

Special numbers 6/10/10

One special number I found was 81.

In my special numbers
let $a \in \mathbb{Z}^+, a \leq 9$ and
let $b \in \mathbb{Z}, 0 \leq b \leq 9$.

Where my special number is $10a+b$

$$\therefore 10a+b = ab + (a+b)$$

$$\text{or } 10a+b = ab + a + b$$

$$\text{or } 10a - a = ab + b - b$$

$$\text{or } 9a = ab$$

$$\text{or } 9a - ab = 0$$

$$\text{or } a(9-b) = 0 \quad \text{--- (1)}$$

$$\therefore a \text{ or } 9-b = 0$$

but a cannot be 0 from definition

$$\therefore b = 9$$

Equation 1 is valid for all values of a and $b = 9$.

All 2-digit numbers ending in 9 are special.