

## 4.1 – Algorithms for Operations Whole Numbers

### Addition

Calculate the sum of the following numbers using the discussed conceptual and procedural algorithms.

1.  $42 + 89$

2.  $473 + 709$

*Try it yourself:*  $1,094 + 3,486$

## Subtraction

Calculate the difference of the following numbers using the discussed algorithms.

1.  $82 - 49$

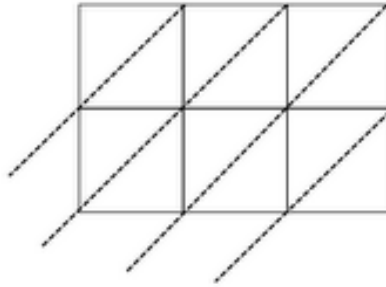
2.  $709 - 473$

*Try it yourself:*  $3,022 - 1,449$

## Multiplication

*Partial Products Algorithm*

$$\begin{array}{r} 357 \\ \times 46 \\ \hline 42 = 6 \times 7 \\ 300 = 6 \times 50 \\ 1800 = 6 \times 300 \\ 280 = 40 \times 7 \\ 2000 = 40 \times 50 \\ \underline{12000} = 40 \times 300 \\ 16422 \end{array}$$



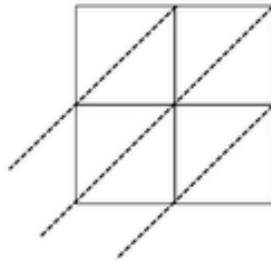
*Standard Algorithm*

$$\begin{array}{r} 357 \\ \times 46 \\ \hline 2142 = 6 \times 357 \\ \underline{14280} = 40 \times 357 \\ 16422 \end{array}$$

Calculate the product of the following numbers using the discussed algorithms.

1.  $23 \times 12$

2.  $314 \times 79$



*Try it yourself:*  $1,507 \times 452$  (don't use blocks/repeated addition/array ☺)

## Division

Calculate the product of the following numbers using the discussed algorithms.

1.  $123 \div 11$

2.  $1,599 \div 11$

*Try it yourself:*  $783 \div 21$

### *Partial Quotients Algorithm*

$$\begin{array}{r} 27 \overline{)654} \\ \underline{270} \quad 10 \\ 384 \\ \underline{270} \quad 10 \\ 114 \\ \underline{27} \quad 1 \\ 87 \\ \underline{27} \quad 1 \\ 60 \\ \underline{54} \quad 2 \\ 6 \end{array}$$

## *Operations on Decimal Numbers*

As we the rules for fundamental operations on decimals, let's focus on why the rules work. Also consider how you could write a story problem to model the problem.

$$4.87 + 3.59 + 14.99$$

$$410 + 0.045$$

$$0.095 + 0.13$$

$$40 - 14.99 - 22.46$$

$$12.4 - 9.37$$

$$30.2 \times 4.7$$

$$18 \times 0.043$$

$$0.09 \times 0.08$$

$$33.52 \div 8$$

$$35 \div 0.7$$

$$22.44 \div 0.11$$