17 Sep' 24

HW): Write numbers 0-9 neatly - practice

Last homework - several mistakes

(12 / 16)

Divisions: 4556 / 365

$$
\begin{array}{r}
12 \checkmark \\
365 \overline{)4556} \\
365 \\
\hline
906 \\
730 \\
\hline
176 \checkmark
\end{array}
$$

$$
\begin{array}{r}
11 \\
365 \\
2 \\
\hline
730
\end{array}
$$

$$\begin{array}{r} 580 \\ 973 \overline{)564391} \\ 4865 \\ \hline 07789 \\ 7784 \\ \hline 000051 \checkmark \end{array}$$

$$\begin{array}{r} 973 \\ \times \quad 6 \\ \hline 5838 \end{array} \qquad \begin{array}{r} 973 \\ \times \quad 5 \\ \hline 4865 \end{array}$$

$$\begin{array}{r} 973 \\ \underline{8} \\ 7784 \end{array}$$

$$\begin{array}{r} 70 \\ 9 \overline{)631} \\ 63 \\ \hline 001 \\ 0 \\ \hline 1 \end{array}$$

How to verify $+, -, *, /$:

$\rightarrow$ $a + b = c$ $\Rightarrow$ (implies/means) $c - b = a$; $c - a = b$

$\rightarrow$ $a - b = c$ $\Rightarrow$ $c + b = a$

$\rightarrow$ $a * b = c$ $\Rightarrow$ $c/b = \underset{\underset{\text{quotient}}{\downarrow}}{a}$, remainder = 0

$$c/a = b \text{ , remainder} = 0$$

$\rightarrow$ $a/b = c$ (quotient) $\Rightarrow$ $b * c + d = a$
     d (remainder)

$$b\overline{\smash{\big)}\,a}^{\,c}$$
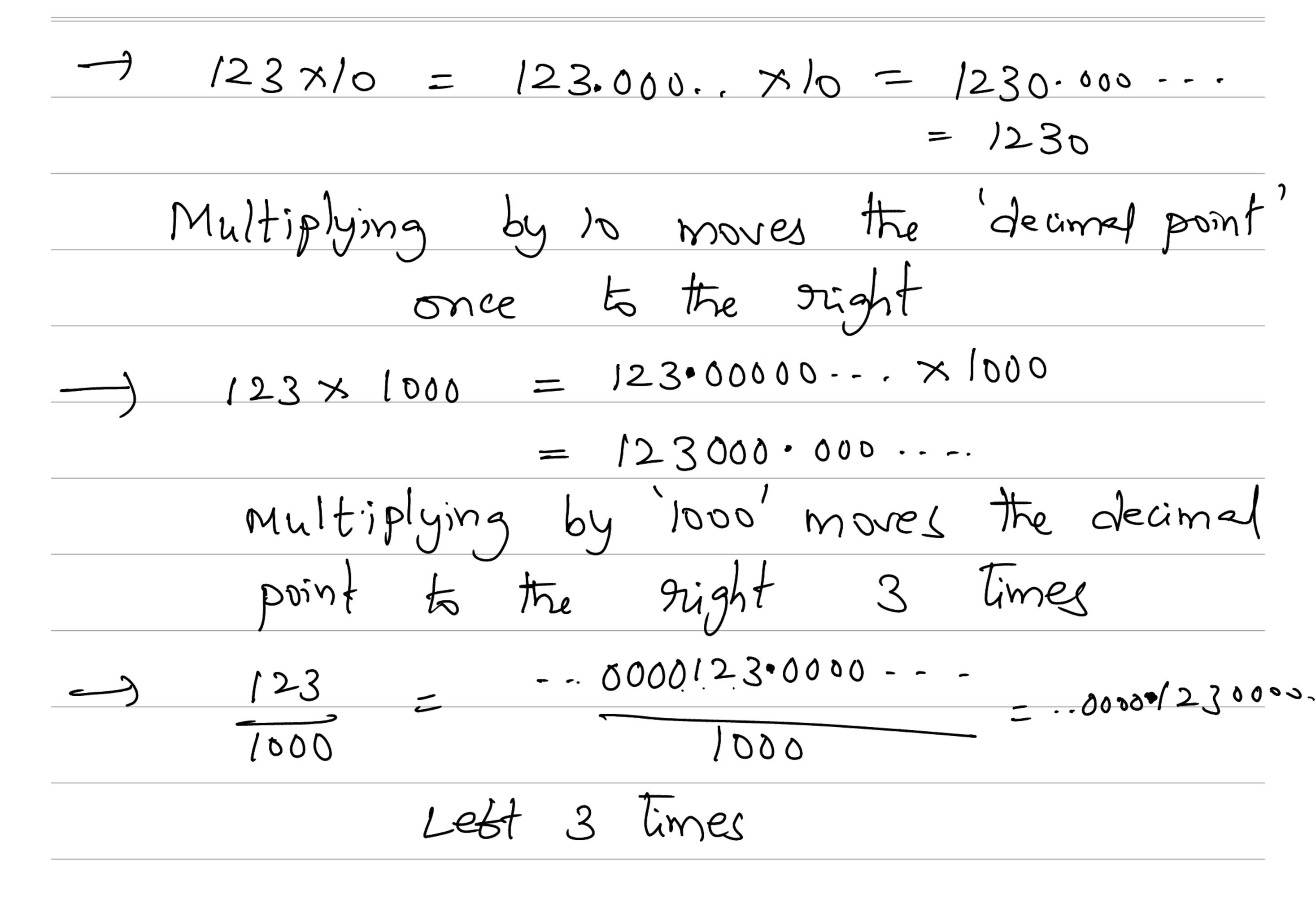
$$\underline{d}$$

HW: Do 5 each of +, -, *, / of 3 and 4 digit numbers; In each case, verify your answers

Decimals: (1) 0.3 apples ⟹ 1 apple cut into 10 pieces and only 3 of those pieces are left

$$\underset{\downarrow}{\underline{.}} \text{ means } 10$$

(2) out of those 3 pieces, each of those pieces is cut into 10 more parts

$$0.3 = 0.30 = 0.300 = 0.300\cdots$$

$$\cdots 003 = 003 = 03 = 3$$

(3) $0.3 = 0.30$

$$1\,2\,3\,4\,6\,8\,9 \bullet 3\,6\,7\,5\,4\,2$$

.... 100s   10s   units 10th 100th 1000th
                              part   part   part

$\rightarrow$ $100 / 10 = 10$

$\rightarrow$ $1230 / 10 = 123$; $\dfrac{1230}{10} = \dfrac{1230.0}{10} = 123.00$

$\rightarrow$ $\dfrac{123}{10} = \dfrac{123.0}{10} = 12.3$ $= 123$

Dividing by 10 moves the 'point' left by 1 digit

$\rightarrow$ $123 \times 10 = 123.000.. \times 10 = 1230.000 \cdots$

$$= 1230$$

Multiplying by 10 moves the 'decimal point' once to the right

$\rightarrow$ $123 \times 1000 = 123.00000 \cdots \times 1000$

$$= 123000.000 \cdots$$

Multiplying by '1000' moves the decimal point to the right 3 times

$\rightarrow$ $\dfrac{123}{1000} = \dfrac{\cdots 0000123.0000 \cdots}{1000} = \cdots 0000.123000 \cdots$

Left 3 times

→ HW: Type these into a program (python) and answer here (with extra zeros and move the decimal point)

-(1) 123×1000

(2) $123 \div 10000$

(3) 0.123×100

(4) $643 \div 100000$

(5) 23.24×1000

(6) 0.096×10

(7) $70.01 \div 1000$

(8) 901.7605×100

(9) 446.1×100

(10) $76.3 \div 1000$