

The first potter's rate is $\frac{15}{5}$ or 3 mugs per hour. The second potter's rate is $\frac{12}{3}$ or 4 mugs per hour. Their combined rate is 7 mugs per hour. So if t = the amount of time, in hours, needed for the two potters to produce 63 mugs, then:

$$7 = \frac{63}{t}, \text{ so } 7t = 63, \text{ and } t = 9$$