding the size of the intervals

The difference between $\frac{1}{3}$ and $\frac{1}{5}$ is $\frac{1}{3} - \frac{1}{5} = \frac{2}{15}$.

This section of the number line is divided into 16 intervals, each of length $\frac{2}{15} \div 16 = \frac{1}{120}$.

The difference between $\frac{1}{4}$ and $\frac{1}{5}$ is $\frac{1}{4} - \frac{1}{5} = \frac{1}{20} = \frac{6}{120}$, and hence $\frac{1}{4}$ is six smaller intervals from $\frac{1}{5}$.