

$$\begin{aligned}
 a.x \pmod{3} &\equiv 2a + x \pmod{3} \\
 &\equiv \left(2a \pmod{3}\right) + \left(x \pmod{3}\right) \\
 &\equiv 2\left(a \pmod{3}\right) + \left(x \pmod{3}\right)
 \end{aligned}$$