



Fluency methods and representations

Written methods

Column Addition

$$\begin{array}{r} 789 \\ + 642 \\ \hline 1431 \\ 11 \end{array}$$

Answer: 1431

Column Subtraction

$$\begin{array}{r} 8 \quad 12 \quad 1 \\ 9 \quad 3 \quad 2 \\ - 4 \quad 5 \quad 7 \\ \hline 4 \quad 7 \quad 5 \end{array}$$

Answer: 475

Short Multiplication

$$\begin{array}{r} 24 \\ \times 6 \\ \hline 144 \\ 2 \end{array}$$

Answer: 144

Long Multiplication

$$\begin{array}{r} 124 \\ \times 26 \\ \hline 744 \quad (x6) \\ 2480 \quad (x20) \\ \hline 3224 \\ 11 \end{array}$$

Answer: 3224

Short Division

432 ÷ 5 becomes

$$5 \overline{) 432} \begin{array}{l} 86 \text{ r}2 \\ \underline{40} \\ 32 \\ \underline{30} \\ 2 \end{array}$$

Answer: 86 remainder 2

Long Division

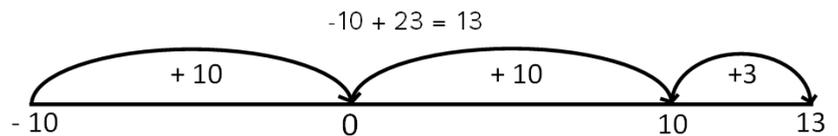
432 ÷ 15 becomes

$$15 \overline{) 432} \begin{array}{l} 28 \text{ r}12 \\ \underline{30} \\ 30 \\ \underline{30} \\ 20 \\ \underline{15} \\ 5 \end{array}$$

Answer: 28 remainder 12

Representations

Number lines

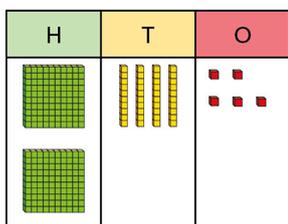


Place value chart

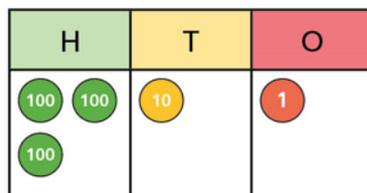
M	HTh	TTh	Th	H	T	O	t	h	th
Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones	tenths	hundredths	thousandths
1 000 000	100 000	10 000	1 000	100	10	1	0.1 $\frac{1}{10}$	0.01 $\frac{1}{100}$	0.001 $\frac{1}{1000}$
					2	6	5		
				2	6	5	0		

x100
Becomes 2 place values larger

Place value counters

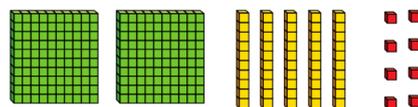


=245



=311

Base ten



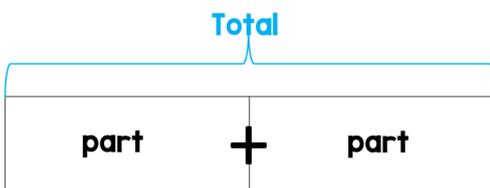
200

50

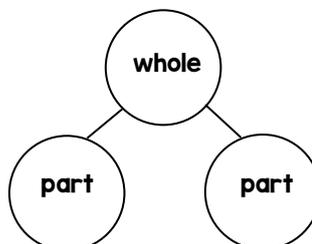
8

=258

Bar model



Part-whole



Arrays

