Common Misconceptions: Algorithms

MISCONCEPTION

Many educators believe algorithms promote memorization, and this would contribute to a superficial understanding of steps, conventions, and rules. This belief leads to the idea that students should not be taught algorithms.

TRUTH

An algorithm is a step-by-step procedure for solving a problem. Using an algorithm requires conceptual understanding of what is happening in the porblem and procedural knowledge to accurately solve. Algorithms can serve as a link between conceptual understanding and procedural knowledge.

Examples of algorithms

$$\begin{array}{r} 23 \\ \times\ 6 \\ \hline 120 \\ +\ 18 \\ \hline 138 \end{array}$$

$$\begin{array}{r} 192 \\ +\ 133 \\ \hline \end{array}$$

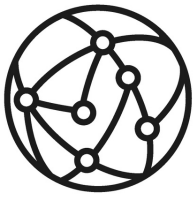
100 + 100 = 200
90 + 30 = 120
2 + 3 = 5

200 + 120 + 5 = 325

$$\begin{array}{r} {\scriptstyle 7\ 11} \\ \not{8}\not{1}7 \\ -\ 653 \\ \hline 164 \end{array}$$

ALGORITHMS[a]

Promote flexibility



Lead to deeper understanding

Help know when and how to use strategies

[a]Rittle-Johnson et al. (2011); Star (2005)

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