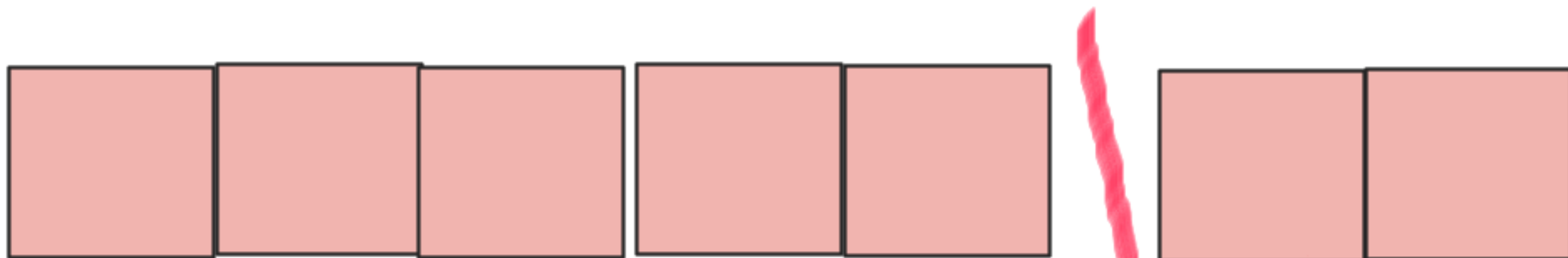
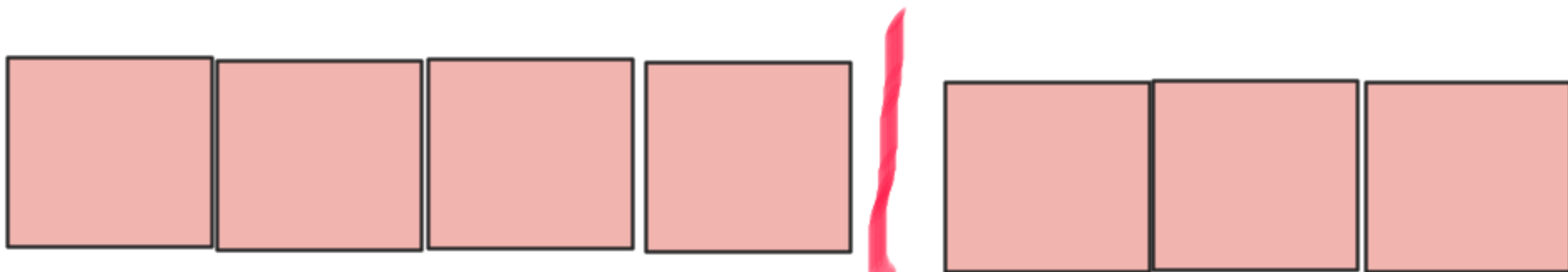


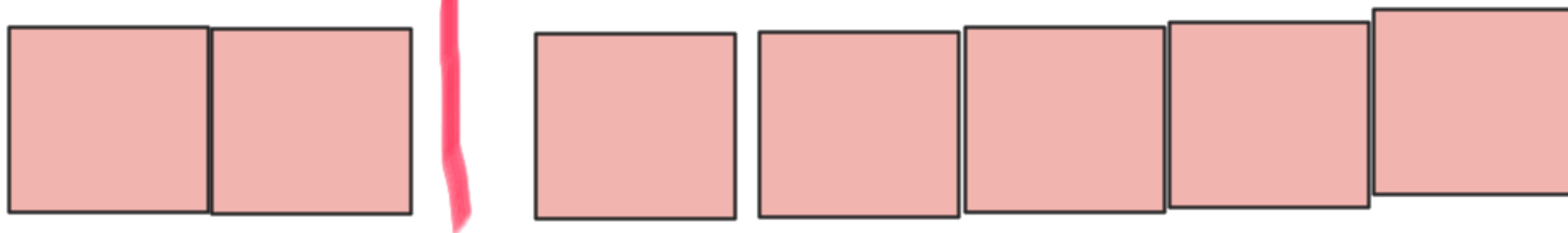
1-  $5+2=7$  1- break off a bit of it leaving it in two pieces. With seven blocks.



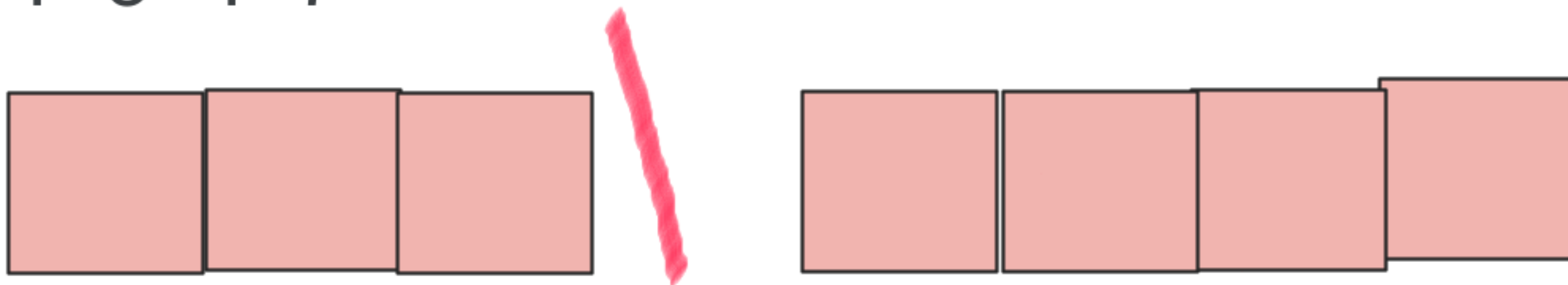
2-  $4+3=7$



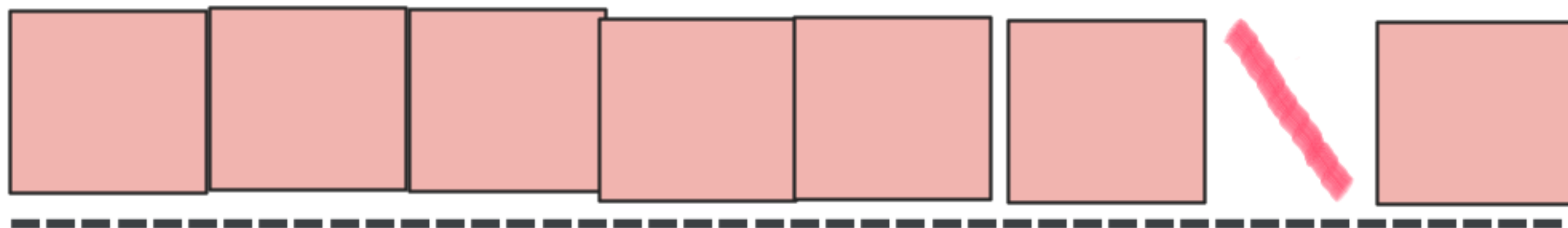
3-  $2+5=7$



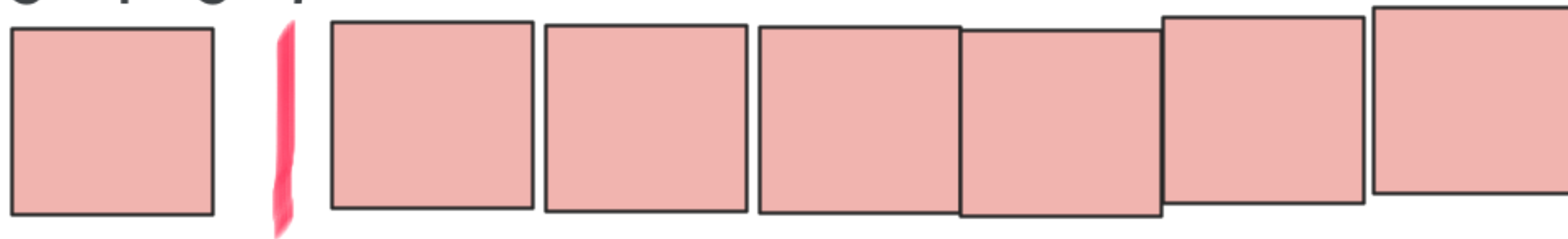
4-  $3+4=7$  1- break off a bit of it leaving it in two pieces. With seven blocks.



5-  $6+1=7$



6-  $1+6=7$

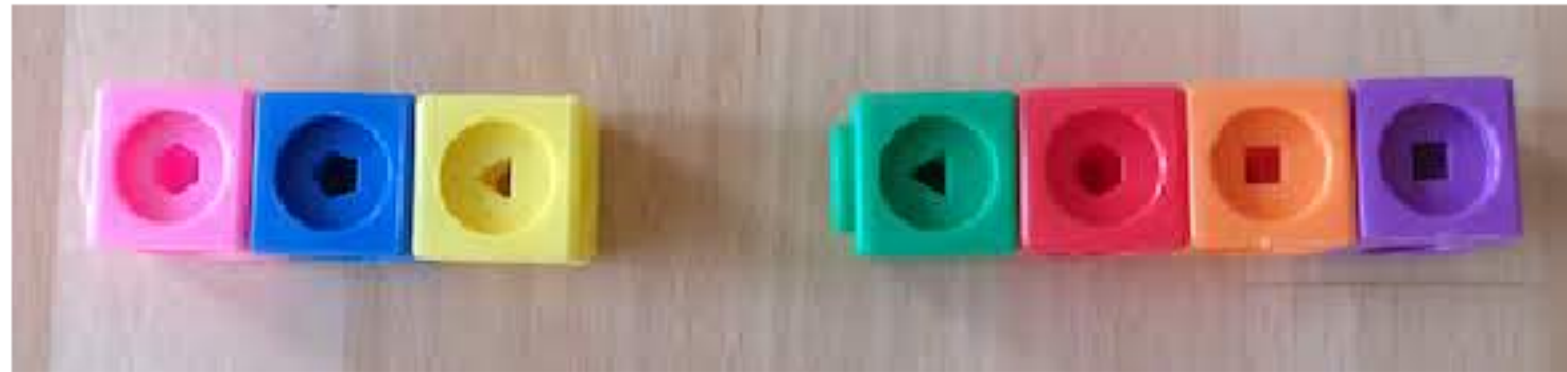


In how many different ways can it be done?

The answer: It can be done in three ways. No more, because if we try breaking them up more, they will be repeated.

EX:

$$3+4=7$$

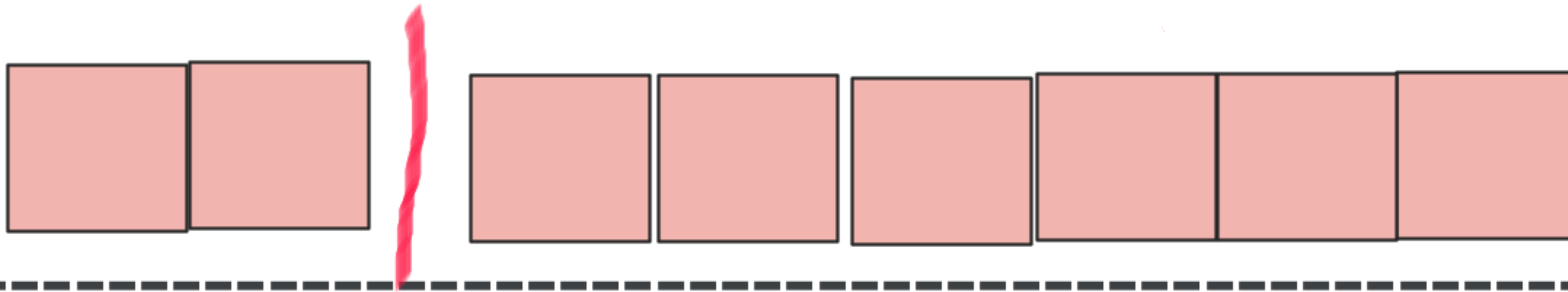


There the same, the only difference is that the places of the 3 and 4 had changed.

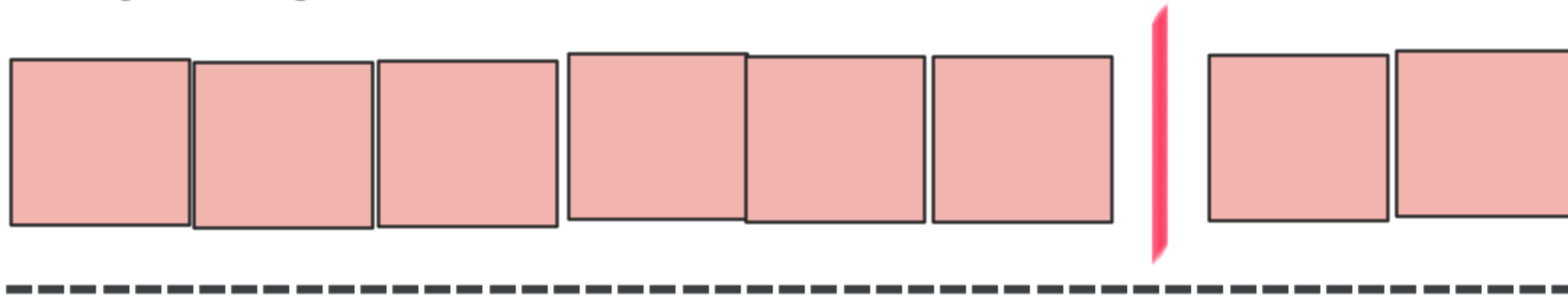
$$4+3=7$$



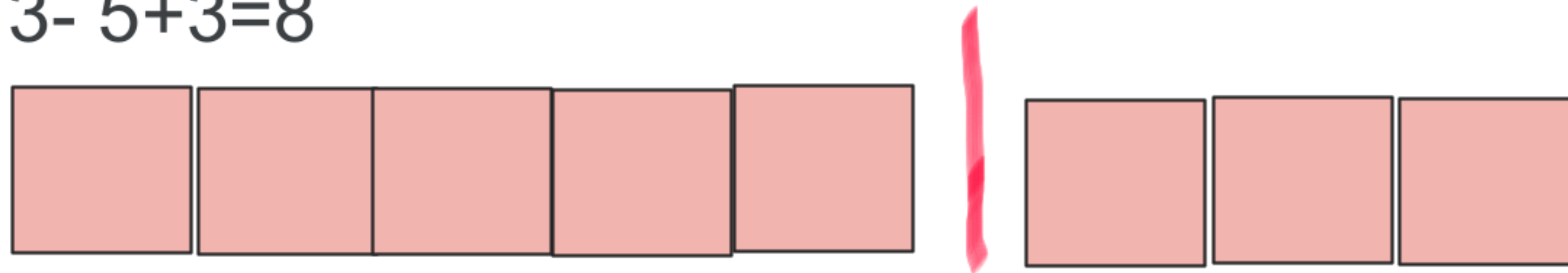
1-  $2+6=8$  1- break off a bit of it leaving it in two pieces. By using 8 cubes.



2-  $6+2=8$

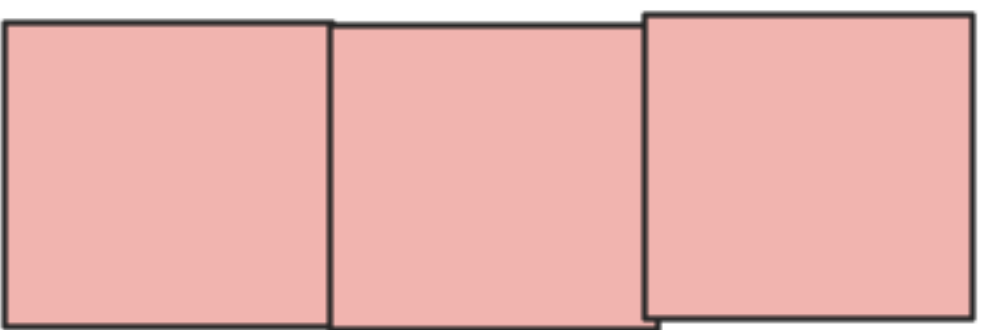


3-  $5+3=8$



1- break off a bit of it leaving it in two pieces. By using 8 cubes.

$$4 - 3 + 5 = 8$$

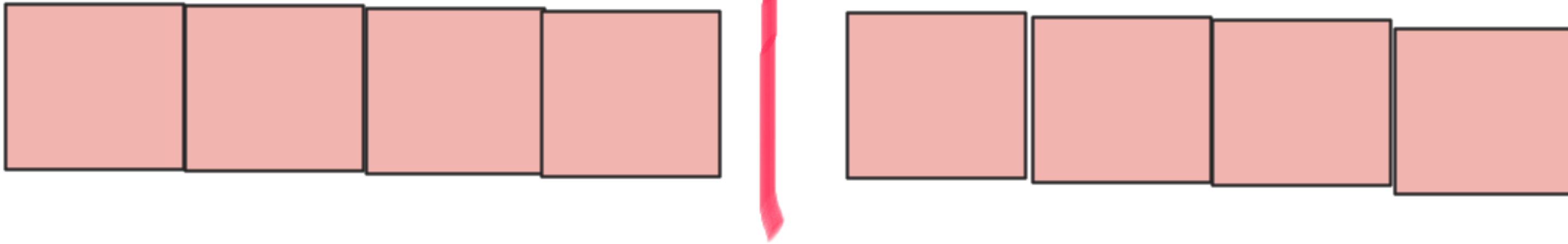


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$$5 - 4 + 4 = 8$$



$$4 - 4 + 4 = 8$$



---

In how many different ways can it be done?

The answer is: it can be done in four ways.

If I start doing the rest they'll be repeated.

I noticed that when we add more blocks the number of ways will have 1 more ways to do it.

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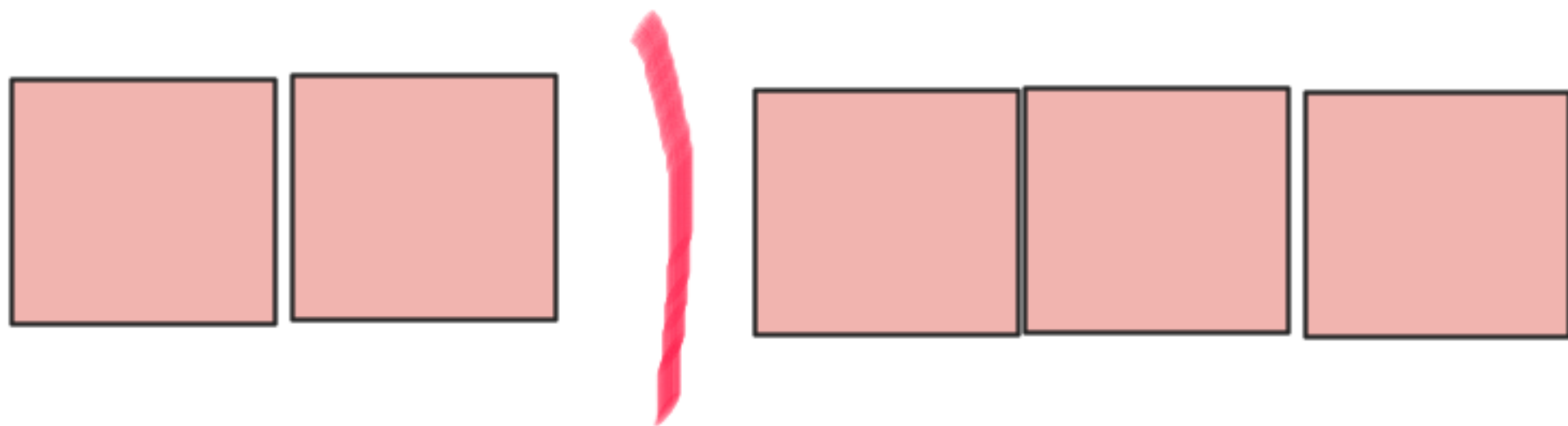
### Explanation:

When we had 7 blocks we had 3 ways of seperating them into 2 parts, but when we added one more block to make them 8 we had 4 ways of doing it.

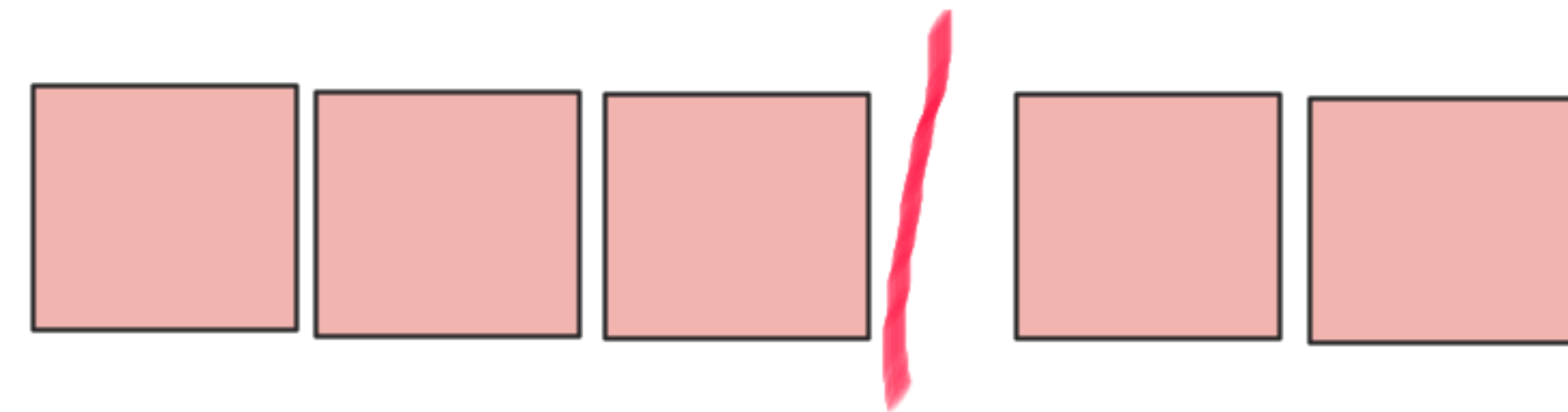
Now predict how many ways there will be with five cubes.  
I predict there will be 4 ways.

---

$$1- 2+3=5$$



$$2- 3+2=5$$

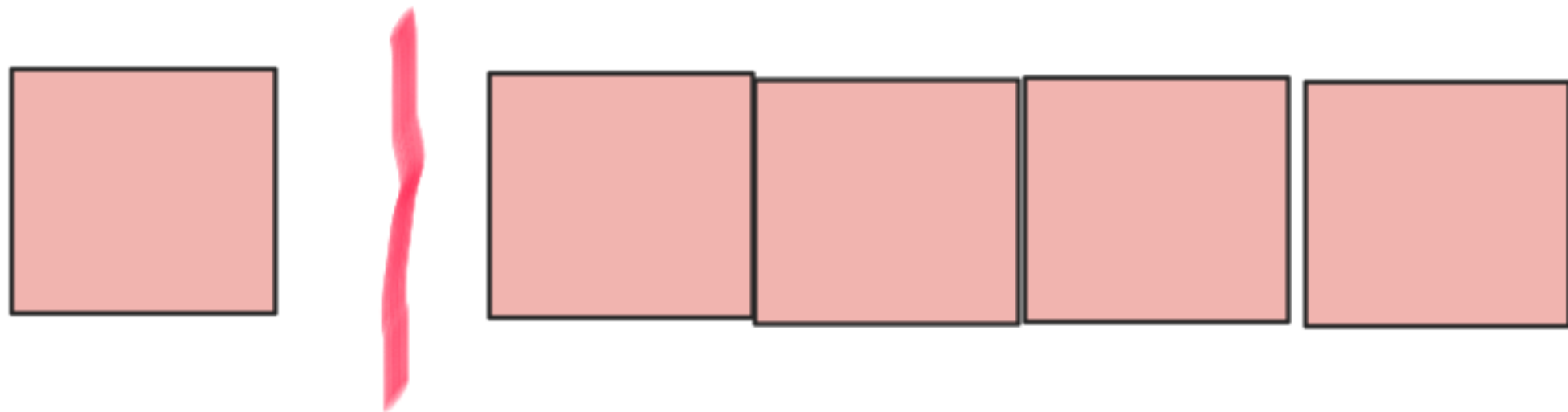


If we do more they'll be repeated ways.

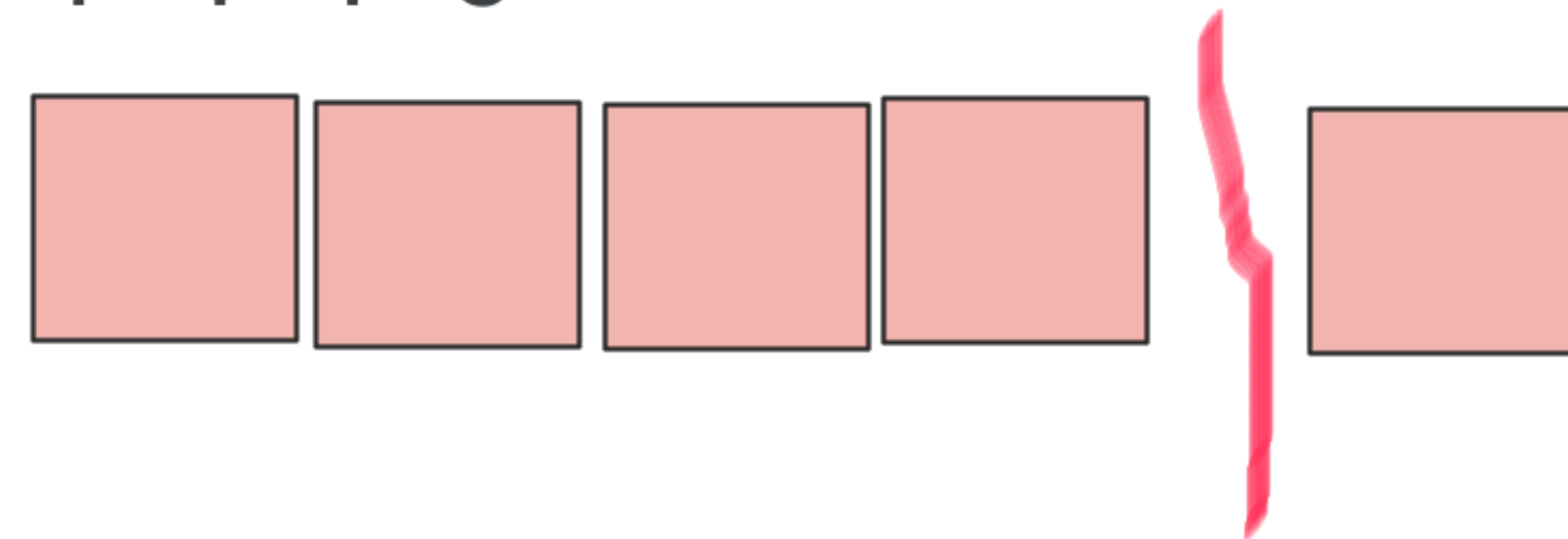
Now predict how many ways there will be with five cubes.  
I predict there will be 4 ways.

---

$$3- 1+4=5$$



$$4- 4+1=5$$



If we do more they'll  
be repeated ways.

# How many ways with 20 cubes.

I think there will be 17 ways of doing it.

---

1-  $18+2=20$

9-  $6+14=20$

2-  $2+18=20$

10-  $14+6=20$

3-  $3+17=20$

11-  $7+13=20$

4-  $17+3=20$

12-  $13+7=20$

5-  $4+16=20$

13-  $8+12=20$

6-  $16+4=20$

14-  $12+8=20$

7-  $5+15=20$

15-  $9+11=20$

8-  $15+5=20$

16-  $11+9=20$

17-  $10+10=20$

Will your noticing always be true?

...I don't think so. Sometimes it won't be true and sometimes it will...

Can you create an argument that would convince mathematicians?