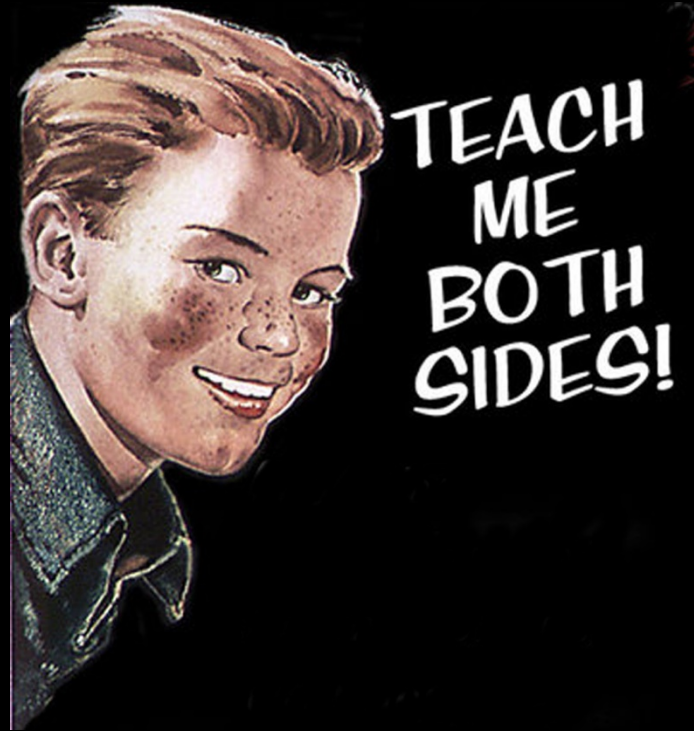


learn for later



Utrecht, August 19, 2022

willem uittenbogaard

what is mental math?

- OUT of your head (by heart)
- WITH your head

what must?

OUT of your head:

- + and – to 20
- time tables and their reverse
- home on the number line
- handy with zeros in multiplication
- lots of friends: the more, the better

what more?

WITH your head:

- stringing + and – to 100 and 1000
- column wise + and –
- column wise \times : one digit \times two digit numbers
- division by multiplying up
- use of a calculator in time

the smallest candy shop in the world



Stijn leaves the shop with 7 things for € 1.
what's in his bag?



the candy



stroopsoldaatje 25 cent

wijnbal 15 cent

zoethout 10 cent

schuimblok 5 cent

smallest candy shop

- the smallest number of things you can buy is 4
- the biggest number of things you can buy is 20
- can you buy any number of things between 4 and 20?
- are you sure?
- can you prove it?

some results of the lesson

$15 + 15 = 30 + 25 = 55 + 10 = 65 + 5 = 70 + 15 + 15 = \text{€}1,00$
~~18 SB~~ 18 SB 12 H
 90 cent 10 cent
~~9 WB~~ 5 SB 2 WB 15 S
 45 cent 30 25
~~WB~~

aantal dingen	25 cent	15 cent	10 cent	5 cent	samen 100
4	4	-	-	-	100
5	3	1	1	-	100
6	3	-	2	1	100
7	2	1	3	1	100
8	2	-	4	2	100
9	-	4	3	2	100
10	-	-	10	-	100
11	-	-	9	2	
12	-	-	8	4	
13	-	-	7	6	
14	-	-	6	8	
15	-	-	5	10	
16	-	-	4	12	
17	-	-	3	14	
18	-	-	2	16	
19	-	-	1	18	
20	-	-	-	40	

pieces of rope



a teacher needs, for a lesson, pieces of rope of 2.75 meter; she has a ball of rope of 80 meters.

- how many pieces can she get out of that?

pieces of rope

- can you solve it?
- how?
- why is it so difficult?
- can children solve it?
- can grown ups solve it?

reactions on the market

- french fries
- just a woman

multiplying up



starting problem

the teacher gets a new electric bicycle for his birthday. then he can go to school on that bike. a full battery is good for 90 kilometers.

- the teacher lives 6.25 kilometers from the school.
- how often can the teacher cycle back and forth to school before recharging the battery?

some results of the starting problem

opladen?

90 km

$$1x = 6,25$$

$$2x = 12,50$$

$$4x = 25$$

$$8x = 50$$

$$12x = 75$$

$$14x = 87,50$$

7 x heen en weer

14 x heen

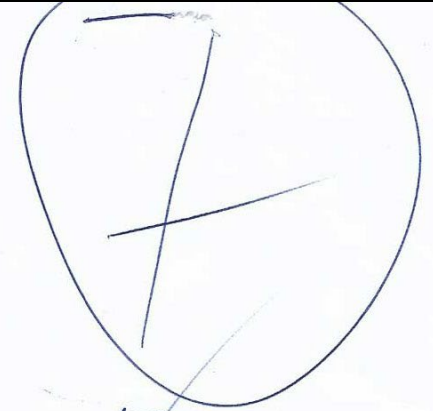
$$6,25 / 90 \text{ R.S.}$$

$$\underline{62,5} \quad 10x$$

$$17,5$$

$$\underline{12,5} \quad 2x$$

$$5,0$$



~~12~~

~~rest . 5~~

$$12,5 / 90$$

$$\underline{12,5}$$

$$77,5 \quad 1x$$

$$\underline{62,5}$$

$$5x$$

$$15,0$$

$$\underline{12,5}$$

$$1x$$

$$2,5$$

7 R. 2,5

some results of the rope problem

10 x 27,5
20 x 55
30 x 82,5
29 x 79,75

(29x)

2,75
2,75
2,75 = 1

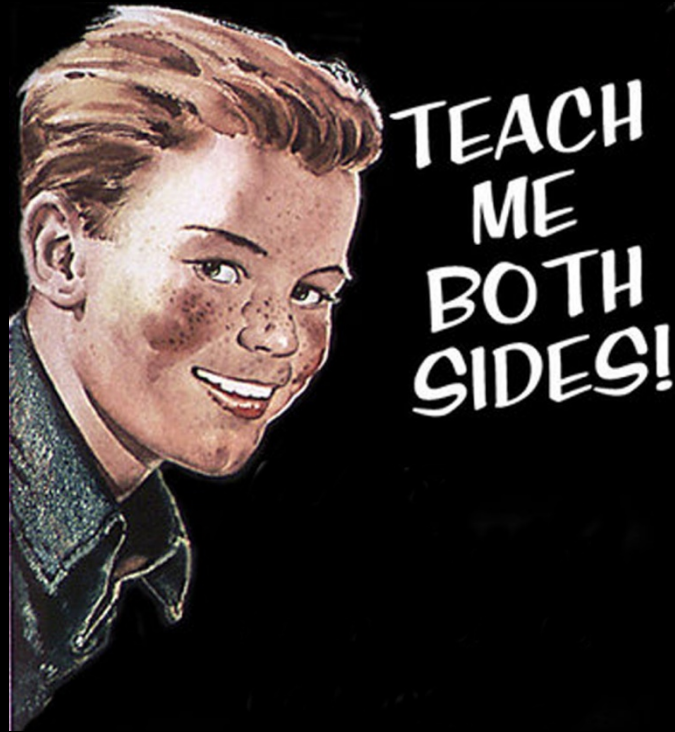
27,5 = 10

~~10~~
55,0 = 20

82,5 = 30

~~82,5~~ (29x)

learn for later



Some sides are much better than others!

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