MEI Mathematics Education Innovation

Equivalence is Key

CALCULATOR CRUNCH

If I know that 482 x 75 = 36,150
What do I need to insert in each row to make the expressions equivalent? For example:

4820 x 75 = 482 x 75	(x)	10	
482 x 7.5 = 482 x 75	( )		
4820 x 7.5 = 482 x 75	( )		
48.2 x 7.5 = 482 x 75	( )		
482 x 750 = 482 x 75	( )		
48.2 x 75 = 482 x 75	( )		

( ) is an operation

☐ is a number

What other expressions can you write that are equivalent to 48.2 x 7.5?

Aim of the game

To work out which operation and number are needed to make the two sides of the calculation equal.

( ) is an operation

☐ is a number

The operation will be either $\times$ *or* $\div$

The missing number will be a multiple of 10

In the first example:

$4820 \times 75 = 361,500$

$482 \times 75 = 36,150$

$36,150 \times 10 = 361,500$

So to make them equal, we need to multiply the second part by 10 so that

$4820 \times 75 = 482 \times 75 \times 10$

How to play (using a calculator)

Use the calculator to work out what each side is equal to and then compare the answers to see what you need to do to make them equal.

Use the calculator to check.

What other expressions can you write that are equivalent to 48.2×7.5?

Top Tips

Think about what happens to numbers as we $\times\ and\ \div$ them by 10, 100 and 1,000.

The digits move as they become 10/100/1,000 times bigger and smaller. Thinking about the place value headings might help.

M	HTh	TTh	Th	H	T	Ones •	t	h	th
		3	6	1	5	0 •			
	3	6	1	5	0	0 •			

⬅   ➡

> × 10 Move the digits one place to the left
>
> ÷ 10 Move the digits one place to the right