

Algorithms: Thursday Afternoon

1

$$\begin{array}{r}
 123 \\
 \times 3 \\
 \hline
 369
 \end{array}$$

Eyes travel up

Brain thinks

Pen writes

L ← R

Mentally

L → R

$$\begin{array}{r}
 3 \times 100 = 300 \\
 3 \times 20 = 60 \\
 + 3 \times 3 = 9 \\
 \hline
 369
 \end{array}$$

2

$$\begin{array}{r}
 123 \\
 \times 12 \\
 \hline
 246 \\
 + 1230 \\
 \hline
 1476
 \end{array}$$

Routine:
second row starts in second place.
(No Explanations!)

9- Remainder checking method (Trachtenberg)

- Reduce the number to one digit by adding its digits.

123 x 12 becomes 6 x 3 = 18
1476 becomes 18 ✓

Shortcut: Ignore nines or combinations of 9

Example:
9 4 6 5 3 2 becomes 29, 11, 2

By mentally eliminating the nines first, you'll get the answer quicker.

3

Demonstration Exercise

$$\begin{array}{r}
 + \\
 18 \quad 24 \\
 \text{Write} \quad \uparrow \\
 34 \\
 \text{See } 2 \quad \uparrow \quad \text{See } 1 \\
 \times 6 \\
 \hline
 204
 \end{array}$$

Write and say, twenty - four

Listen & Hear

Put down the carry the 2'n 18's 20

4,

Eventually all Mentally

Dialogue

Student: "I don't understand!"
Teacher: "Excellent! I only want you to repeat what I'm saying and doing until you can do it yourself."

Friday Morning

21. Invent your own Algorithms and check them with the 9 - Remainder method.

Friday Afternoon

22. Repeat exercise 19.

Practise makes perfect.

For a while, test yourself at least once a week in order to consolidate your knowledge.