

ADDITION AND SUBTRACTION

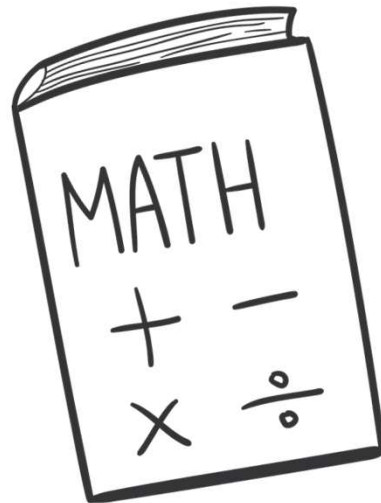
Subtract with Place Value Models

LESSON 5

TODAY'S OBJECTIVE

Today, we will subtract three-digit numbers using base 10 models.

TAKE OUT YOUR **MATH JOURNALS**





WATCH ME FIRST

Fair Trades

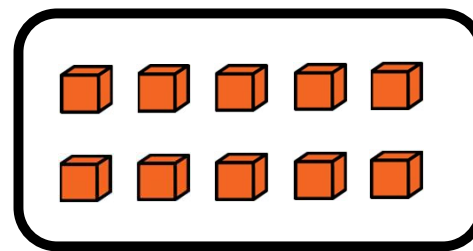
in base ten

When making fair trades in base 10, ten individual units are exchanged for one group that is made up of ten units.

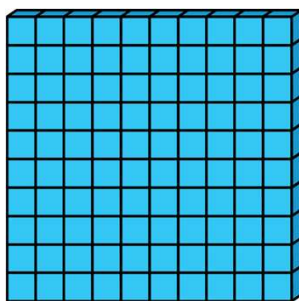


1 ten

=

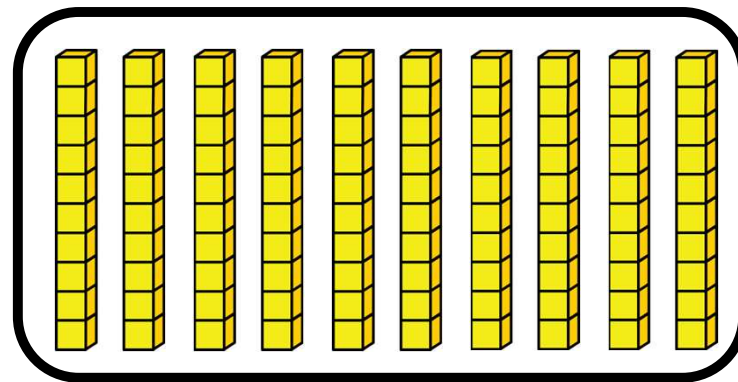


10 ones



1 hundred

=



10 tens



Today we are going to use base ten models to subtract numbers.

$$\begin{array}{r} 444 \\ - 187 \\ \hline \end{array}$$

PARTS OF A SUBTRACTION EQUATION

Minuend – Subtrahend = Difference

EXAMPLES

$$50 - 10 = 40$$

minuend subtrahend difference

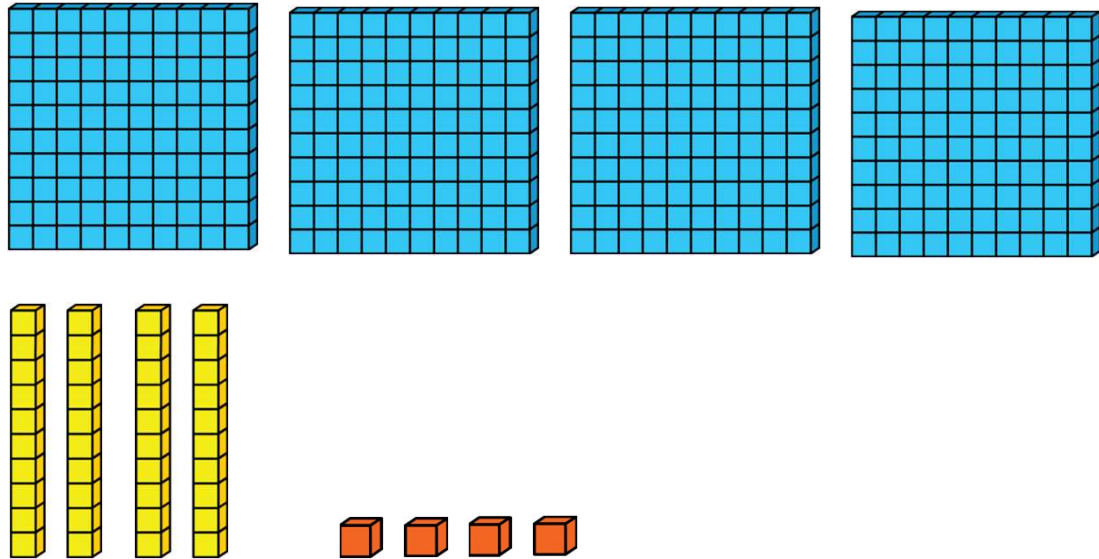
$$\begin{array}{r} 300 \\ - 175 \\ \hline 125 \end{array}$$

← minuend
← subtrahend
← difference

 WATCH ME FIRST

To solve the problem, first I'll represent the minuend (444) in the equation with base ten blocks.

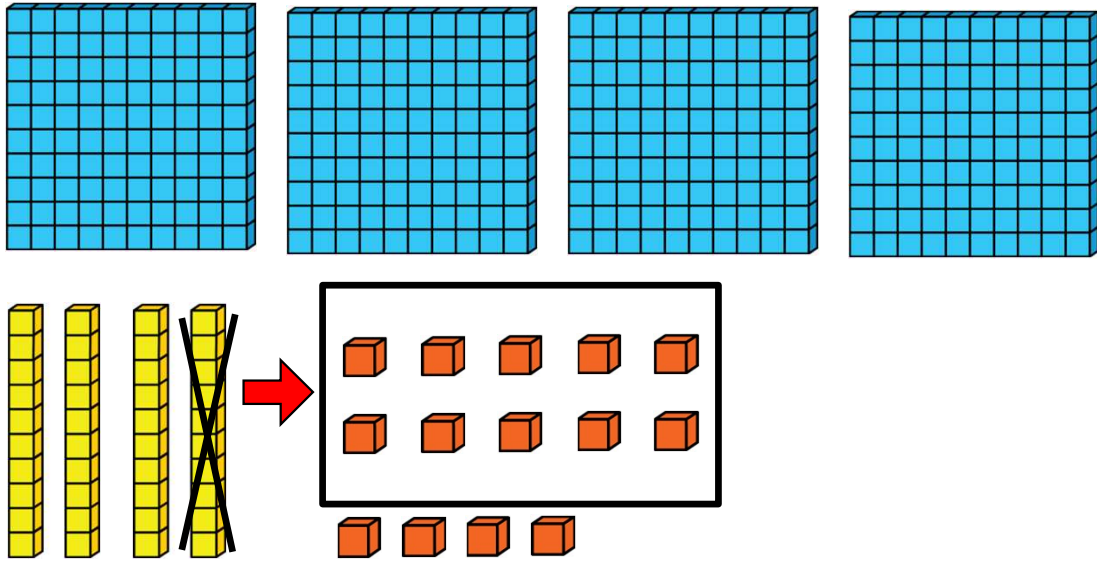
$$\begin{array}{r} 444 \\ - 187 \\ \hline \end{array}$$



 WATCH ME FIRST

Looking in the ones place, I do not have enough ones to subtract 7 from 4. I'll make a fair trade.

$$\begin{array}{r} 444 \\ - 187 \\ \hline \end{array}$$



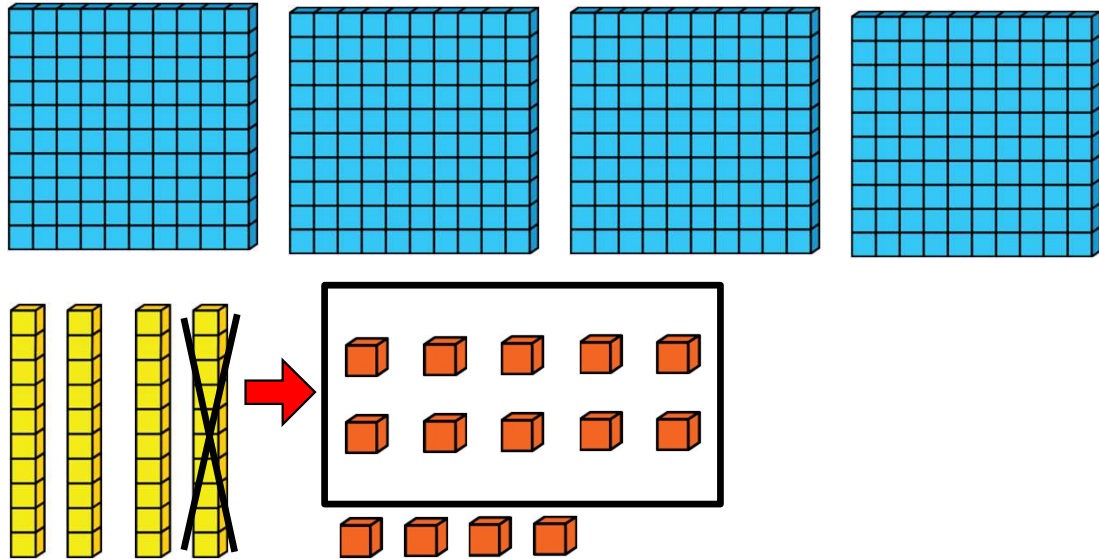
I traded 1 ten for 10 ones.

 WATCH ME FIRST

Now, I'll record the new amount of ones in the equation.
I'll also record the new amount of tens.

Let's Record

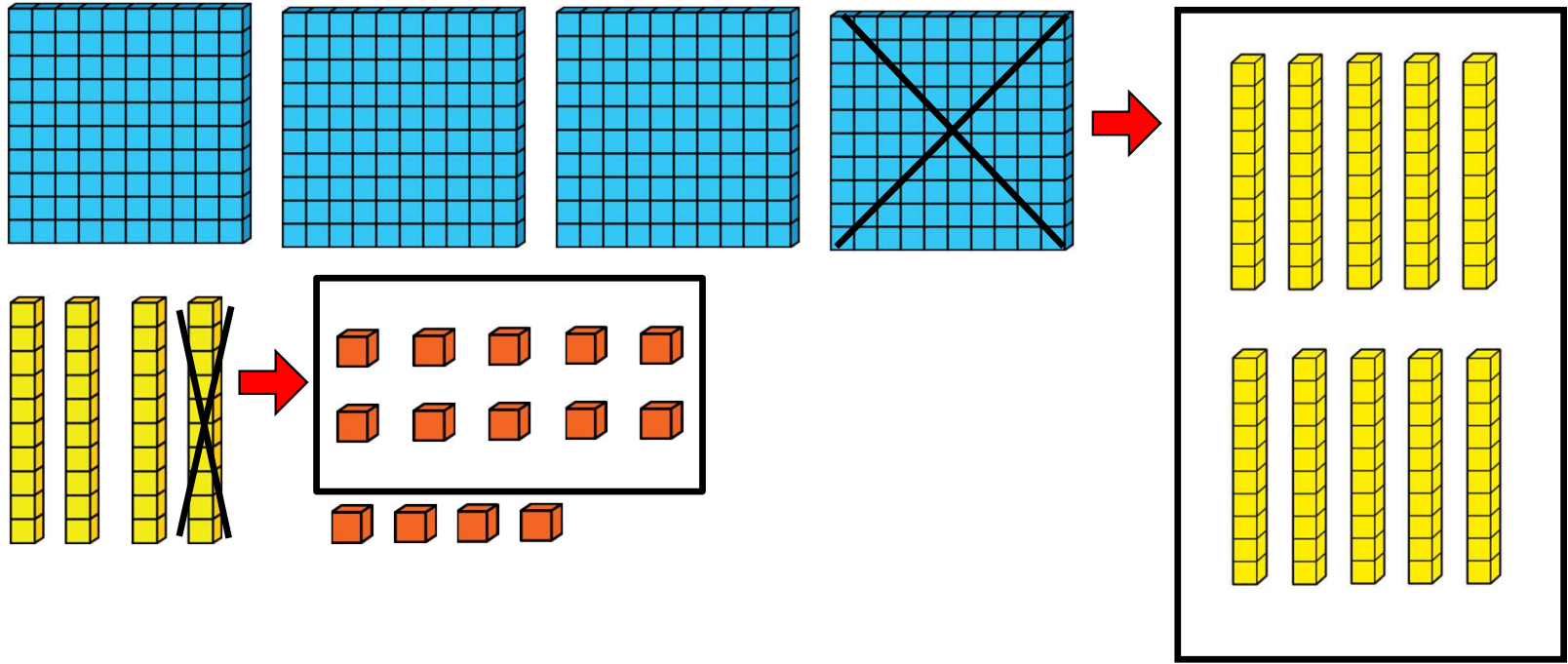
$$\begin{array}{r} 3 \quad 14 \\ \cancel{444} \\ - 187 \\ \hline \end{array}$$



 WATCH ME FIRST

Looking in the tens place, I do not have enough tens to subtract 8 tens from 3 tens. I'll make a fair trade.

$$\begin{array}{r}
 3 \quad 14 \\
 \cancel{4} \cancel{4} \cancel{4} \\
 - 187 \\
 \hline
 \end{array}$$



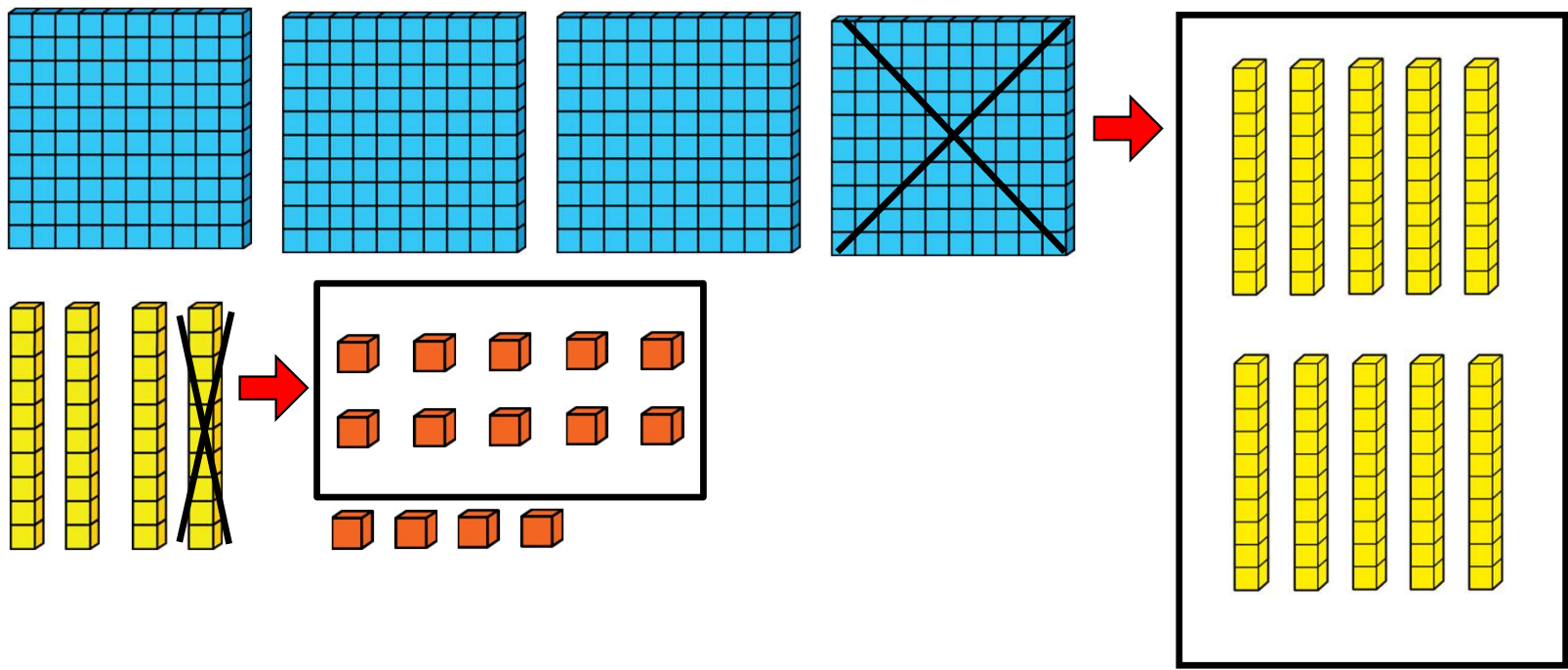
I traded 1 hundred for 10 tens.

 WATCH ME FIRST

I traded 1 hundred for 10 tens. I'll record 13 tens in the equation. I'll also record the new amount of hundreds.

Let's Record

$$\begin{array}{r} 3 \quad 13 \quad 14 \\ \cancel{4} \cancel{4} \cancel{4} \\ - 187 \\ \hline \end{array}$$

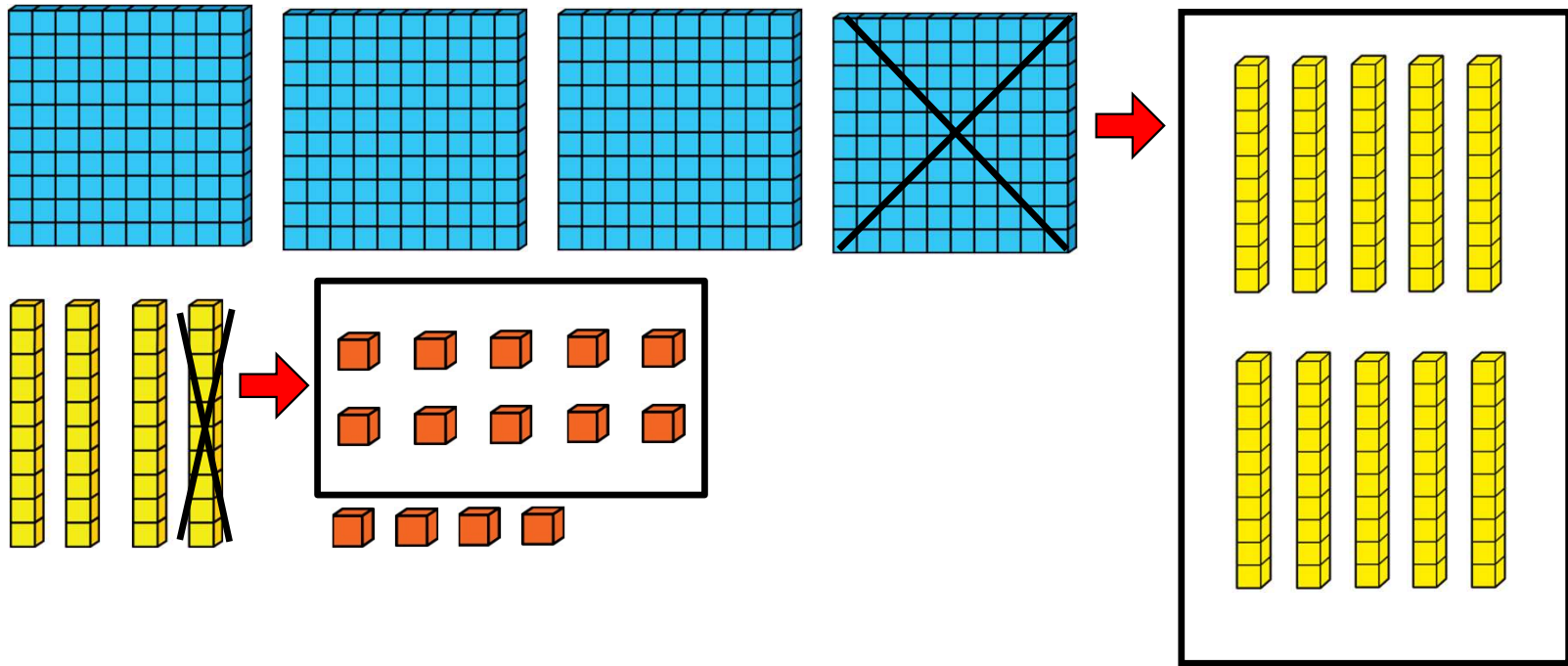


 WATCH ME FIRST

Now I'll use what I recorded in the equation to subtract and find the difference.

Let's Record

$$\begin{array}{r} 3 \quad 13 \quad 14 \\ \cancel{444} \\ - 187 \\ \hline \end{array}$$

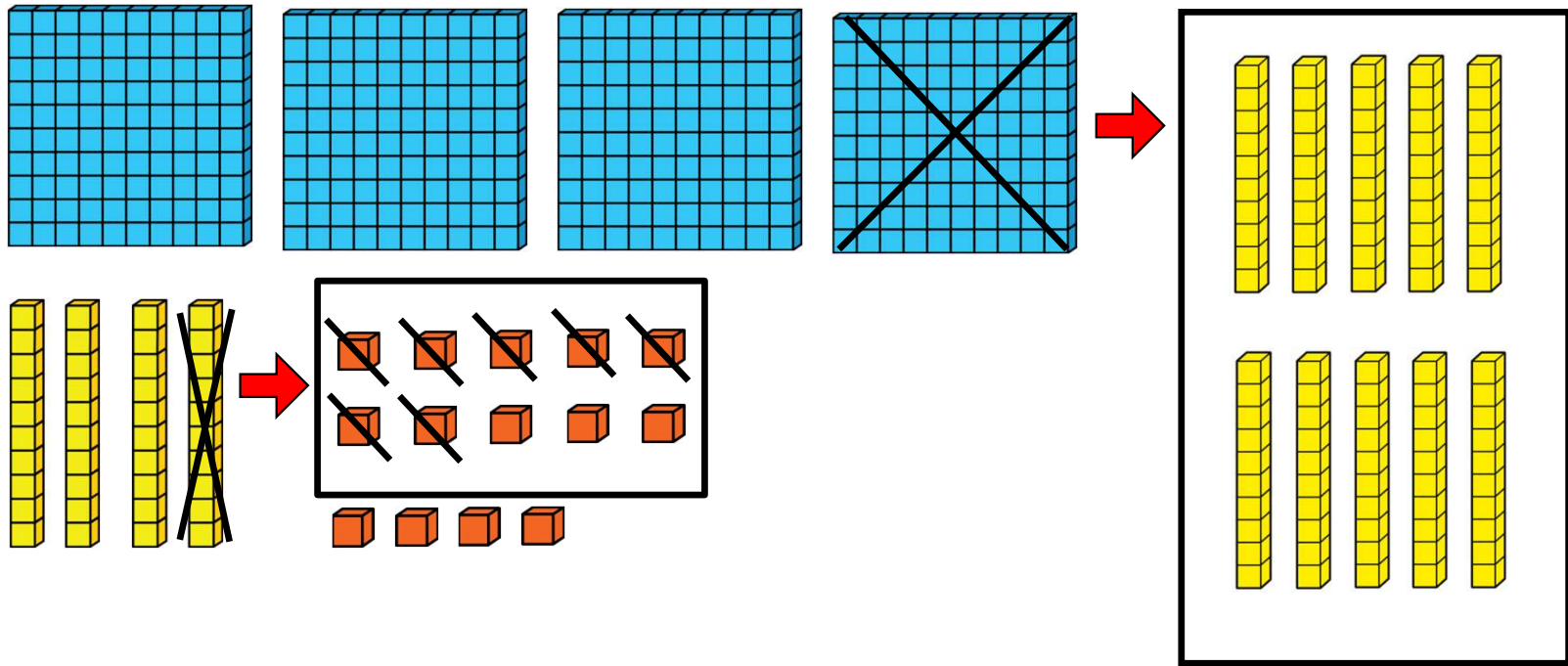


 WATCH ME FIRST

I'll start with subtracting the ones.
14 minus 7 equals 7.

Let's Record

$$\begin{array}{r} 3 \ 13 \ 14 \\ \cancel{444} \\ - 187 \\ \hline 7 \end{array}$$

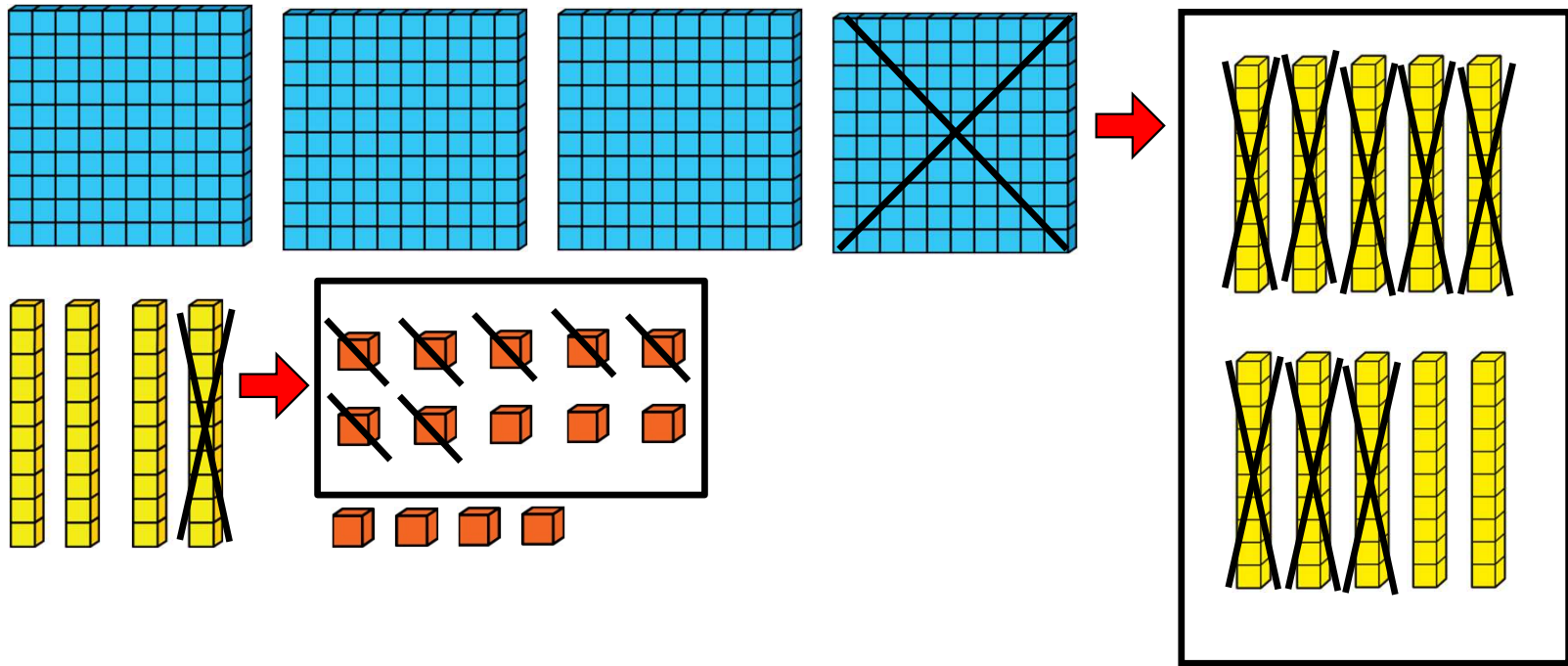


 WATCH ME FIRST

Next, I'll subtract the tens.
13 tens minus 8 tens equals 5 tens.

Let's Record

$$\begin{array}{r} 3 \ 13 \ 14 \\ \cancel{4} \ \cancel{4} \ \cancel{4} \\ - 187 \\ \hline 57 \end{array}$$

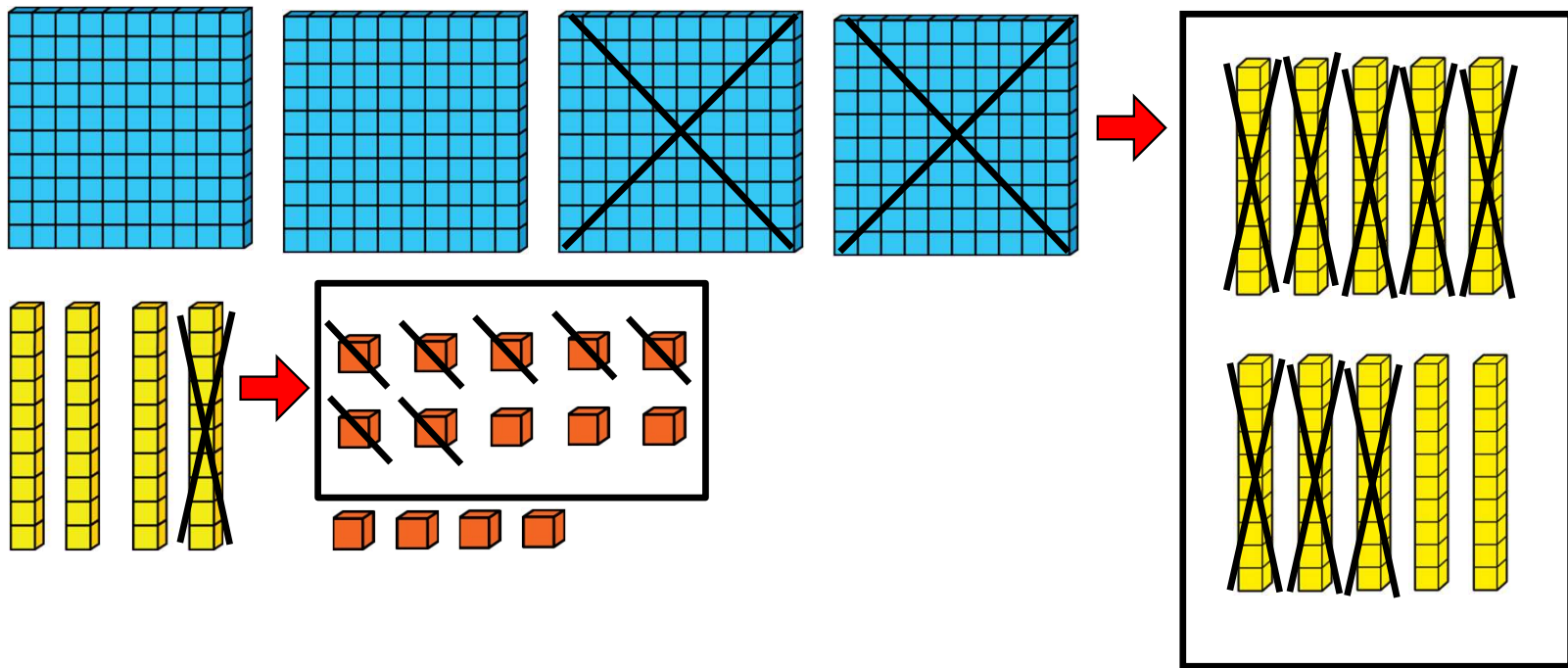


 WATCH ME FIRST

And finally, I'll subtract the hundreds.
3 hundreds minus 1 hundred equals 2 hundreds.

Let's Record

$$\begin{array}{r} 3 \quad 13 \quad 14 \\ \cancel{4} \quad \cancel{4} \quad \cancel{4} \\ - 187 \\ \hline 257 \end{array}$$

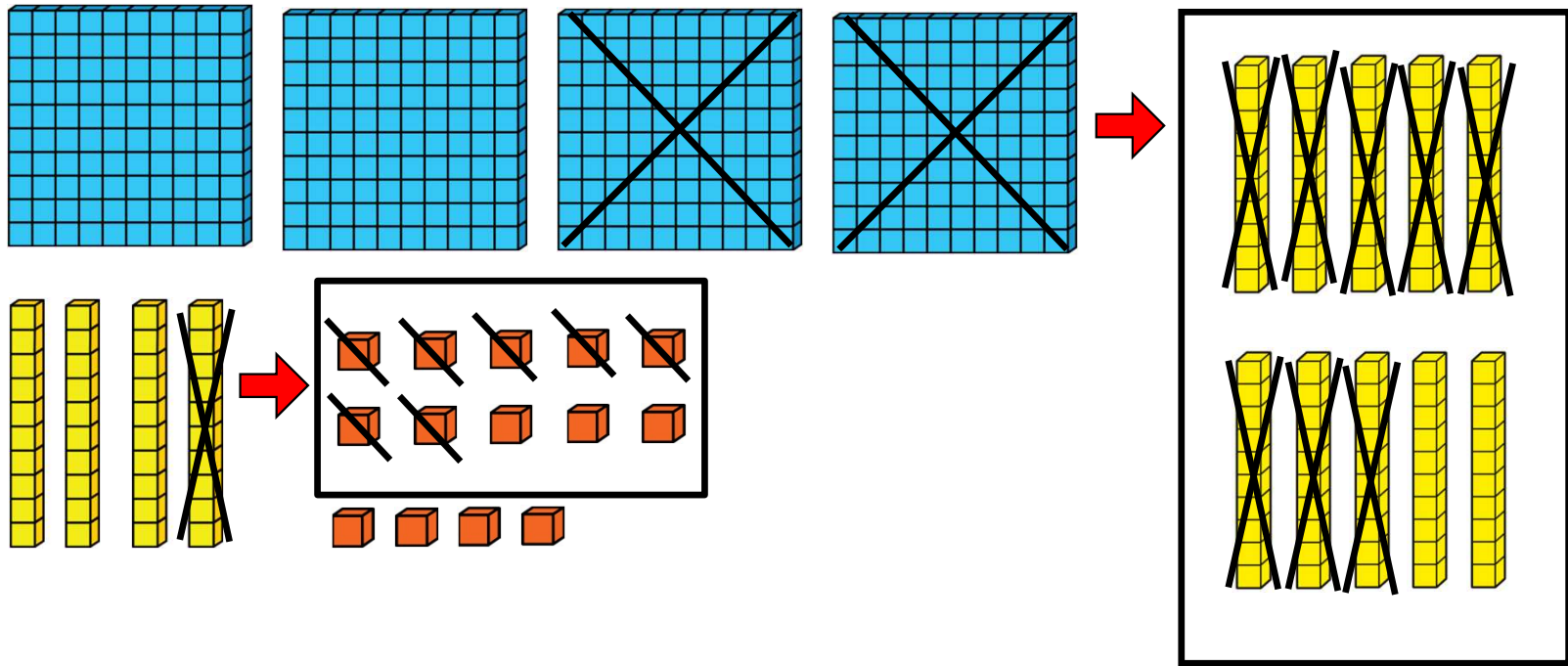


 WATCH ME FIRST

444 minus 187 is the same as 257.

Let's Record

$$\begin{array}{r} 3 \ 13 \ 14 \\ \cancel{444} \\ - 187 \\ \hline 257 \end{array}$$



What's the Difference?

2 hundred(s) 5 ten(s) 7 one(s) = **257**



Did You Know?

The numbers we record at the top of the equation represent the value of our fair trades.

(H = hundreds, T = tens, O = ones)

The renamed number is equal to the minuend.
We can check to make sure they are equal.

$$300 + 130 + 14 \text{ equals } 444$$

300	130	14
↑	↑	↑
H	T	O
3	13	14
<hr style="border: 0; border-top: 1px solid black; margin: 5px 0;"/>		
444		
<hr style="border: 0; border-top: 1px solid black; margin: 5px 0;"/>		
- 187		
<hr style="border: 0; border-top: 1px solid black; margin: 5px 0;"/>		
257		

↙ Equals (=)



LET'S WORK TOGETHER

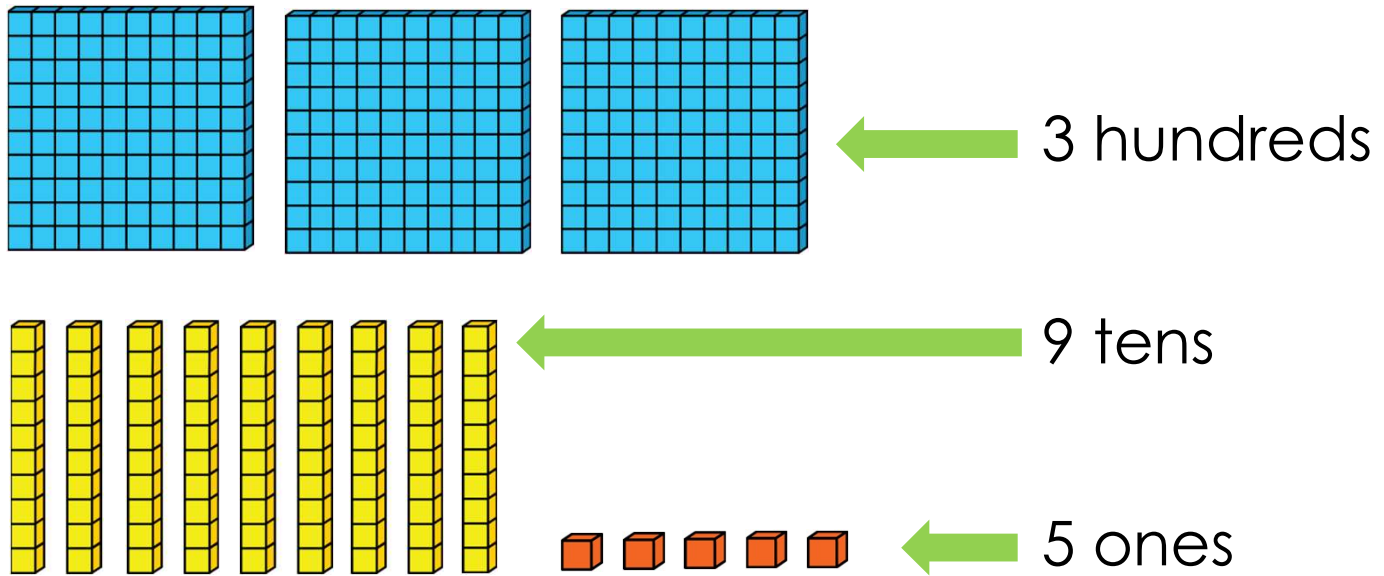
Let's solve one together!

$$\begin{array}{r} 395 \\ - 278 \\ \hline \end{array}$$

 **Problem #1**
LET'S WORK TOGETHER

Time to solve. How do we represent 395?

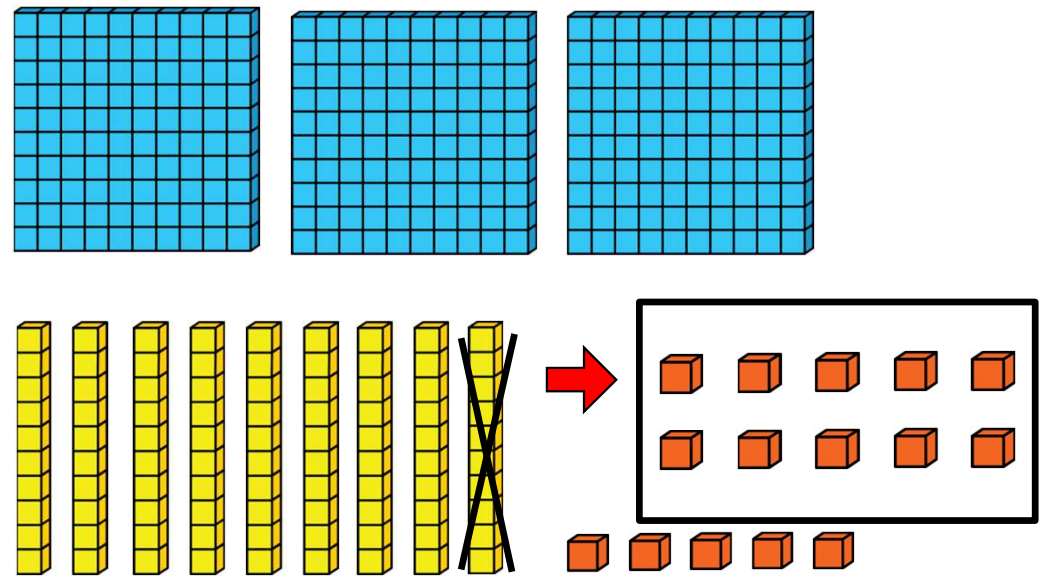
$$\begin{array}{r} 395 \\ - 278 \\ \hline \end{array}$$



 **Problem #1**
LET'S WORK TOGETHER

Do we have enough ones to take away 8 ones?
If not, how do we get more?

$$\begin{array}{r} 395 \\ - 278 \\ \hline \end{array}$$

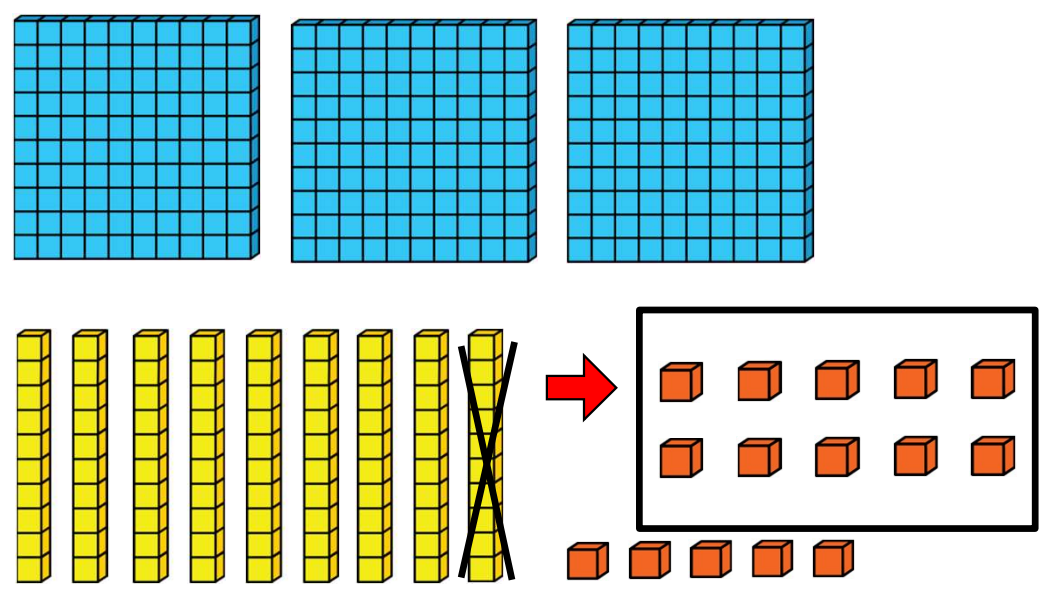


We need to trade 1 ten for 10 ones.

 **Problem #1**
LET'S WORK TOGETHER

Time to record! How can we reflect our fair trade in the equation?

$$\begin{array}{r} 8 \quad 15 \\ 395 \\ - 278 \\ \hline \end{array}$$



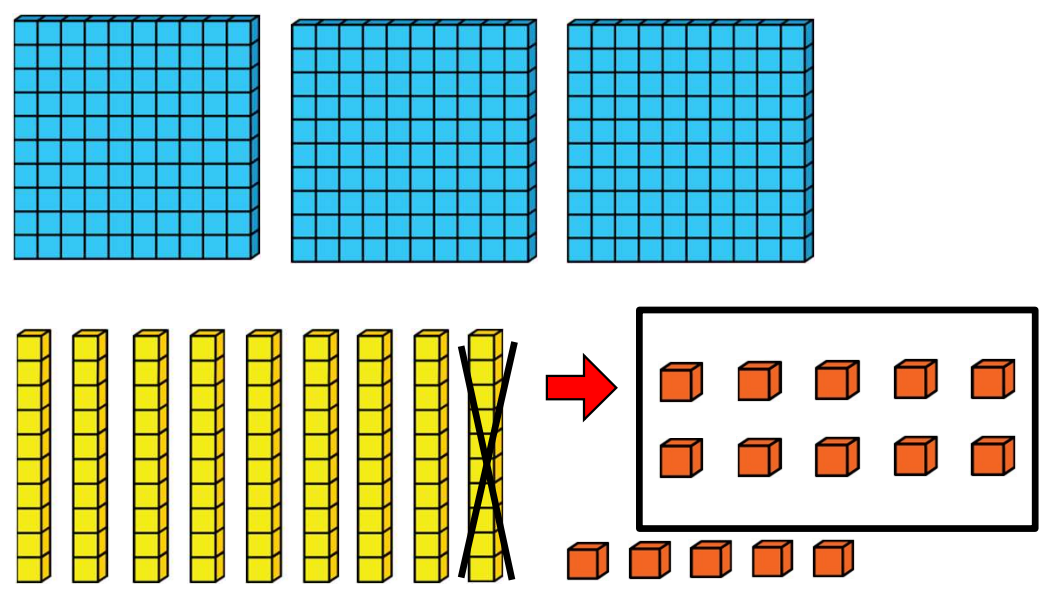
There are now 15 ones and 8 tens.

 **Problem #1**
LET'S WORK TOGETHER

Do we have enough tens to take away 7 tens?
If not, how do we get more?

$$\begin{array}{r} 395 \\ - 278 \\ \hline \end{array}$$

8 15

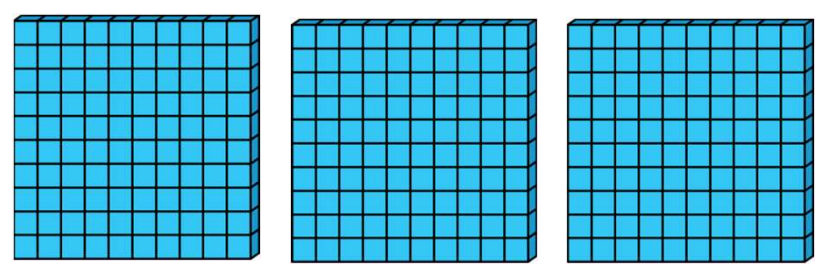


YES!!! We have enough tens. We do not have to do a trade.

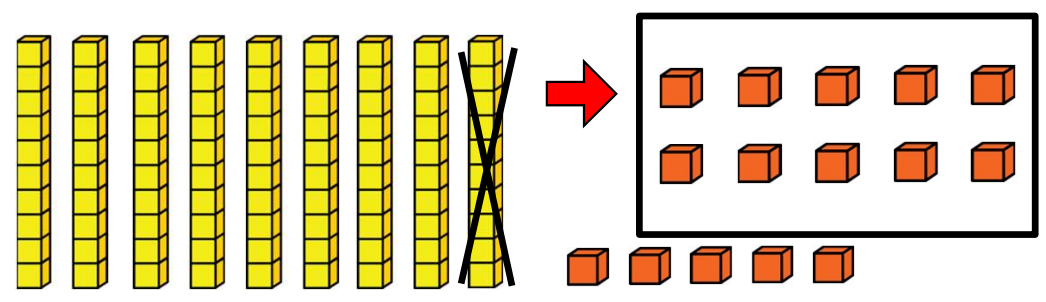
 **Problem #1**
LET'S WORK TOGETHER

Do we have enough hundreds to take away 2 hundreds?

$$\begin{array}{r} 8 \quad 15 \\ 395 \\ - 278 \\ \hline \end{array}$$



YES!!! We have enough hundreds. Now, let's subtract.

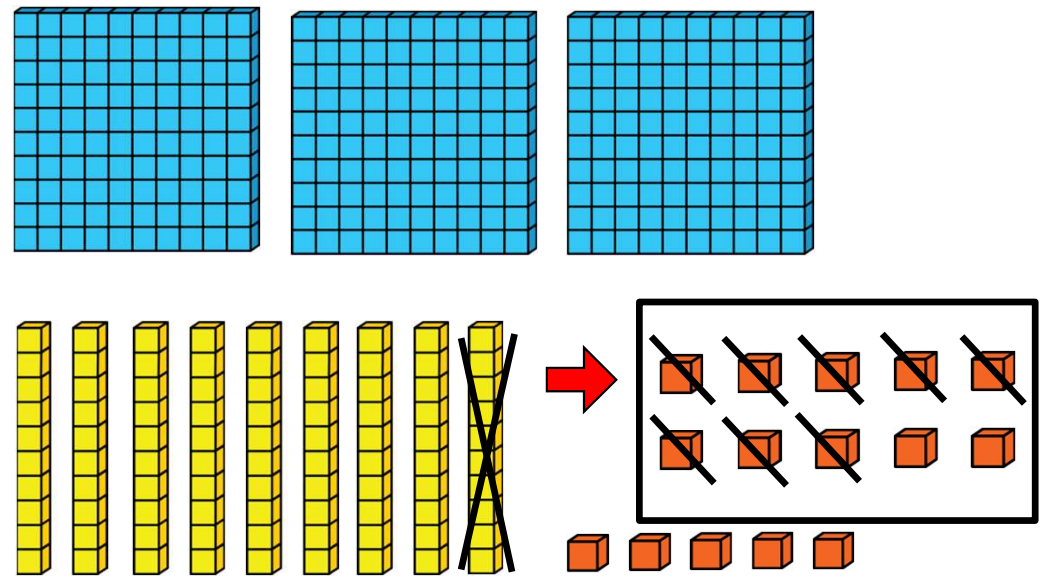


 **Problem #1**
LET'S WORK TOGETHER

Let's use what we recorded in the equation to find the difference. What goes in the ones place?

$$\begin{array}{r}
 395 \\
 -278 \\
 \hline
 7
 \end{array}$$

8 15

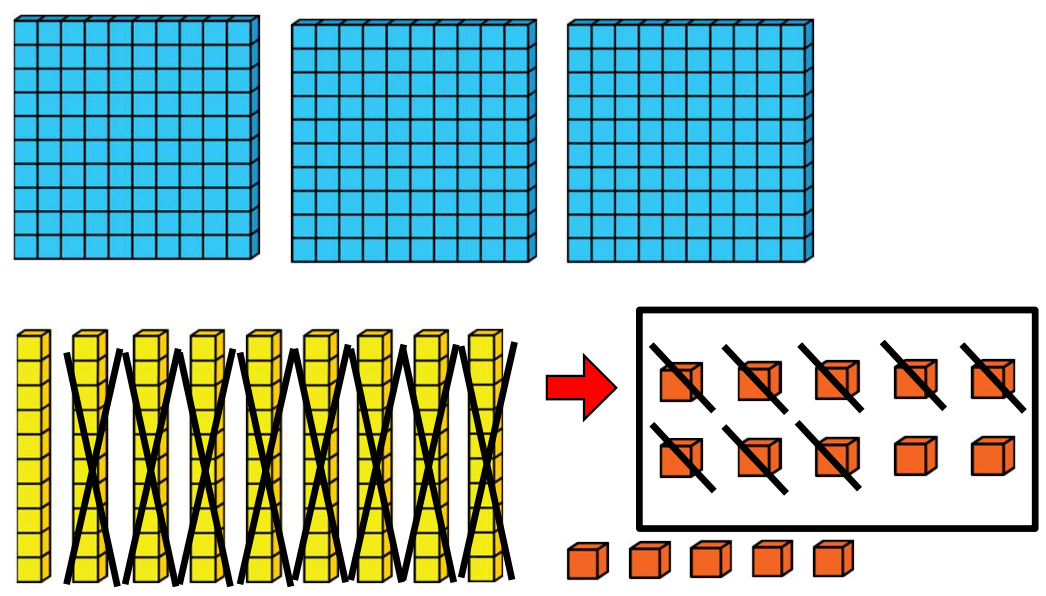


 **Problem #1**
LET'S WORK TOGETHER

What goes in the tens place?

$$\begin{array}{r}
 395 \\
 -278 \\
 \hline
 17
 \end{array}$$

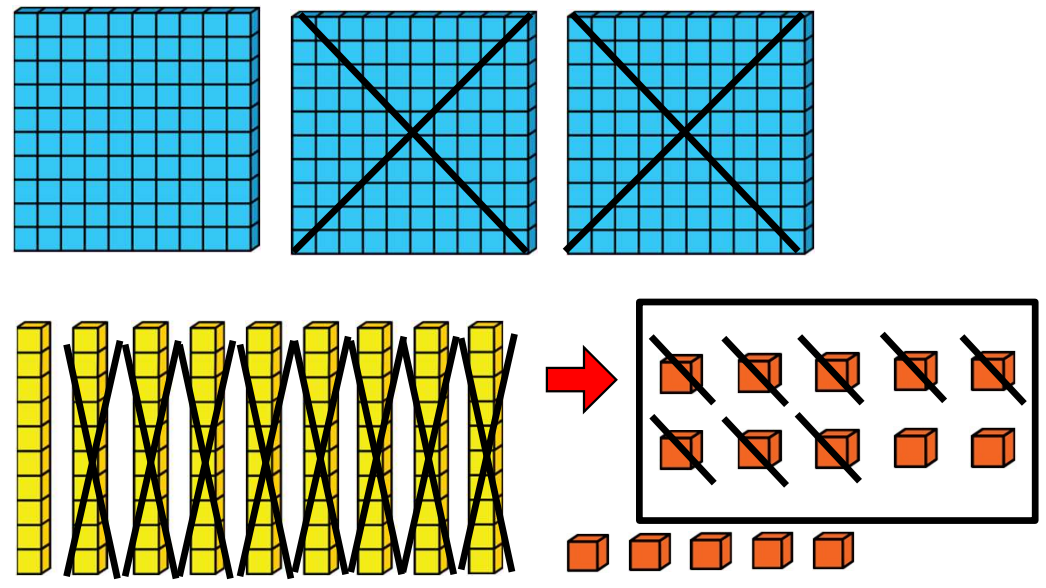
8 15



 **Problem #1**
LET'S WORK TOGETHER

What goes in the hundreds place?

$$\begin{array}{r}
 8 \quad 15 \\
 \cancel{3} \cancel{9} \cancel{5} \\
 - \cancel{2} 7 8 \\
 \hline
 117
 \end{array}$$

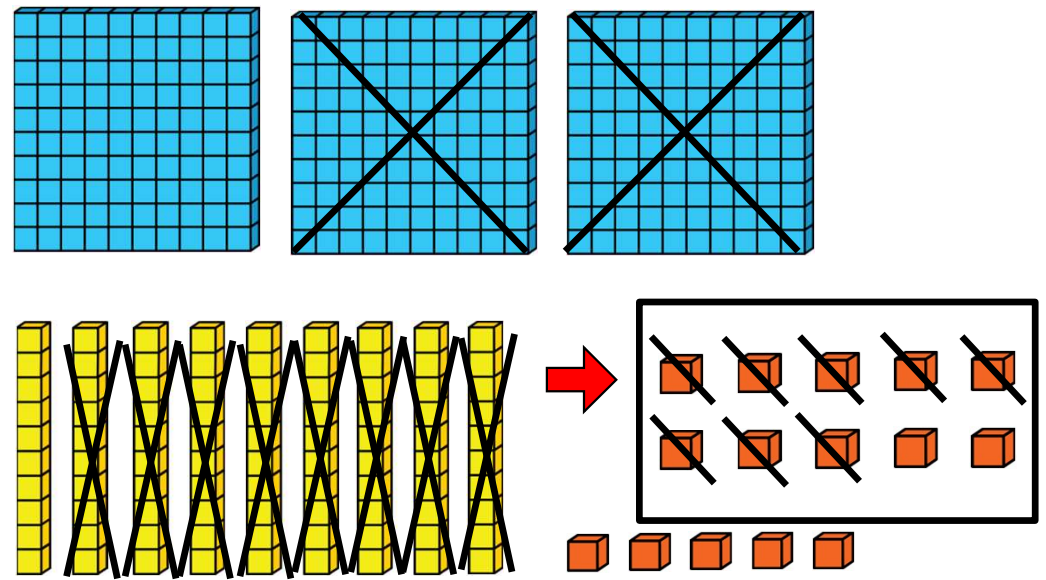


 **Problem #1**
LET'S WORK TOGETHER

395 minus 278 is the same as 117.

$$\begin{array}{r}
 395 \\
 -278 \\
 \hline
 117
 \end{array}$$

8 15



What's the Difference?

1 hundred(s) 1 ten(s) 7 one(s) = **117**

LET'S DO ONE MORE TOGETHER...





Problem #1
LET'S WORK TOGETHER

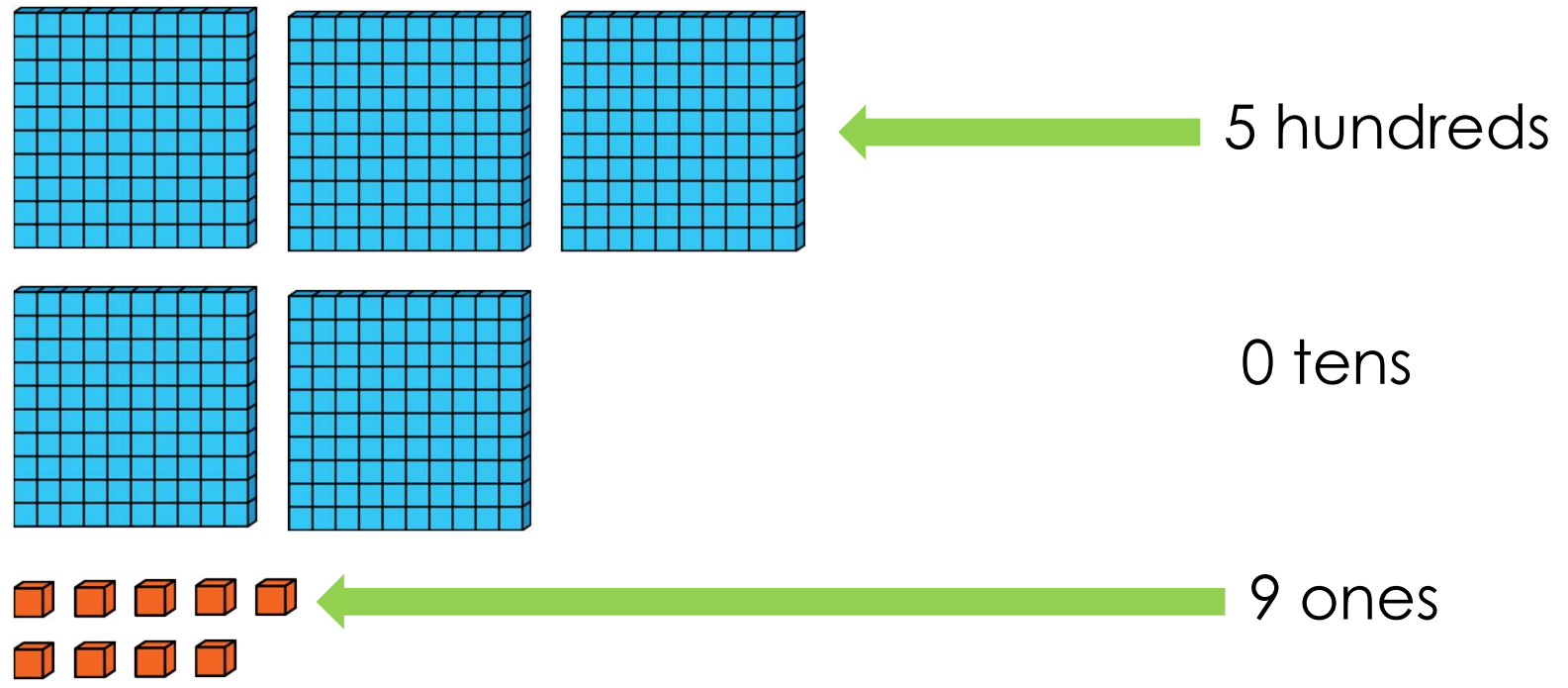
Mike believes 509 minus 365 is 244. Do you agree or disagree?

$$\begin{array}{r} 509 \\ - 365 \\ \hline \end{array}$$

 **Problem #1**
LET'S WORK TOGETHER

Let's solve! How do we represent 509?

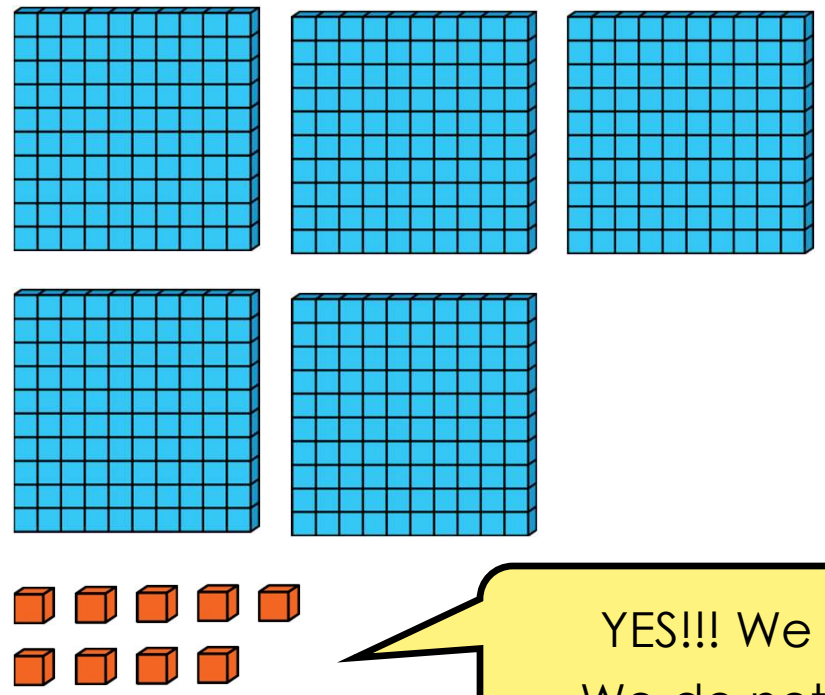
$$\begin{array}{r} 509 \\ - 365 \\ \hline \end{array}$$



 **Problem #1**
LET'S WORK TOGETHER

Do we have enough ones to take away 5 ones?
If not, how do we get more?

$$\begin{array}{r} 509 \\ - 365 \\ \hline \end{array}$$

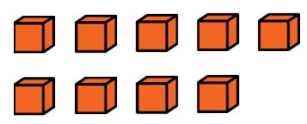
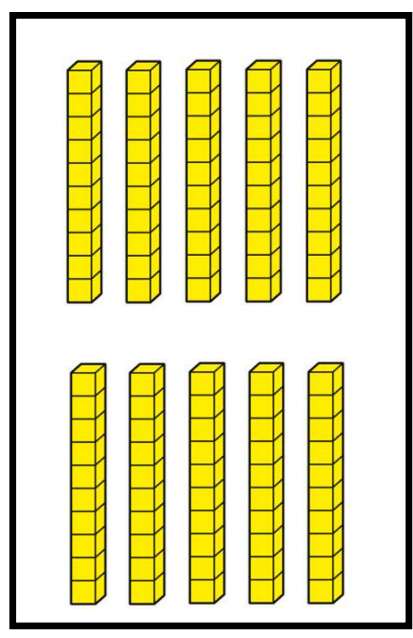
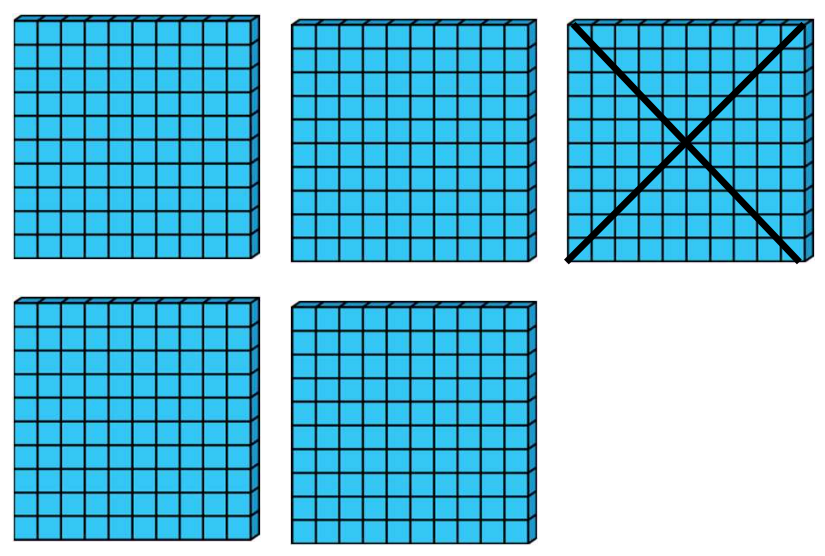


YES!!! We have enough ones.
We do not have to do a trade.

 **Problem #1**
LET'S WORK TOGETHER

Do we have enough tens to take away 6 tens?
If not, how do we get more?

$$\begin{array}{r} 4 \quad 10 \\ \cancel{5} \cancel{0} 9 \\ - 365 \\ \hline \end{array}$$

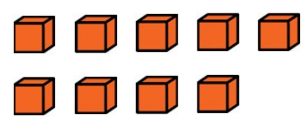
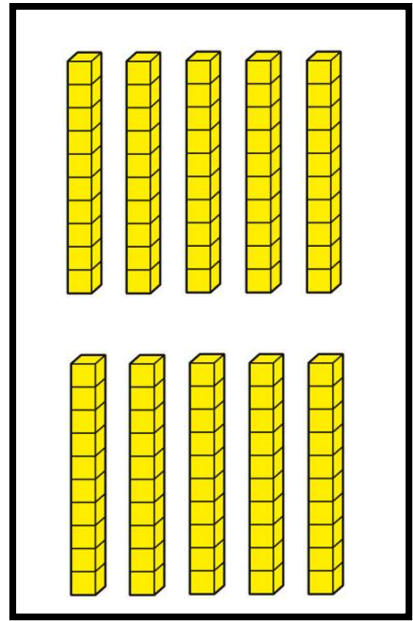
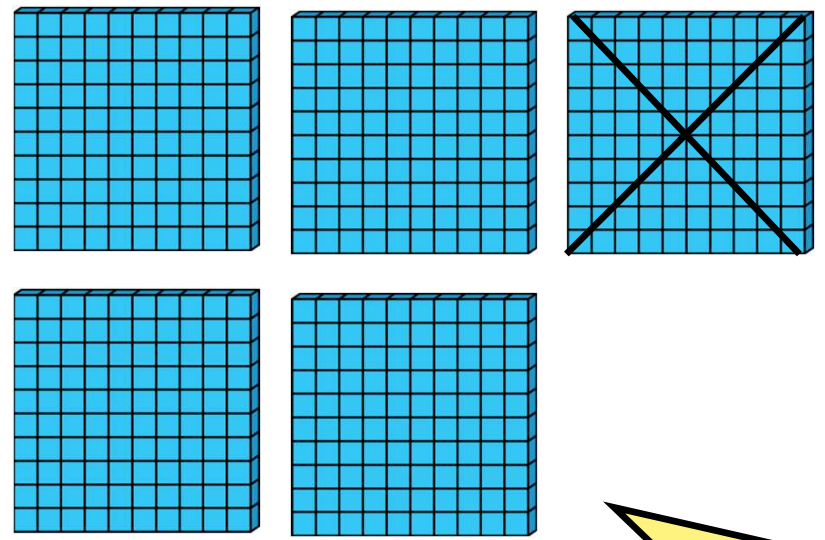


We do not have enough tens.
We'll have to trade 1 hundred for 10 tens.

 **Problem #1**
LET'S WORK TOGETHER

Do we have enough hundreds to take away 3 hundreds?

$$\begin{array}{r}
 4 \quad 10 \\
 \cancel{5} \cancel{0} 9 \\
 - 365 \\
 \hline
 \end{array}$$

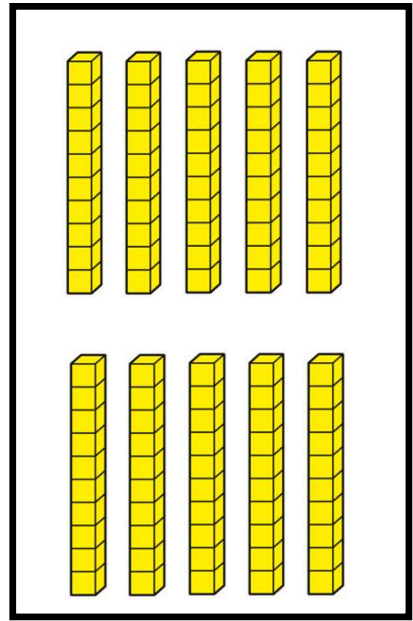
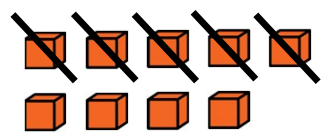
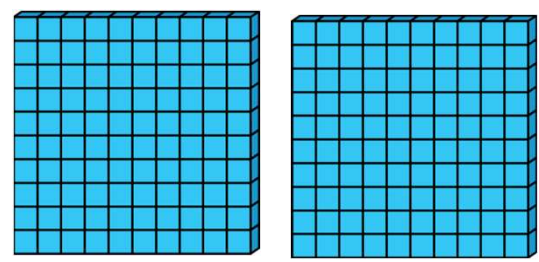
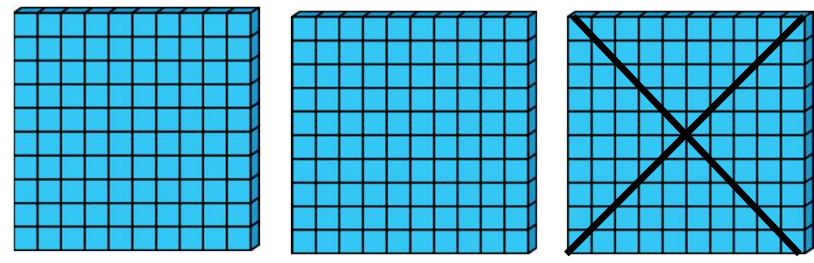


YES!!! We have enough hundreds. Now, let's subtract.

 **Problem #1**
LET'S WORK TOGETHER

Let's use what we recorded in the equation to find the difference. What goes in the ones place?

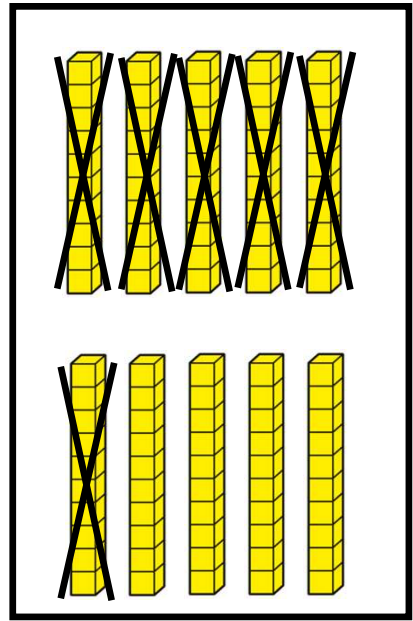
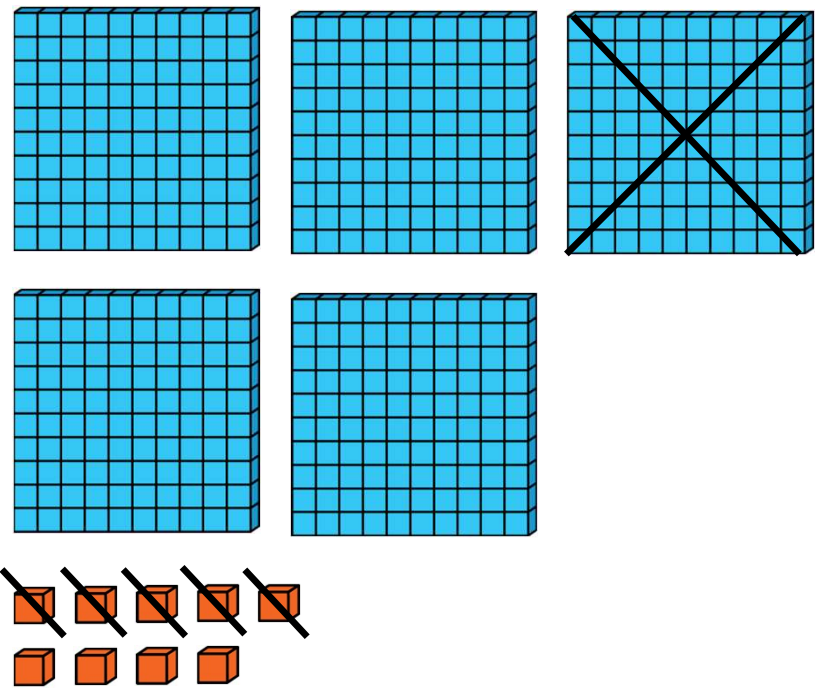
$$\begin{array}{r}
 4 \quad 10 \\
 \cancel{50} \cancel{9} \\
 - 365 \\
 \hline
 4
 \end{array}$$



 **Problem #1**
LET'S WORK TOGETHER

What goes in the tens place?

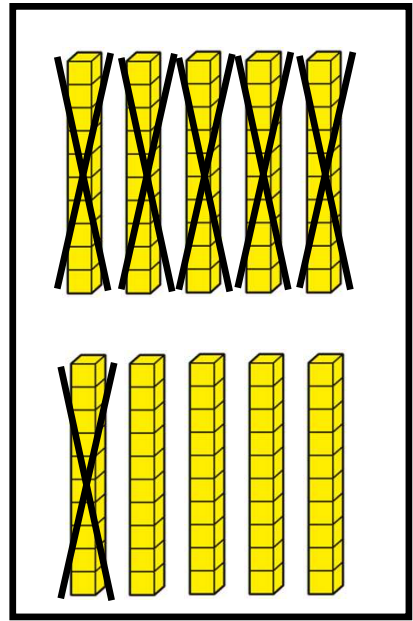
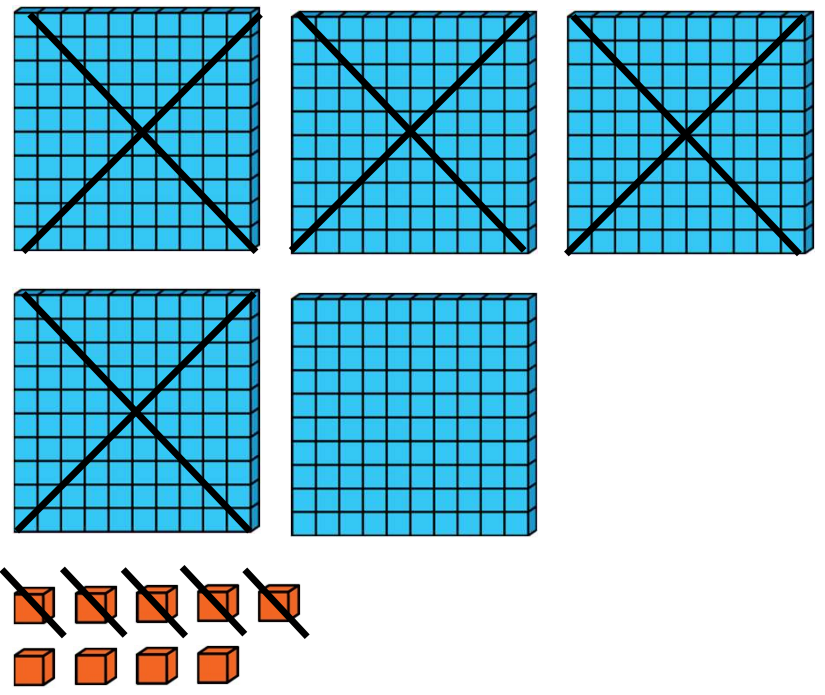
$$\begin{array}{r}
 4 \ 10 \\
 \cancel{5}0\cancel{9} \\
 - 365 \\
 \hline
 44
 \end{array}$$



 **Problem #1**
LET'S WORK TOGETHER

What goes in the hundreds place?

$$\begin{array}{r}
 4 \ 10 \\
 \cancel{5}0\cancel{9} \\
 - \cancel{3}65 \\
 \hline
 144
 \end{array}$$





Problem #1

LET'S WORK TOGETHER

Mike believes 509 minus 365 is 244. Do you agree or disagree?

Let's take a look back at the original problem.
Do we agree or disagree?

Disagree. $509 - 365$ is 144. Mike forgot to take into account the fair trades for the hundreds.

$$\begin{array}{r} 4 \ 10 \\ \cancel{509} \\ - 365 \\ \hline 144 \end{array}$$

CHECK - IN

- What did you notice?
- Can you make a connection to anything else you already know? How?
- Do you have any questions?



IT'S YOUR TURN

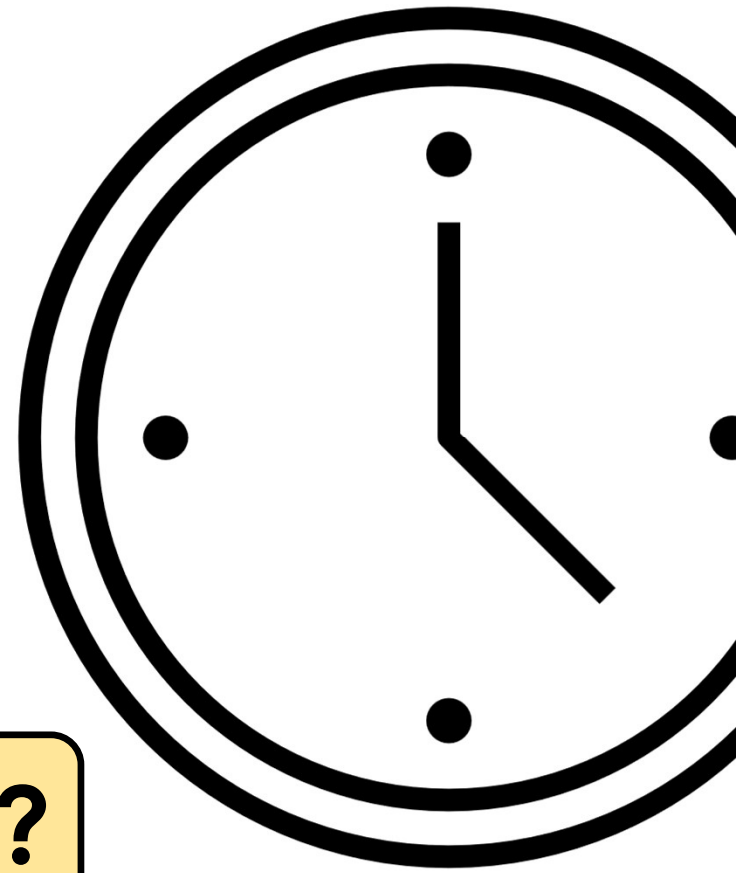


Now it's **“YOUR TURN”** to Solve



Don't forget to explain your thinking!

Time to **Discuss** and **Check** Your Answers



How did you solve?

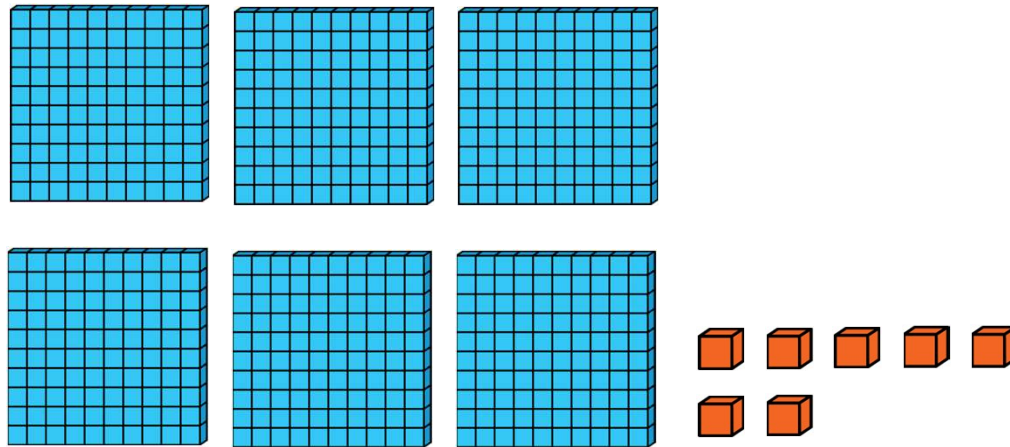


Problem #1

YOUR TURN

Use base ten block drawings to solve the equation.

$$607 - 143 = ?$$

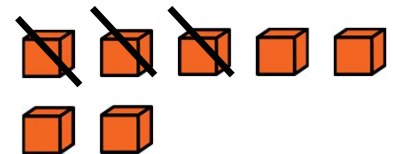
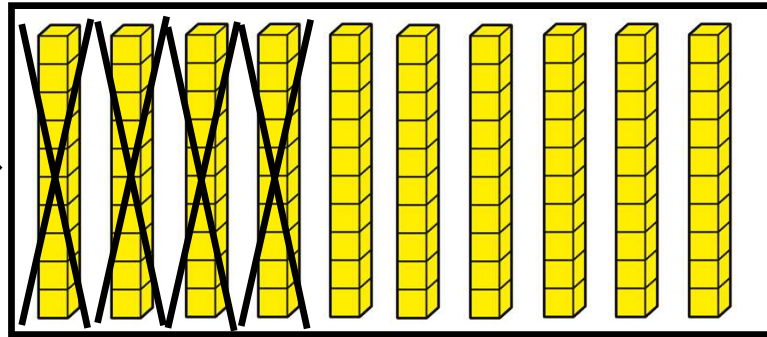
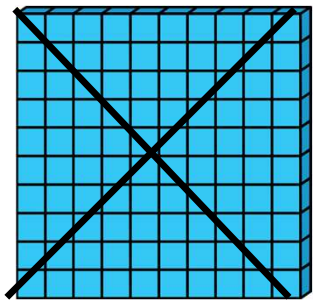
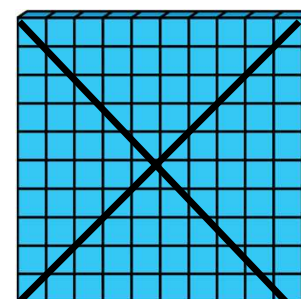
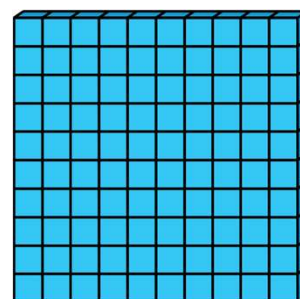
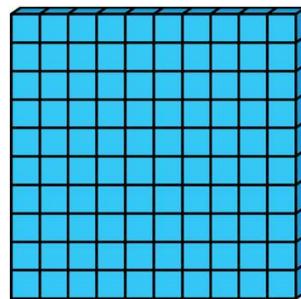
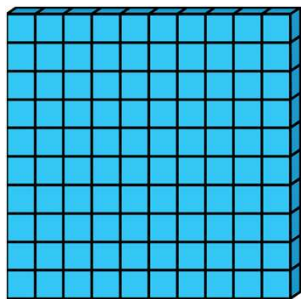
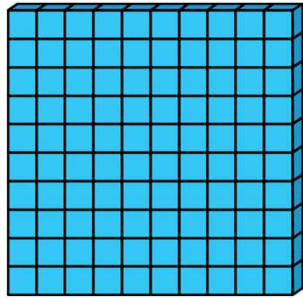




Problem #1

YOUR TURN

	H	T	O
	5	10	
	6	0	7
-	1	4	3
<hr/>			
	4	6	4



What's the Difference?

4 hundred(s) 6 ten(s) 4 one(s) = **464**

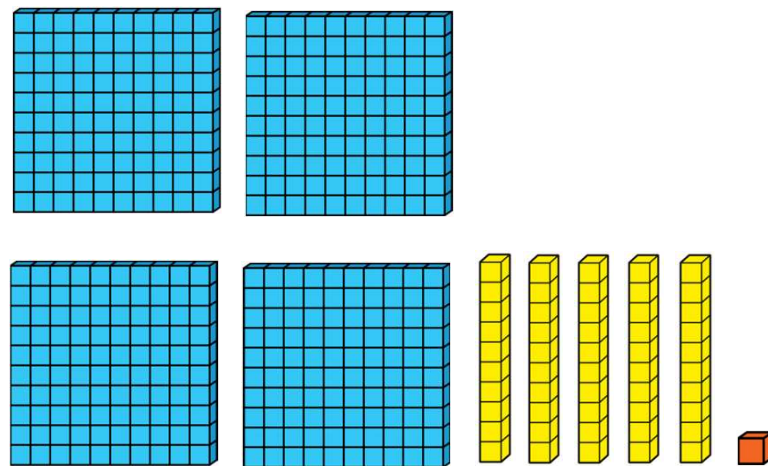


Problem #2

YOUR TURN

Use base ten block drawings to solve the equation.

$$451 - 348 = ?$$



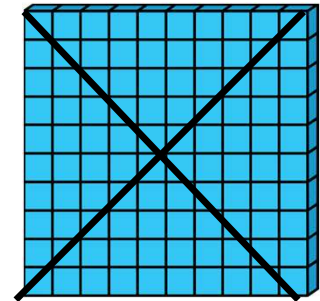
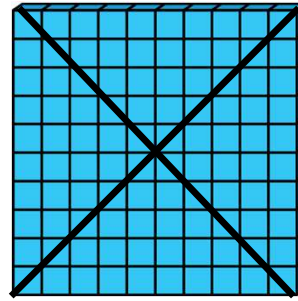
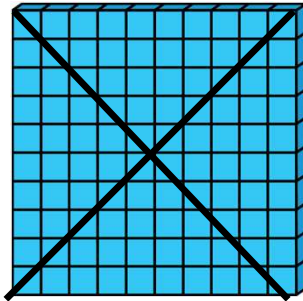
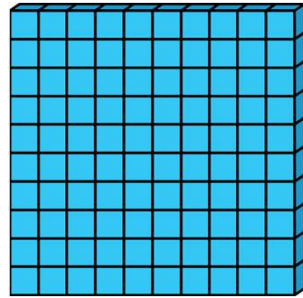


Problem #2

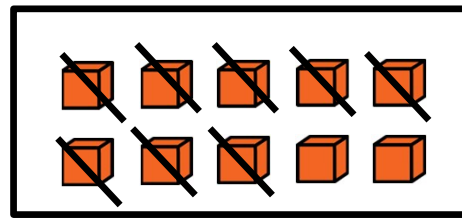
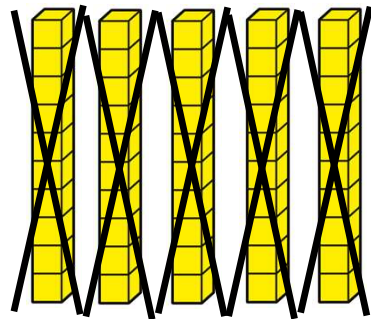
YOUR TURN

H	T	O
	4	11
4	5	1

~~451~~



$$\begin{array}{r}
 -348 \\
 \hline
 103
 \end{array}$$



What's the Difference?

1 hundred(s) 0 ten(s) 3 one(s) = **103**

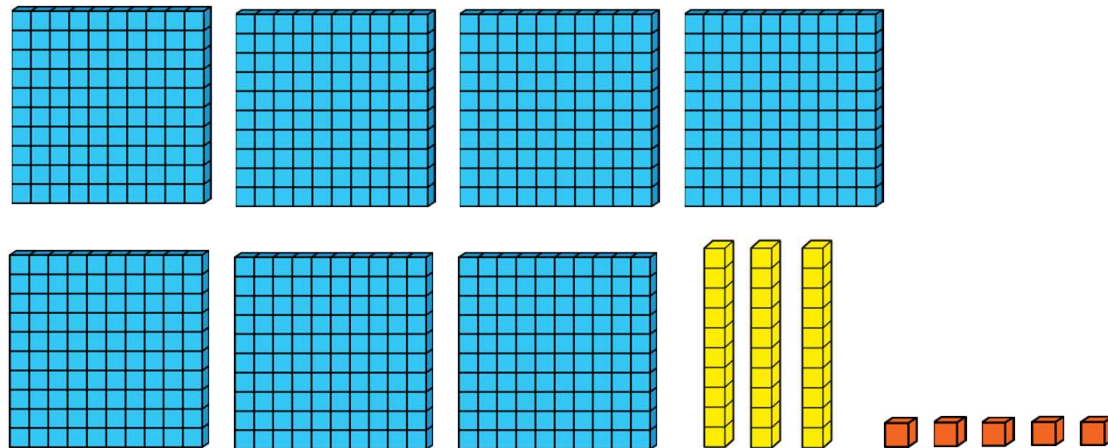


Problem #3

YOUR TURN

Cori believes 735 minus 159 is 576. Do you agree or disagree?

$$735 - 159 = ?$$

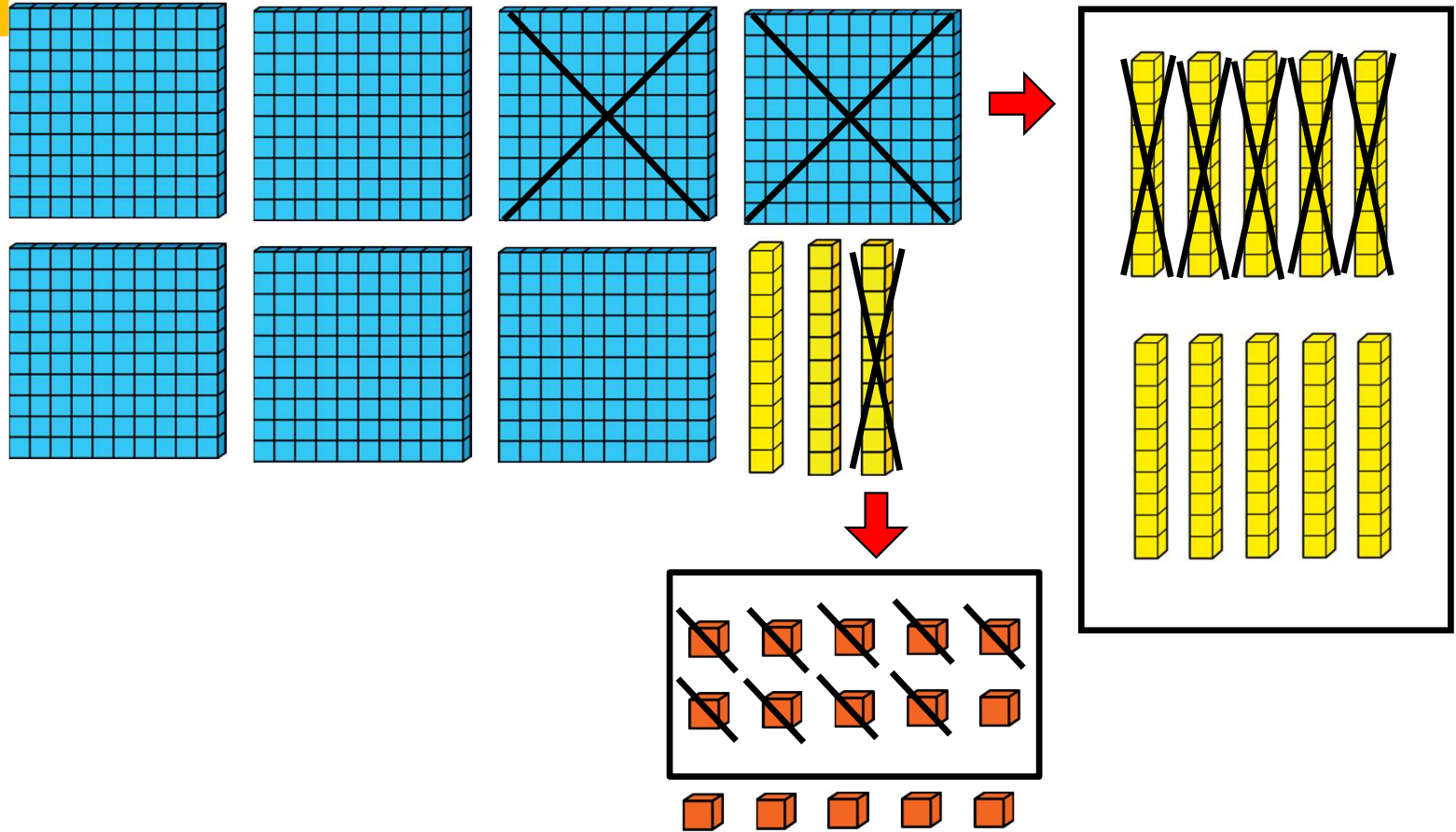




Problem #3

YOUR TURN

$$\begin{array}{r}
 \text{H T O} \\
 6 \text{ 12 15} \\
 \cancel{735} \\
 - 159 \\
 \hline
 576
 \end{array}$$



Agree. $735 - 159$ equals 576.

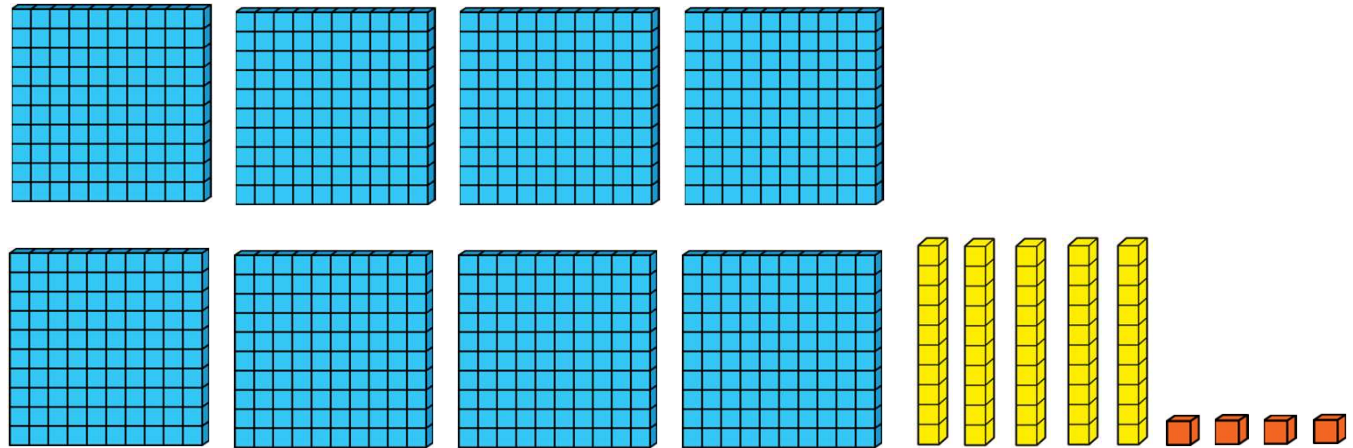


Problem #4

YOUR TURN

Tommie believes 854 minus 562 is 272 . Do you agree or disagree?

$$854 - 562 = ?$$

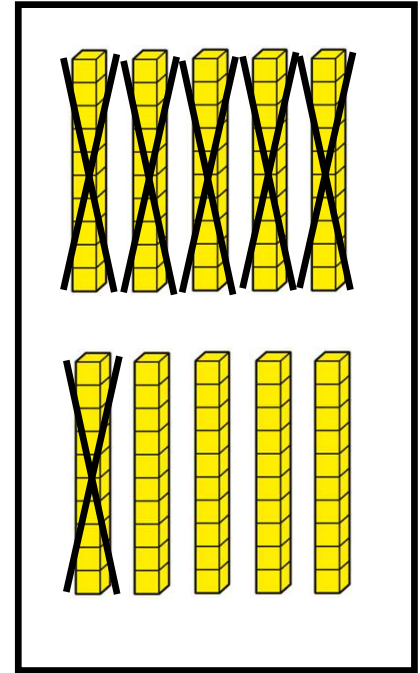
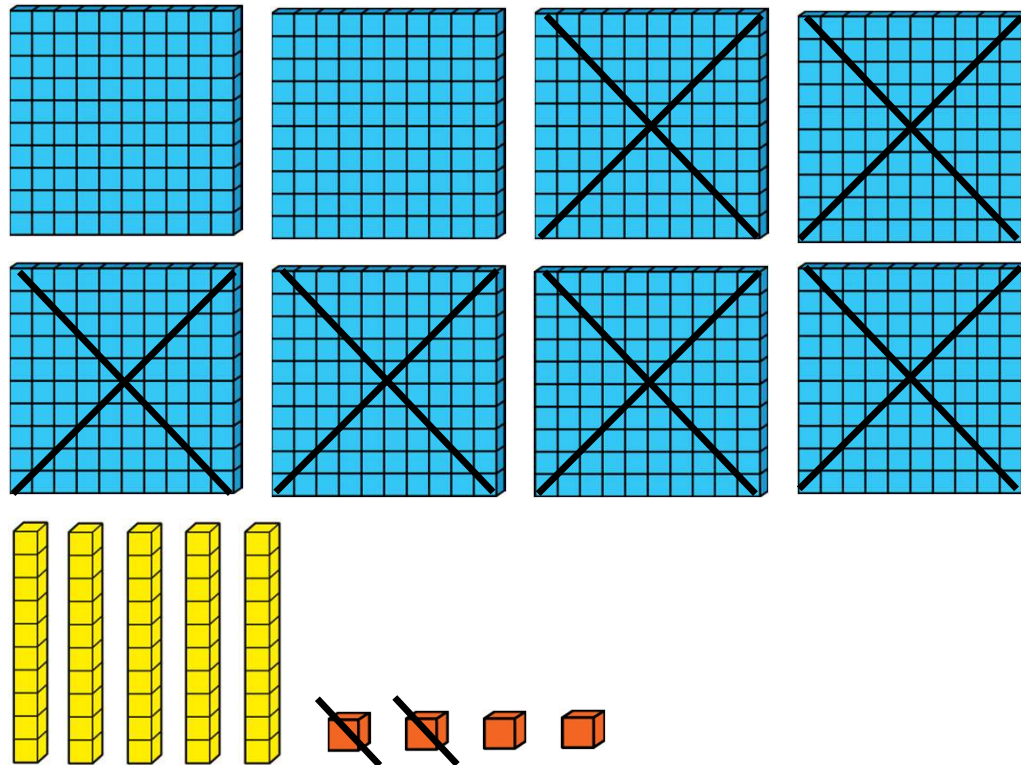




Problem #4

YOUR TURN

$$\begin{array}{r}
 \text{H T O} \\
 7 \ 15 \\
 \cancel{8}5\cancel{4} \\
 - 562 \\
 \hline
 292
 \end{array}$$



Disagree. $854 - 562$ equals 292.

 **Let's Reflect**



It's reflection time!