



SUBTRACT

Lesson 2-7



SUBTRACT

Subtract Across Zeros



**BROADUS
LEARNINGS**



SUBTRACT

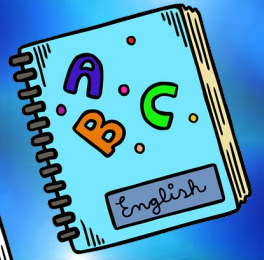
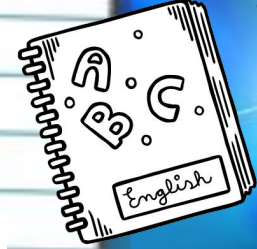
STANDARD:

NC.4.NBT.4

Add and subtract multi-digit whole numbers up to and including 100,000 using the standard algorithm with place value understanding.

OBJECTIVE:

Today, we will use number sense and regrouping to subtract across zeros.





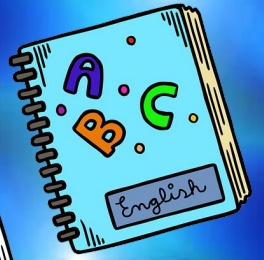
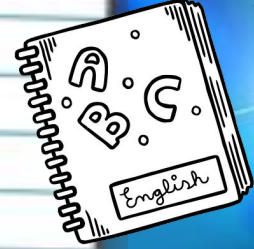
SUBTRACT

I CAN STATEMENT:

I can use the standard algorithm to subtract from numbers with zeros.

ESSENTIAL QUESTION:

How do you subtract across zeros?





Take notes in your blue notebook when you see the notebook icon.

SUBTRACTING ACROSS ZEROS:

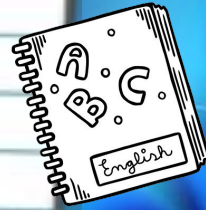
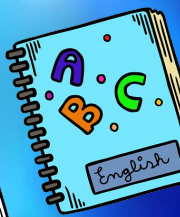
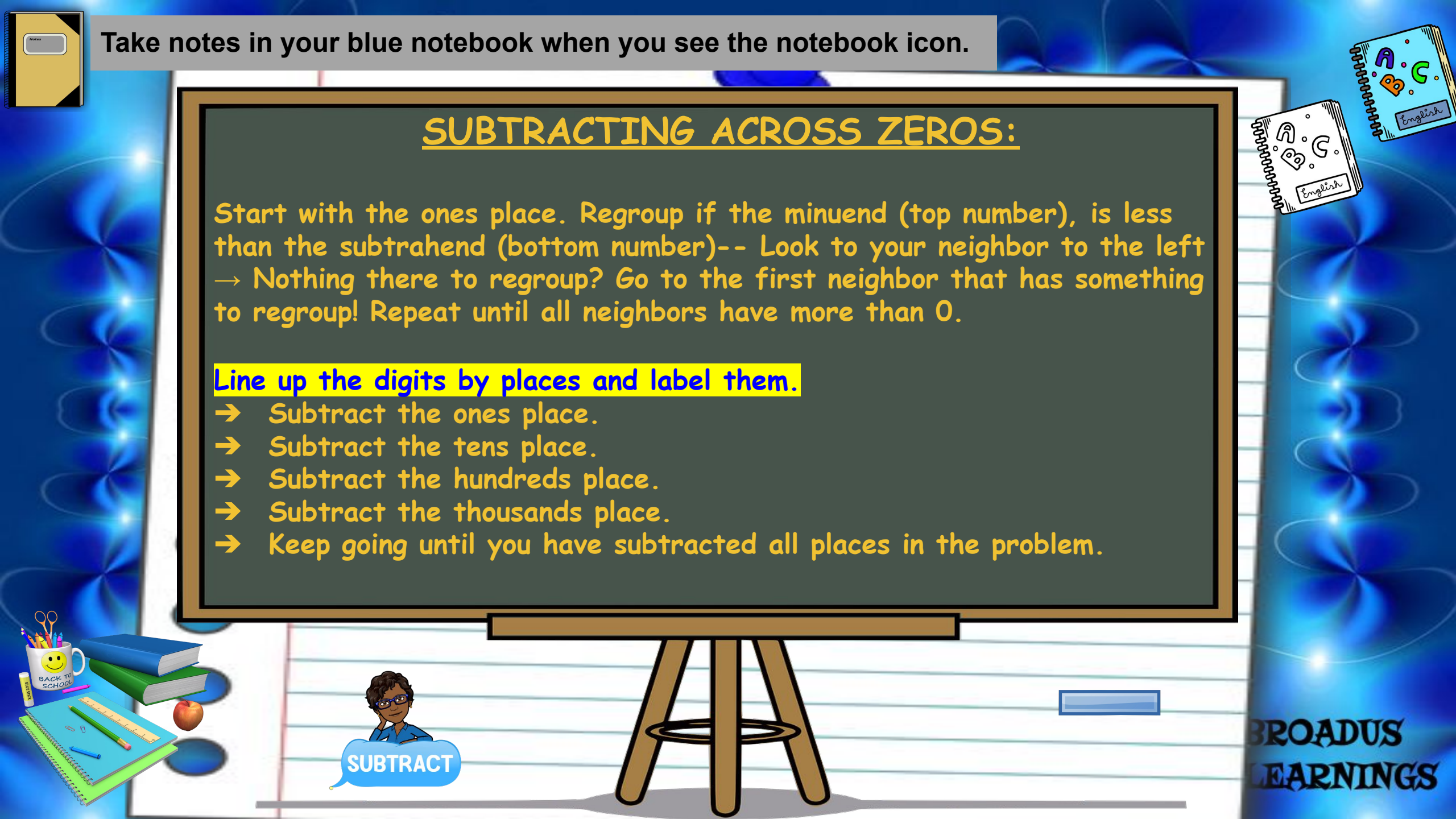
Start with the ones place. Regroup if the minuend (top number), is less than the subtrahend (bottom number)-- Look to your neighbor to the left → Nothing there to regroup? Go to the first neighbor that has something to regroup! Repeat until all neighbors have more than 0.

Line up the digits by places and label them.

- Subtract the ones place.
- Subtract the tens place.
- Subtract the hundreds place.
- Subtract the thousands place.
- Keep going until you have subtracted all places in the problem.



SUBTRACT

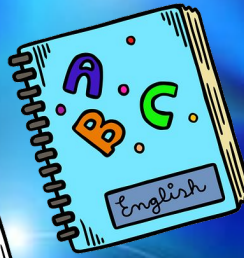
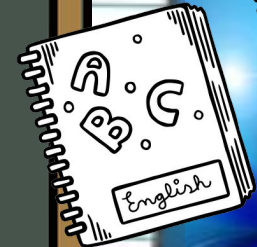
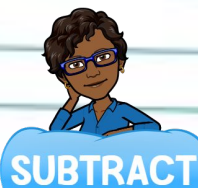


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LEARNINGS

Take notes in your blue notebook when you see the notebook icon.

Inverse operations are opposite operations. The inverse of adding is subtracting.

We will continue to use inverse operations to check our work! In the problems that follow, we will subtract and then use the inverse operation (add) to make sure our answer is accurate.



Take notes in your blue notebook when you see the notebook icon.



★ Solve & Share ★

» London, England, is 15,710 kilometers from the South Pole. Tokyo, Japan, is 13,953 kilometers from the South Pole. How much farther is London than Tokyo from the South Pole? *Solve this problem any way you choose.*



SUBTRACT

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LEARNINGS**

Start with the ones place. We have to regroup because the minuend is less than the subtrahend. Go to the first neighbor that has a digit to regroup!!

Th H T O
8 10

2 ~~9~~ 0 5

- 2,568



SUBTRACT

Subtract the **ones** first. Since 8 cannot be subtracted from 5, use regrouping where necessary. To subtract the ones, regroup hundreds to tens.

Regroup: the number 2,905 by regrouping 9 hundreds + 0 tens = 8 hundreds + 10 tens.

Th H T O

$$\begin{array}{r} \overset{9}{8} \overset{10}{\cancel{0}} \overset{15}{\cancel{5}} \\ - 2,568 \\ \hline \end{array}$$

To subtract the ones, we regrouped hundreds to tens and now tens to ones. Now you can complete the subtraction problem.

Keep regrouping until all neighbors have more than 0!



SUBTRACT

Regroup: 10 tens + 5 ones = 9 tens and 15 ones.

Now let's
subtract the
ones place.



SUBTRACT

Th H T O

9

8 ~~10~~ **15**

2 ~~9~~ ~~0~~ ~~5~~

$$\begin{array}{r} - 2,56\mathbf{8} \\ \hline \mathbf{7} \end{array}$$

15 ones - **8** ones = **7** ones.

Now let's
subtract the
tens place.



SUBTRACT

Th H T O

8 9 15
2 ~~9~~ ~~0~~ ~~5~~

- 2,568
37

9 tens - 6 tens = 3 tens

Now let's
subtract the
hundreds place.



SUBTRACT

Th H T O

9

8

~~10~~

15

~~2905~~

- 2,568

337

9 hundreds - 6 hundreds = 3 hundreds

Now let's
subtract the
thousands place.



SUBTRACT

Th H T O

9

8 10 15

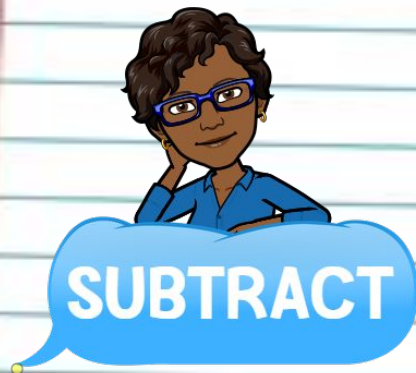
~~2 905~~

- 2,568

0337

9 thousands - 6 thousands = 3 thousands

Subtract, then use the inverse operation to check your work.
Estimate to check if your answers are reasonable.



Th	H	T	O
	7	17	
4	,	3	87
-		3	<u>59</u>
		1	, 028

1. Subtract the **thousands** place.
Regroup if needed.

4 thousands - **3** thousands = **0** thousands

No regrouping needed because the minuend is greater than the subtrahend.

Tth Th H T O

5 10

$$\begin{array}{r} 7\cancel{6},\cancel{0}00 \\ - 57,337 \\ \hline \end{array}$$

Start with the ones place. We have to regroup because the minuend is less than the subtrahend. Go to the first neighbor that has a digit to regroup!!

Subtract the **ones** first. Since cannot subtracted 7 from 0, use regrouping where necessary. To subtract the ones, regroup thousands to hundreds.

Regroup: the number 76,000 by regrouping 6 thousands + 10 hundreds = 5 thousands + 10 hundreds

Keep regrouping until all neighbors have more than 0!



Tth	Th	H	T	O
		9		
	5	10	10	
7	6	0	0	0
-	5	7	3	3
				7

Since cannot be subtracted from , use regrouping where necessary. To subtract the ones, regroup hundreds to tens.

Regroup: 10 hundreds + 0 tens = 9 hundreds + 10 tens.

Keep regrouping until all neighbors have more than 0!



Tth	Th	H	T	O
		9	9	
5	1	1	1	10
7	6	0	0	0
- 5	7	,	3	3 7

Since cannot be subtracted from , use regrouping where necessary. To subtract the ones, regroup tens to ones.

Regroup: 10 tens + 0 ones = 9 tens + 10 ones

Now let's
subtract the
ones place.



SUBTRACT



Tth	Th	H	T	O
		9	9	
	5	10	10	10
7	6	0	0	0
- 5	7	,	3	3
				3

10 ones - **7** ones = **3** ones.

Now let's
subtract the
tens place.



SUBTRACT



Tth	Th	H	T	O
		9	9	
	5	10	10	10
7	6	0	0	0
- 5	7	3	3	7
				63

$$9 \text{ tens} - 3 \text{ tens} = 6 \text{ tens.}$$

Now let's
subtract the
hundreds place.



SUBTRACT



Tth	Th	H	T	O
		9	9	
	5	10	10	10
7	6	0	0	0
- 5	7	<u>3</u>	3	7
		6	6	3

9 hundreds - 3 hundreds = 6 hundreds.

Now let's
subtract the
thousands
place.



SUBTRACT

Tth Th H T O


$$\begin{array}{r} \text{6} \quad \text{15} \quad \text{9} \quad \text{9} \\ \text{7} \text{ } \text{6} \text{ } \text{0} \text{ } \text{0} \text{ } \text{0} \\ - \text{5} \text{ } \text{7} \text{ } \text{3} \text{ } \text{3} \text{ } \text{7} \\ \hline \text{8} \text{ } \text{6} \text{ } \text{6} \text{ } \text{3} \end{array}$$

Regroup: 7 ten thousands + 5 thousands = 6 ten thousands + 15 thousands
15 thousands - 7 thousands = 8 thousands

Now let's subtract the **ten thousands** place.



SUBTRACT

Tth Th H T O

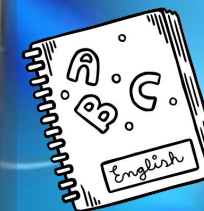

$$\begin{array}{r} 15 9 9 \\ 6 \cancel{5} \cancel{10} \cancel{10} 10 \\ \cancel{7} \cancel{6} , \cancel{0} \cancel{0} \cancel{0} \\ - 57 , 337 \\ \hline 18 , 663 \end{array}$$

6 ten thousands - **5** ten thousands = **1** ten thousand



SUBTRACT

NEW STRATEGY ALERT:



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INDEPENDENT PRACTICE:

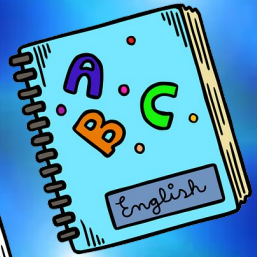
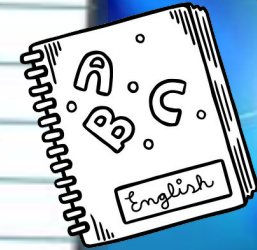
p 63 Problems 18
p 64 Problems 27, 28

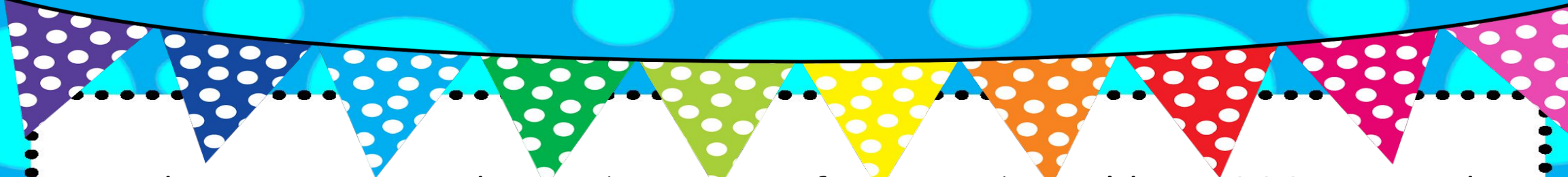
HOMEWORK:

Monday: p 63 9-16
Tuesday: p 63 17, 19-23



SUBTRACT



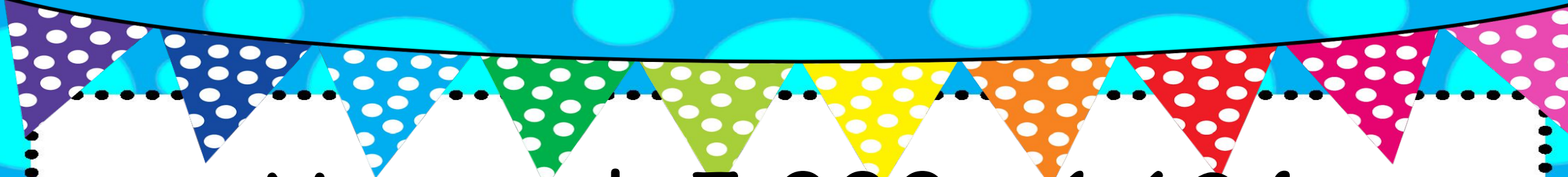


Another strategy, when subtracting from numbers like 2,000 is to take one away from 2,000 to make it 1,999. Subtract $1,999 - 1,876$. Now you don't have to borrow!!

Because we took one away (subtracted) from 2,000 we have to give it back (add it) at the end to get our final answer.

$$\begin{array}{r} 1,999 \\ - 1,876 \\ \hline 123 \end{array}$$

We took one away from 2,000, so we have to give it back (add it) to find the answer. $123 + 1 = 124$



You try! $5,000 - 1,634$

Discuss strategies. Answers on next slide

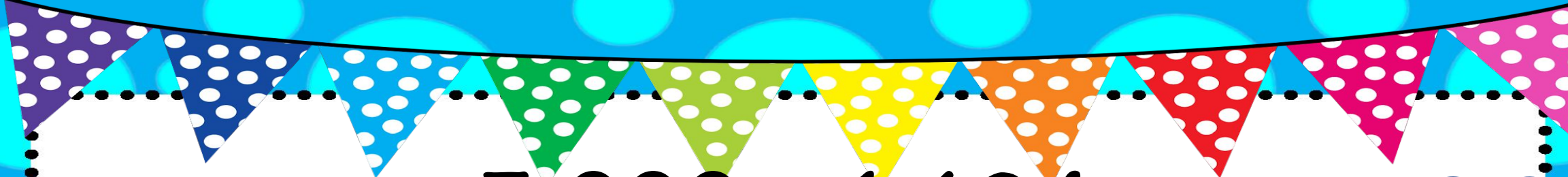
$$\begin{array}{r} 5,000 \\ -1,634 \\ \hline \end{array}$$

OR

$$\begin{array}{r} 4,999 \\ -1,634 \\ \hline \end{array}$$



We took one
away. Don't
forget to
give it back!

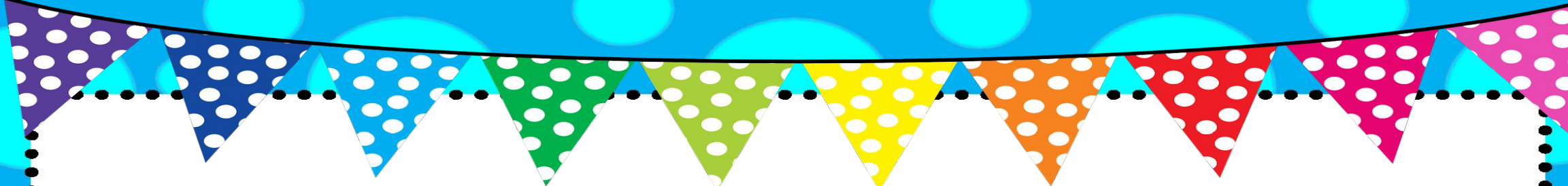

$$5,000 - 1,634$$

$$\begin{array}{r} 5,000 \\ -1,634 \\ \hline 3,366 \end{array}$$

OR

$$\begin{array}{r} 4,999 \\ -1,634 \\ \hline 3,365 + 1 \\ 3,366 \end{array}$$

We took one
away. Don't
forget to
give it back!

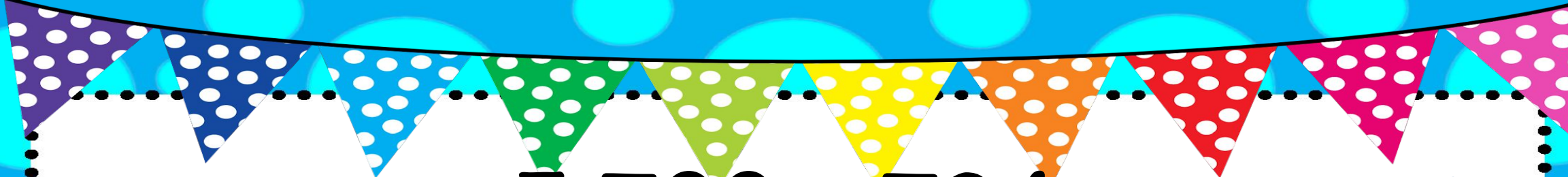


Solve

$$5,700 - 734$$

(answer on next slide)




$$5,700 - 734$$

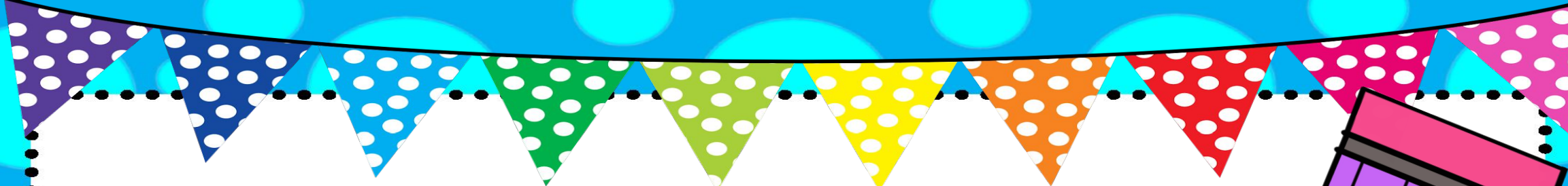
$$\begin{array}{r} \overset{4}{\cancel{5}}, \overset{6}{\cancel{7}}, \overset{9}{\cancel{0}}, \overset{10}{\cancel{0}} \\ - 734 \\ \hline 4,966 \end{array}$$

OR

$$\begin{array}{r} \overset{4}{\cancel{5}}, \overset{16}{6}, 9, 9 \\ - 734 \\ \hline 4,965 \end{array}$$

$$4,965 + 1 = 4,966$$

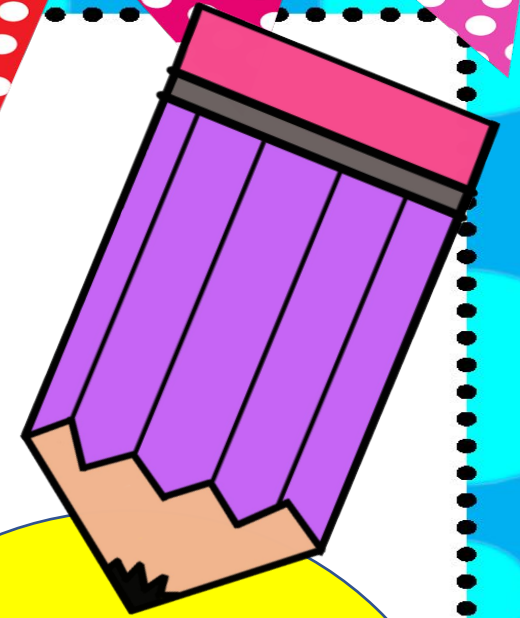
You still might have to borrow, but not as much. We took one away. Don't forget to give it back!



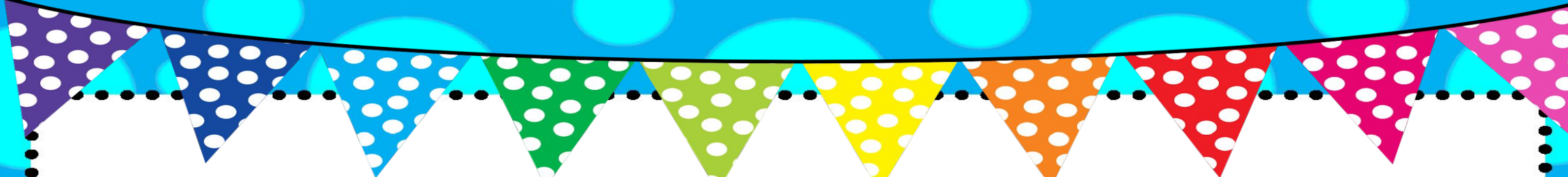
Solve!

$$5,001 - 1,856$$

(answer on next
slide)



Try
subtracting 2
to make it
4,999!


$$5,001 - 1,856 = 3,145$$

Subtracting 2 made it a LOT easier!
 $4,999 - 1,856 = 3,143$ because we
took two away to make subtraction
easier, we must give the two back
(add 2) in our answer.

$$3,143 + 2 = 3,145$$

Solve!

$$406 - 164$$

(answer on next slide)



Answer
242.



62,500 people attended the Chicago Bears football game and 41,876 people attended the Sox baseball game. How many more people attended the football game than the baseball game?

Answer on next slide.



62,500 people attended the Chicago Bears football game and 41,876 people attended the Sox baseball game. How many more people attended the football game than the baseball game?

$$\begin{array}{r}
 \\
 \\
 \\
 \\
 \hline
 20,624
 \end{array}$$

$$\begin{array}{r}
 \\
 \\
 \\
 \\
 \hline
 20,623 \\
 \text{Add one back} \\
 +1 = 20,624
 \end{array}$$

Notice, you may still need to borrow when you adjust a number.



Last Question: Josh scored 12,399 points on a pinball game. His sister Janice scored 8,980 points. How many more points did he score than his sister?



Answer on next slide.

1

$$\begin{array}{r} 12,399 \\ 8,980 \\ \hline 3,419 \end{array}$$

Josh scored 3,419
more points than
his sister.

