Alternative Computation Methods (grades 1-6)

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Agenda

1. Introduction
2. Examine alternative computation methods
3. Why do the methods work?
4. Why do we care?
5. Wrap-up

Alternative Computation Methods

- Posted around the room are alternative calculation methods. **All of these methods DO work.**
- **Begin anywhere.** Look at each method and try to figure out what the student was doing/thinking.
- **Can you figure out why each method works?**

Why do these methods work?

A

$$\begin{array}{r} 276 \\ +\ 89 \\ \hline 15 \\ 15 \\ 2 \\ \hline 365 \end{array}$$

B

$$\begin{array}{r} 276 \\ +\ {}^{1}{}^{1}89 \\ \hline 365 \end{array}$$

C

$$\begin{array}{rr} 2\ 7\ 6 & \rightarrow 2\ 6\ 5 \\ +\quad 8\ 9 & \rightarrow 1\ 0\ 0 \\ \hline & 3\ 6\ 5 \end{array}$$

D

$$\begin{array}{rr} & 2\ 9 \\ & \cancel{3\ 0}\ {}^{1}0\ 7 \\ -\quad & 2\ 8\ 4 \\ \hline & 2\ 7\ 2\ 3 \end{array}$$

E

$$\begin{array}{rr} & 3\ 0\ 0\ 7 \\ -\quad & 2\ 8\ 4 \\ \hline & 1\ 6 \\ +\quad & 7\ 0\ 0 \\ +\ 2 & 0\ 0\ 0 \\ + & 7 \\ \hline 2\ 7\ 2\ 3 & \end{array}$$

F

$$\begin{array}{rr} 3\ 0\ 0\ 7 & \rightarrow 3\ 0\ 2\ 3 \\ -\quad 2\ 8\ 4 & \rightarrow \quad 3\ 0\ 0 \\ \hline & 2\ 7\ 2\ 3 \end{array}$$

G

$$\begin{array}{rr} & 3\ {}^{1}0\ {}^{1}0\ 7 \\ -\ {}_{1} & 2_{1}\ 8\ 4 \\ \hline & 2\ 7\ 2\ 3 \end{array}$$

H

126 x 48

= 252 x 24

= 504 x 12

= 1008 x 6

= 6,048

I

$$13 \times 14$$

$$= (12 + 1)(12 + 2)$$

$$= 144 + 24 + 12 + 2$$

$$= 144 + 36 + 2$$

$$= 182$$

J

$$\begin{array}{rrrrr} & & & 5 & 7 \\ & & \times & 2 & 6 \\ \hline & & & 4 & 2 \\ & & 3 & 0 & 0 \\ & & 1 & 4 & 0 \\ + & 1 & 0 & 0 & 0 \\ \hline & 1 & 4 & 8 & 2 \end{array}$$

K

$$57 \times 26 =$$

$$(50 + 7)(20 + 6) =$$

$$1000 + 300 + 140 + 42 =$$

$$1482$$

L

$$2/3 \div 4/5 =$$

$$10/15 \div 12/15 =$$

$$10/12 =$$

$$5/6$$

M

	1	2	6	
0	0/4	0/8	2/4	4
6	0/2/8	1/1/6	4/8	8
	0	4	8	

Other methods you have seen....

Why do we care?

Why do we care?

- Diverse populations mean diverse algorithms.
- Student-generated calculation methods allow us to see their thinking.
- Other algorithms may be equally as efficient as the traditional ones.

➢ **Always teach the traditional algorithms to mastery while honoring alternative methods!**

The Take-Home Message

- As teachers we must evaluate computation methods for their validity
- Alternative calculation methods are not necessarily wrong, and should be judged according to:
  - Applicability
  - Efficiency
  - Student understanding and facility with algorithm

Resources

- Today's presentation handout: **tinyurl.com/Wilmington2014**
- Email me: Ann Gaffney at **gaffneyedcons@gmail.com**

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