Definición de División: $\frac{a}{b} = a \cdot \frac{1}{b}$

Recíproco del producto: $\frac{1}{ab} = \frac{1}{a} \cdot \frac{1}{b}$

Cualquier multiplicación de fracciones se puede tratar de la siguiente manera:

$$\frac{a}{b} \cdot \frac{c}{d} = a \cdot \frac{1}{b} \cdot c \cdot \frac{1}{d} = (ac) \cdot \left(\frac{1}{b} \cdot \frac{1}{d} \right)$$

$$= ac \cdot \frac{1}{bd} = \frac{ac}{bd}$$

Problemas (personal)

4.8) $2 \cdot \frac{1}{3} = \boxed{\frac{2}{3}}$

4.9)

$$3 \cdot \frac{4}{5} = 3 \cdot 4 \cdot \frac{1}{5} = 12 \cdot \frac{1}{5} = \boxed{\frac{12}{5}}$$

4.10)

$66666 \cdot \frac{7}{6} \cdot$

(a) $66666 \cdot \frac{7}{6} = 66666 \cdot 7 \cdot \frac{1}{6} = \frac{66666 \cdot 7}{6}$

(b) $\frac{66666 \cdot 7}{6} = 11111 \cdot 7 = \boxed{77777.}$
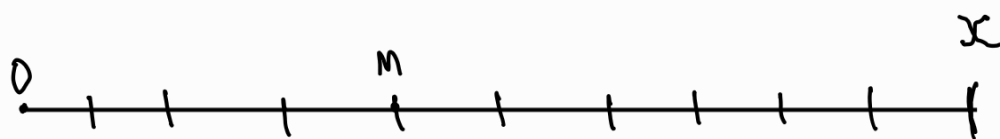
4.11) $\frac{1}{3} \cdot \frac{1}{2} = \frac{1}{6}$

4.12) $\frac{2}{3} \cdot \frac{4}{5} = \frac{2 \cdot 4}{3 \cdot 5} = \frac{8}{15}$

4.13) $\frac{35}{6} \cdot \frac{48}{7} = \frac{35 \cdot 48}{6 \cdot 7} = 5 \cdot 8 = \boxed{40}$

4.14)

(a) $\frac{2}{3} \cdot 90 = 2 \cdot 30 = \boxed{60}$

(b) $\frac{3}{4} \cdot \frac{11}{8} = \frac{33}{32}$

Idea: Cuando multiplicamos por una fracción, estamos dividiendo el número en n partes iguales y determinando la posición m. $\left(\frac{m}{n} \cdot x \right)$

hay n lineas (incluyendo x).

4.15)

$160 \cdot \frac{3}{5} = 32 \cdot 3 = 96.$

$96 \cdot \frac{3}{4} = 24 \cdot 3 = \boxed{72}$

Ejercicios

4.2.1)

(a) $\dfrac{5}{6} \cdot \dfrac{11}{7} = \dfrac{5 \cdot 11}{6 \cdot 7} = \boxed{\dfrac{55}{42}}$

(b) $\dfrac{1}{5} \cdot (-75) \cdot \dfrac{2}{3} = -(15) \cdot \left(\dfrac{2}{3}\right)$

$$= \boxed{-10}$$

(c) $\left(-\dfrac{80}{7}\right)\left(\dfrac{14}{9}\right)\left(-\dfrac{63}{16}\right) = \dfrac{\overset{5}{80} \cdot \overset{2}{14} \cdot \overset{7}{63}}{\underset{1}{7} \cdot \underset{1}{9} \cdot \underset{1}{16}} = \boxed{70}$

4.2.2)

$$\dfrac{\overset{2}{80} \cdot \overset{2}{28} \cdot \overset{2}{26} \cdot \overset{2}{24}}{\underset{1}{12} \cdot \underset{1}{13} \cdot \underset{1}{14} \cdot \underset{1}{18}} = 2^4 = \boxed{16}$$

4.2.3)

$$\dfrac{\overset{1}{3} \cdot \overset{1}{8}}{\underset{1}{9} \cdot \underset{1}{11}} \times \dfrac{\overset{1}{7} \cdot \overset{1}{9} \cdot \overset{1}{11}}{\underset{1}{3} \cdot \underset{1}{8} \cdot \underset{1}{7}} = \boxed{1}$$

4.2.4) $\dfrac{3}{\underset{1}{4}} \cdot \dfrac{\overset{2}{8}}{\underset{1}{9}} \cdot \overset{20}{180} = 3 \cdot 2 \cdot 20 = \boxed{120}$

4.2.5) $\frac{1}{2} \cdot \frac{\cancel{2}}{\cancel{3}} \cdot \frac{\cancel{3}}{\cancel{4}} \cdot \frac{\cancel{4}}{\cancel{5}} \cdot \overset{\overset{10}{\cancel{50}}}{\cancel{100}} = \boxed{20}$

4.2.6) $\frac{5}{\cancel{8}} \cdot \frac{\cancel{8}}{\cancel{11}} \cdot \frac{\cancel{11}}{\cancel{14}} \cdot \frac{\cancel{14}}{\cancel{17}} \cdot \frac{\cancel{17}}{\cancel{20}} \cdot \frac{\cancel{20}}{23} = \boxed{\frac{5}{23}}$

4.2.7)

(a) $\frac{5}{6} \cdot \, ? \, = \frac{5}{7}$

$x = \frac{\cancel{5}}{7} \cdot \frac{6}{\cancel{5}} = \boxed{\frac{6}{7}}$

(b) $\frac{5}{6} \cdot x = \frac{4}{7}$

$\frac{\cancel{5}}{\cancel{6}} \cdot \frac{4 \cdot \cancel{6}}{\cancel{5} \cdot 7} = \frac{4}{7}$

$\frac{4 \cdot 6}{5 \cdot 7} = \boxed{\frac{24}{35}}$

4.2.8) $\frac{a}{b} = \frac{3}{4} \qquad \frac{b}{c} = \frac{11}{13}$

$\frac{a}{c} = \, ?$

$a = \frac{3b}{4} \qquad c = \frac{13b}{11}$

$\frac{3b}{4} \div \frac{13b}{11} = \frac{3\cancel{b}}{4} \cdot \frac{11}{13\cancel{b}}$

$= \frac{3 \cdot 11}{4 \cdot 13}$

$\frac{3 \cdot 11}{4 \cdot 13} = \boxed{\frac{33}{52}}$