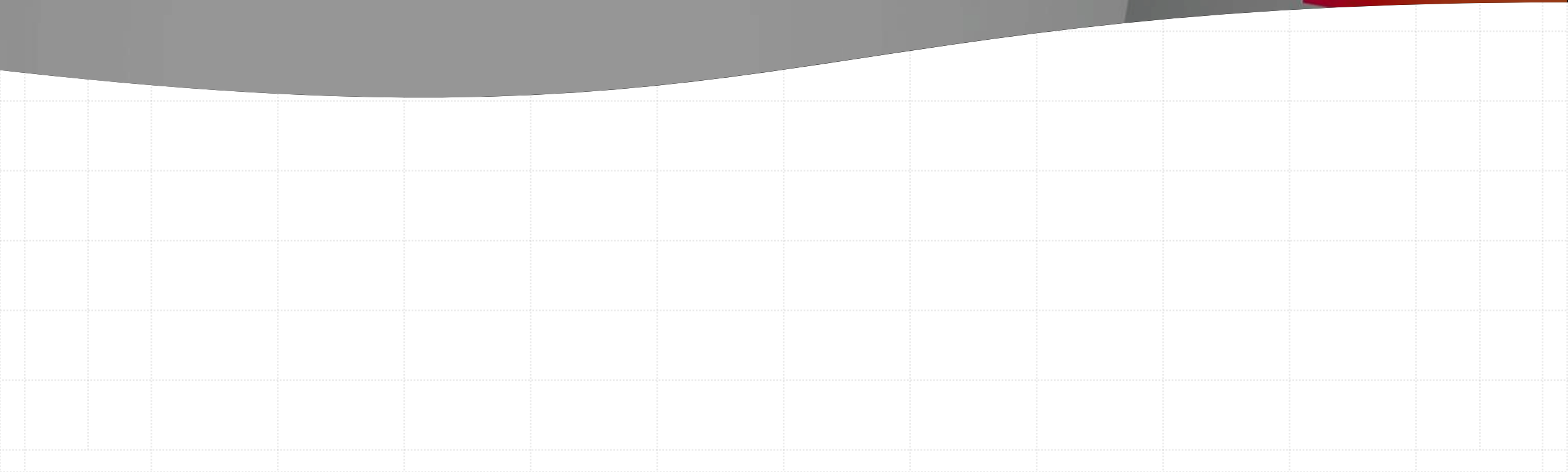


Mental Math

The background of the top half of the image is a dark gray gradient. It features several plus signs of varying sizes and colors (orange, white, and gray). There are also overlapping rectangular shapes in shades of gray and a prominent red and orange shape on the right side. The overall aesthetic is modern and mathematical.

▶ Multiplying by 11

- 32×11 can solve this in your head?

▶ Multiplying by 11

- 32×11 simply add 3 and 2 which = 5. Now put the 5 in between the 3 and the 2. And you get 352.

Multiplying by 11

- 85×11 what if the number adds more than 9. $8 + 5 = 13$. As before the 3 goes in between the 8 and the 5. But the 1 needs to be added to the 8. The answer you get is 935.

Let's Practices show your answer
calculate in your head.

$$\begin{array}{r} 1.) \quad 97 \\ \underline{\quad \quad} \\ \quad \quad x11 \end{array}$$

$$\begin{array}{r} 2.) \quad 45 \\ \underline{\quad \quad} \\ \quad \quad x11 \end{array}$$

$$\begin{array}{r} 3.) \quad 99 \\ \underline{\quad \quad} \\ \quad \quad x11 \end{array}$$


$$\begin{array}{r} 4.) \quad 88 \\ \underline{\quad \quad} \\ \quad \quad x11 \end{array}$$



Adding Left to Right

- The easiest addition questions are those that do not have any carrying.
- To solve $47 + 32$, first add 30 and 47, then add 2. After adding 30,
 - you have the *simpler* problem $77 + 2$, which equals 79. We
 - illustrate this as follows:

$$\begin{array}{r} 47 \\ +32 \\ \hline \end{array}$$



Let's Practices show your answer
calculate in your head.

$$\begin{array}{r} 1.) \quad 47 \\ +43 \\ \hline \end{array}$$

$$\begin{array}{r} 2.) \quad 58 \\ +22 \\ \hline \end{array}$$

$$\begin{array}{r} 3.) \quad 33 \\ +64 \\ \hline \end{array}$$

$$\begin{array}{r} 4.) \quad 63 \\ +25 \\ \hline \end{array}$$




Now let's try a calculation that requires you to carry a number:

- Adding from left to right, you can simplify the problem by adding $67 + 20 = 87$; then $87 + 8 = 95$.

$$\mathbf{67 + 28 = 87 + 8 = 95}$$

(first add 20) (then add 8)

$$\begin{array}{r} 67 \\ +28 \\ \hline \end{array}$$



Let's Practices show your answer
calculate in your head.

$$\begin{array}{r} 1.) \quad 84 \\ \quad +57 \\ \hline \end{array}$$

$$\begin{array}{r} 2.) \quad 68 \\ \quad +45 \\ \hline \end{array}$$

$$\begin{array}{r} 3.) \quad 97 \\ \quad +16 \\ \hline \end{array}$$

$$\begin{array}{r} 4.) \quad 63 \\ \quad +39 \\ \hline \end{array}$$



References

- Credit goes to Arthur Benjamin and Michael Shermer there book Secrets of Mental Math