Searching for Tens
Grade 3

Objective: Students use the commutative and associative properties to move and group addends to make ten ones, ten tens, and ten hundreds. They combine like terms (numbers with similar value), using their knowledge of place value. They will also recognize expanded and standard form.

Part 1: Searching for 10 ones in an expression. This lesson is scripted out.

Sample: (5)+(8)+(2)+(60)+(3)+(5)

= 60 + (8 + 2) + (5 + 5) + 3

= 60 + 10 + 10 + 3

= 80 + 3

= 83

Part 2: Searching for 10 tens and 10 ones. Examples and abbreviated script provided.

Sample: (60)+(2)+(40)+(400)+(9)+(30)+(8)

= 400 + (60 + 40) + 30 + (2 + 8) + 9

= 400 + 100 + 30 + 10 + 9

= 500 + 40 + 9

= 549

Part 3: Searching for 10 hundreds, 10 tens, and 10 ones. Examples and abbreviated script provided.

Sample: (90)+(7,000)+(500)+(4)+(500)+(10)+(60)

= 7,000 + (500 + 500) + (90 + 10) + 60 + 4

= 7,000 + 1,000 + 100 + 60 + 4

= 8,000 + 100 + 60 + 4

= 8,164

Warm Up (for Part 1)

(Since it is early in the year in 3rd grade, the warm up is lead by the teacher.)

CST Released Test Question (3rd Grade)

Sophie has 527 seashells in her collection. Which of these equals 527?

A 5 + 2 + 7

B 5 + 20 + 700

C 500 + 20 + 7

D 500 + 200 + 7

Current:

Write an example of the **Commutative Property.**

Write an example of the **Associative Property**.

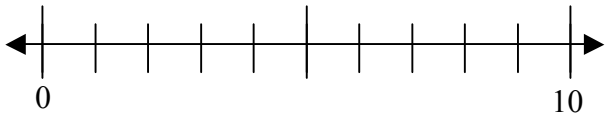
Review:

Use **addition** to make ten. You can use 2 addends, 3 addends, or 4 addends. See if you can come up with at least 6 different ways.

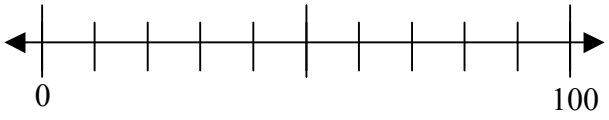
Sums of 10

Other: Counting Practice

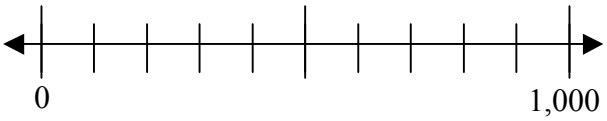
What is the value of each tic mark on this number line?



What is the value of each tic mark this on number line?



What is the value of each tic mark on this number line?



Warm Up (Teacher Directions/Debrief)

CST Released Test Question (3rd Grade)

Sophie has 527 seashells in her collection. Which of these equals 527?

A 5 + 2 + 7

B 5 + 20 + 700

C 500 + 20 + 7

D 500 + 200 + 7

Teacher Directions:

Read the directions with me…. Looking at our answer choices, what type of notation are we looking for, standard, word, or expanded? (Expanded). You have 3 minutes to chose/write the correct answer on your paper.

Debrief:

Raise your hand if you chose A(hands),B(hands) ….

I know my answer will have a hundreds addend in it because it has 3 digits. Does A have a hundreds number in it? (No) What is 5 + 2 + 7? (14)

Let's test B: What is 5 + 20 + 700? (725)

C and D are very similar. (Yes) How are C and D different? Share with your partner.
(Take quiet hands to share out.)

Which is correct? (C) Can you see why someone might choose D on accident? Is it important to read the answers carefully? (Yes, of course!)

Current:

Write an example of the **Commutative Property.**

2 + 3 = 5
3 + 2 = 5

Write an example of the **Associative Property**.

(2 + 3) + 1	*2 + (3 + 1)*
= 5 + 1	*= 2 + 4*
= 6	*= 6*

Teacher Directions:

(It is a good idea to introduce the concepts briefly before the lesson, so that they can be applied during the lesson without slowing the pace. Attaching a hand gesture or movement to the concept is helpful.)

First we have the ***Commutative Property***. Say that with me…Here is our example: We know that 2 + 3 = 5. Now watch as I take the 2 and the 3 and move them. What do I have now? (3 + 2) Does it equal 5? (Yes) The commutative property lets us change the order of the addends without changing the sum. On your paper, write our examples.

Now we have the ***Associative Property***. Say that with me…What if we had 2 + 3 + 1? Let's group (2+3) together with parentheses. Now simplify: 2 + 3= 5, and 5 + 1 = 6. What if we grouped the 3 and the 1 together first? Thumbs up if you think we will still get 6. 3 + 1 = 4, and 2 + 4 = 6. Did we get the same sum? (Yes) The associative property lets us group the addends how we want without changing the sum.

Warm Up (Teacher Directions/Debrief Continued)

Review:

Use **addition** to make ten. You can use 2 addends, 3 addends, or 4 addends. See if you can come up with at least 6 different ways.

Sums of 10

4 + 6
6 + 4
8 + 2
2 + 8
7 + 3
3 + 7
9 + 1
1 + 9
8 + 2
2 + 8
5 + 5
2 + 3 + 2 + 3

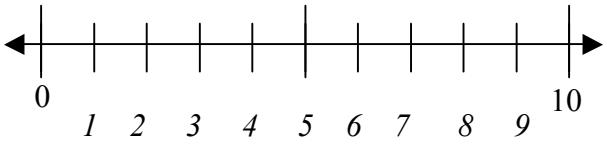
Teacher Directions:
Think of ways to make 10 using addition. You can have 2, 3, or 4 addends. For example, 8 + 2 would work because it has 2 addends. 4 + 4 + 2 would work because it has 3 addends.

Think about ways to make 10. Look at your neighbor. Share your ideas. Now you have about 5 minutes to write as many ways to make 10 using addition as you can.

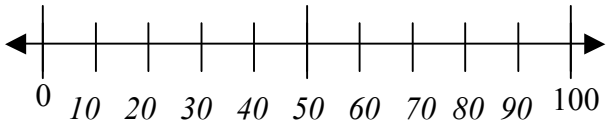
Debrief:
What is one way to make 10? (4 + 6)
If we use the commutative property, what do we have? (6 + 4) Everyone read what we have so far. (Take other ways and list both ways, using the commutative property.)

Raise your hand if you used 3 or 4 addends. *(Take 1 or 2 examples.)*
These examples are great. For today, we are going to focus on 2 addends.

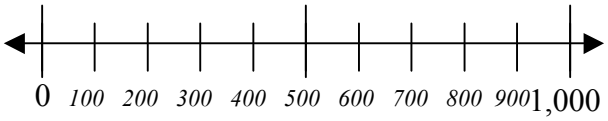
Other: Counting Practice



Each tic mark is worth 1.



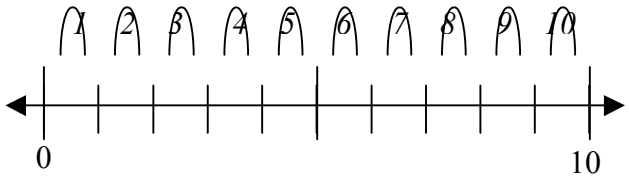
Each tick mark is worth 10.



Each tic mark is worth 100.

Debrief:
(I suggest this part be walked through by the teacher with the students, especially at this time of the year. In some cases, it is not practical for teachers to copy the warm ups, so this part can be done with the teacher drawing the number line on the overhead, and the students following along.)

The basic process: What is on the left of the number line? (0) What is on the right? (10). Let's find out how many sections the number line is divided into.

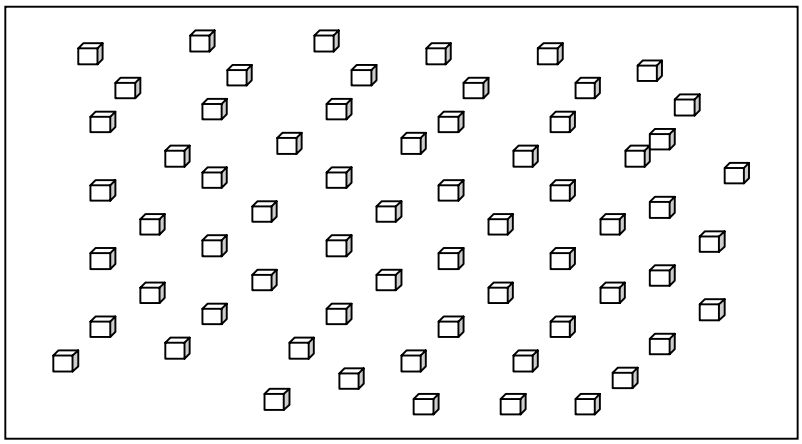


There are 10 sections. So…how much is each tic mark worth? (1) Let's test it. (1, 2, 3, …10)

This next number line has 100 on the right. We still have 10 sections. How much for each line? (10). Let's try…10, 20, 30… *(Repeat for the last number line.)*

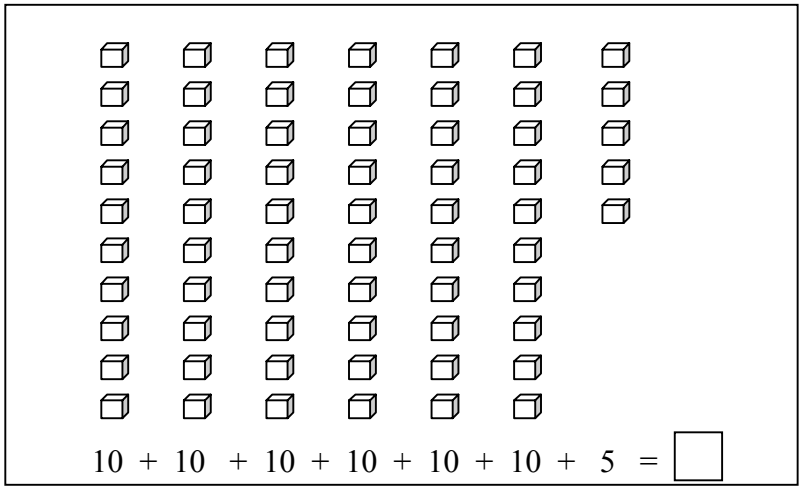
Lesson Script: Grade 3 Search for Tens Part 1
Search for 10 Ones

After the Warm Up (which should take about 15 minutes)…
What if you had to count all these? Think about how you would organize them to make it easier to count. Think….Look at your partner. Share your ideas.



(Take suggestions… Cross out cubes as you count them, Group by 2s, 5s, 10s, etc.)
Those are all good suggestions. Today we are going to focus on grouping them into tens because we have a base ten number system.

In this picture, the cubes are organized into tens with some left over. Let's add it up.
What's 10 + 10 + 10 + 10 + 10 +10? (60) What's 60 + 5? (65)



We just took mixed up objects and organized them into tens. When we work with numbers, we look for tens too because it's easier.

Today, we are going to turn something like this…
6 + 3 + 7 + 4 + 8 + 1 + 2 + 9 + 3 + 5 + 9 + 1 + 7 into this 10 + 10 + 10 + 10 + 10 + 10 + 5.

Which would be easier to add?

We Do: 5 + 3 + 8 +7 + 2

Raise your hand if you see a way to make 10. (3 + 7 ..or other)
We'll circle the 3 and the 7, so we know we've used them. Then we'll use the commutative property to move them together. Then we'll group them using the associative property.

5 +(3)+ 8 +(7)+ 2
= (3 + 7)

What's the other way to make a 10? (8 and 2). Good. We'll move the 8 and the 2 and group them together. Are there any addends left? (Yes, the 5). That's like having extra cubes leftover. We just add the 5 at the end, but don't group it with anything.

(5)+(3)+(8)+(7)+(2)
= (3 + 7) + (8 +2) + 5

Now that we have the 3 and 7 together, and the 8 and 2 together, we can finally combine them each to make 10. Raise you hand if you know what we do with the 5. (Just copy it alone.)

(5)+(3)+(8)+(7)+(2)
= (3 + 7) + (8 + 2) + 5
= 10 + 10 + 5

We could just add the 10 + 10 + 5 to make 25, but we are going combine the tens so that all the tens are together and all the ones are together.

(5)+(3)+(8)+(7)+(2)
= (3 + 7) + (8 + 2) + 5
= 10 + 10 + 5
= 20 + 5

Finally we can simplify our final answer: 25.

(5)+(3)+(8)+(7)+(2)
= (3 + 7) + (8 + 2) + 5
= 10 + 10 + 5
= 20 + 5
= $\boxed{25}$

We Do: 7 + 9 + 8 + 1 + 2 + 4 + 3

(Walk through the process with less help. Have them try to remember what to do on each line by looking back at the previous example.)

Think…Do you see any ways to make 10? Share with your partner. Think…What did we do on the second line last time? Share with your partner. Raise your hand if you know what to write on the second line. (Move the addends together).Thumbs up if you agree. How do we keep track of what we moved? (Circle them.) Try to do the second line on your own. Then we'll check as a class.

$$\begin{aligned} &\textcircled{7}+\textcircled{9}+\textcircled{8}+\textcircled{1}+\textcircled{2}+\textcircled{4}+\textcircled{3} \\ &= (7 + 3) + (9 + 1) + (8 + 2) + 4 \end{aligned}$$

Think…Now what do we do? Look back at my notes. Last time we simplified 3 and 7 into 10 and 2 and 8 into 10. What do we do this time? Share with your partner. Thumbs up if you have an idea. (Call on a student—We change 7 + 3 to 10…..). Thumbs up if you agree. Do the next line on your own. Then we'll check as a class.

$$\begin{aligned} &\textcircled{7}+\textcircled{9}+\textcircled{8}+\textcircled{1}+\textcircled{2}+\textcircled{4}+\textcircled{3} \\ &= (7 + 3) + (9 + 1) + (8 + 2) + 4 \\ &= \quad 10 \quad + \quad 10 \quad + \quad 10 \quad + 4 \end{aligned}$$

Do we have expanded form yet? (No.) Why not? (Choose a student to share out.) Yes, all the tens need to be together to be expanded form. Raise your hand if you can put this in expanded form. Go ahead and write the next line…Now let's change it from expanded form to standard form, which is 34.

$$\begin{aligned} &\textcircled{7}+\textcircled{9}+\textcircled{8}+\textcircled{1}+\textcircled{2}+\textcircled{4}+\textcircled{3} \\ &= (7 + 3) + (9 + 1) + (8 + 2) + 4 \\ &= \quad 10 \quad + \quad 10 \quad + \quad 10 \quad + 4 \\ &= \qquad 30 \qquad + \quad 4 \\ &= \qquad\quad \boxed{34} \end{aligned}$$

You Try: 1 + 5 + 6 + 4 + 5

$$\begin{aligned} &\textcircled{1}+\textcircled{5}+\textcircled{6}+\textcircled{4}+\textcircled{5} \\ &= (5 + 5) + (6 + 4) + 1 \\ &= \quad 10 \quad + \quad 10 \quad + \quad 1 \\ &= \qquad 20 \qquad + \quad 1 \\ &= \qquad\quad \boxed{21} \end{aligned}$$

(While debriefing the You Try, reinforce expanded form.)

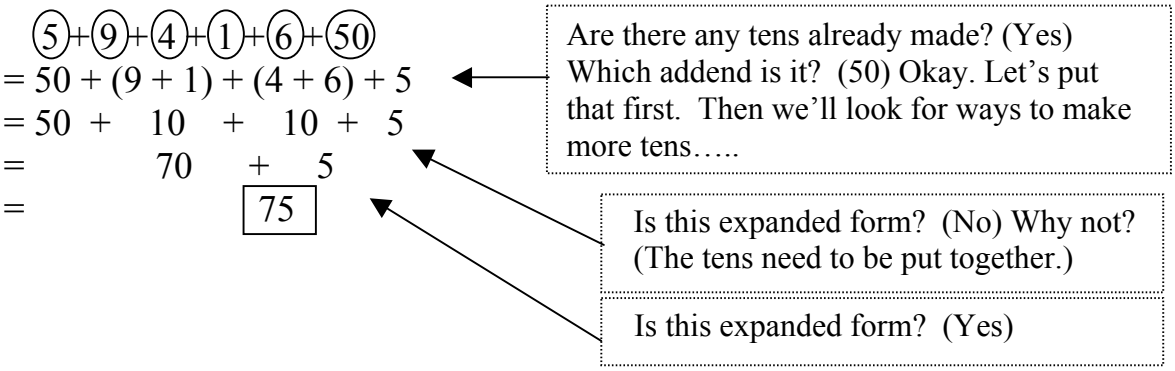
Challenge You Try: 4 + 5 + 6 + 9 + 2 + 3

$$\begin{aligned} &\textcircled{4}+\textcircled{5}+\textcircled{6}+\textcircled{9}+\textcircled{2}+\textcircled{3} \\ &= (4 + 6) + (5 + 2 + 3) + 9 \\ &= \quad 10 \quad + \quad 10 \quad + \quad 9 \\ &= \qquad 20 \qquad + \quad 9 \\ &= \qquad\quad \boxed{29} \end{aligned}$$

(The challenge you try can be a given in addition to the first you try. This gives the slower students time to work through the first you try while the quicker students can try something more challenging after they finish the first you try).

We Do: 5 + 9 + 4 + 1 + 6 + 50

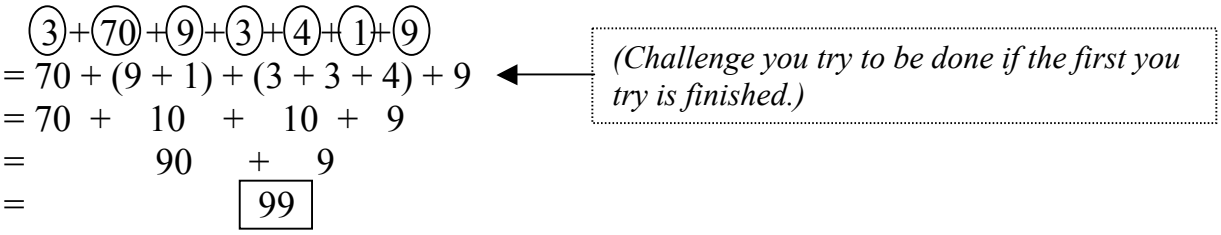
(The students should be more independent with the process at this point. Prompt them as necessary. The new element is that we are adding a multiple of 10.)



You Try: 5 + 8 + 2 + 60 +3 + 5

5+8+2+60+3+5
= 60 + (8 + 2) + (5 + 5) + 3
= 60 + 10 + 10 + 3
= 80 + 3
= 83

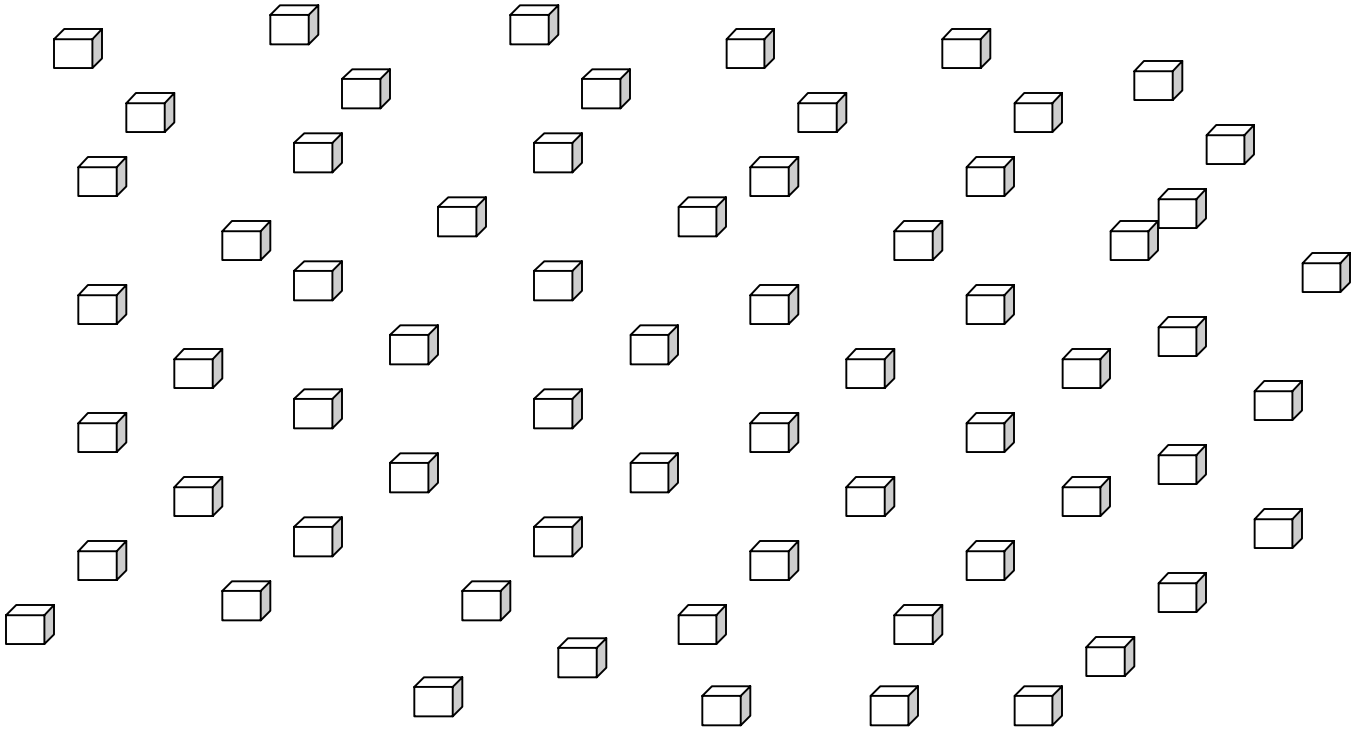
Challenge You Try: 3 + 3 + 9 + 70 + 4 + 1 + 9

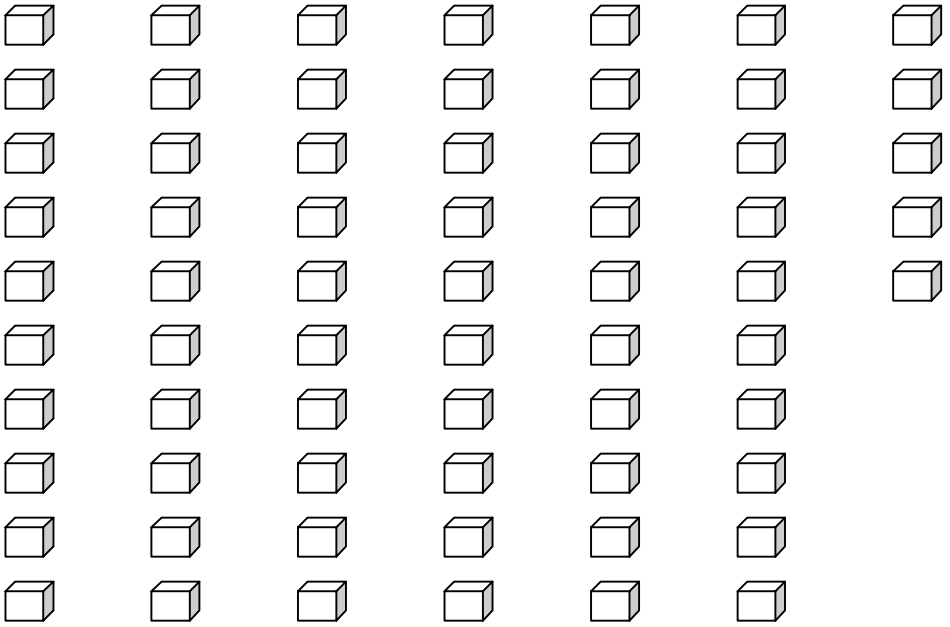


Wrap Up:

Why did we look for tens today? Share with your partner.
Thumbs up if you feel pretty good about what we did today.
Raise your hand if it's still a little confusing.
Raise your hand if you understand more now than at the beginning of class.

How would you organize these cubes to make them easier to count?





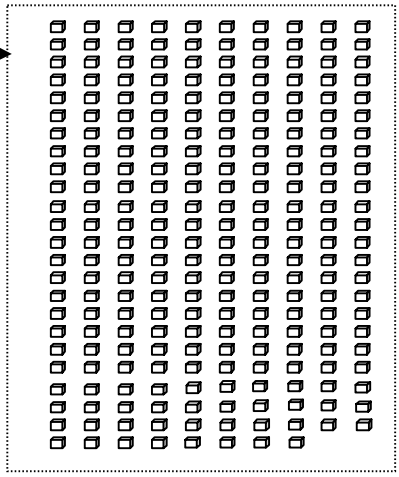
Searching for Tens Part 2
Search for 10 Tens (Abbreviated Script)

(The Warm Up should include a review problem from Part 1. It could also include a new list of "Sums of 100" to go with the Sums of 10 list.)

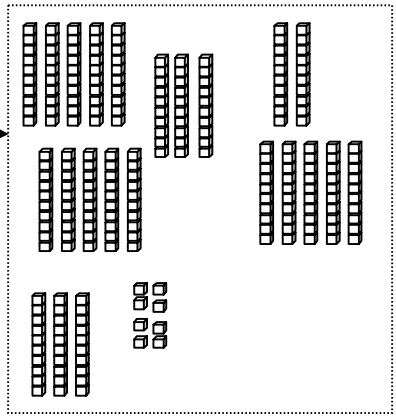
Sums of 10	Sums of 100 (or 10 tens)
5 + 5	50 + 50
6 + 4	60 + 40
4 + 6	40 + 60
8 + 2	80 + 20
2 + 8	20 + 80
7 + 3	70 + 30
3 + 7	30 + 70
9 + 1	90 + 10
1 + 9	10 + 90
3 + 2 + 3 + 2	30 + 20 + 30 + 20

(Begin the lesson by showing a concrete representation of a number over 100…)

What if you had to count this many cubes? Would you group them into tens?



These are the same number of cubes grouped into tens. How could we group them to make it even easier? (Group them into hundreds) *(Circle groups of one hundred and count as a class. 238)*



Today we will look for ten tens, (or one hundred).

We Do: 40 + 50 + 60 + 200 + 4 + 3 + 6

(40)+(50)+(60)+(200)+(50)+(4)+(3)+(6)
= 200 + (60 + 40) + (50 + 50) + (4 + 6) + 3
= 200 + 100 + 100 + 10 + 3
= 400 + 10 + 3
= 413

Do you see any hundreds? (Yes) Which addend? (200) Let's put that first. Do you see any other ways to make a hundred? (Yes, 60 and 40, 50 and 50.) Let's use the commutative and associative property to move and group them together. Do we have any tens? (Yes, 4 + 6.) Let's move and group them. What's left? (3)What do we do with the 3? (Just add it.)

What form is this? (Standard form.)

Do you recognize this notation? Is this standard form, word form, or expanded form? (Expanded form.)
Yes, it expanded because all the hundreds are together, all the tens are together, and all the ones are together.

You Try #1: 80 + 500 + 10 + 20 + 90 + 4 + 40

(80)+(500)+(10)+(20)+(90)+(4)+(40)
= 500 + (80 + 20) + (10 + 90) + 40 + 4
= 500 + 100 + 100 + 40 + 4
= 700 + 40 + 4
= 744

Challenge You Try#1: 20 + 30 + 700 + 10 + 30 + 50 + 4 + 60 +6

(20)+(30)+(700)+(10)+(30)+(50)+(4)+(60)+(6)
= 700 + (20 +30 + 50) + (60+ 30 + 10) + (4 + 6)
= 700 + 100 + 100 + 10
= 900 + 10
= 910

We Do: **60 + 2 + 40 + 400 + 9 + 30 + 8**

(60)+(2)+(40)+(400)+(9)+(30)+(8)
= 400 + (60 + 40) + 30 + (2 + 8) + 9
= 400 + 100 + 30 + 10 + 9
= 500 + 40 + 9
= 549

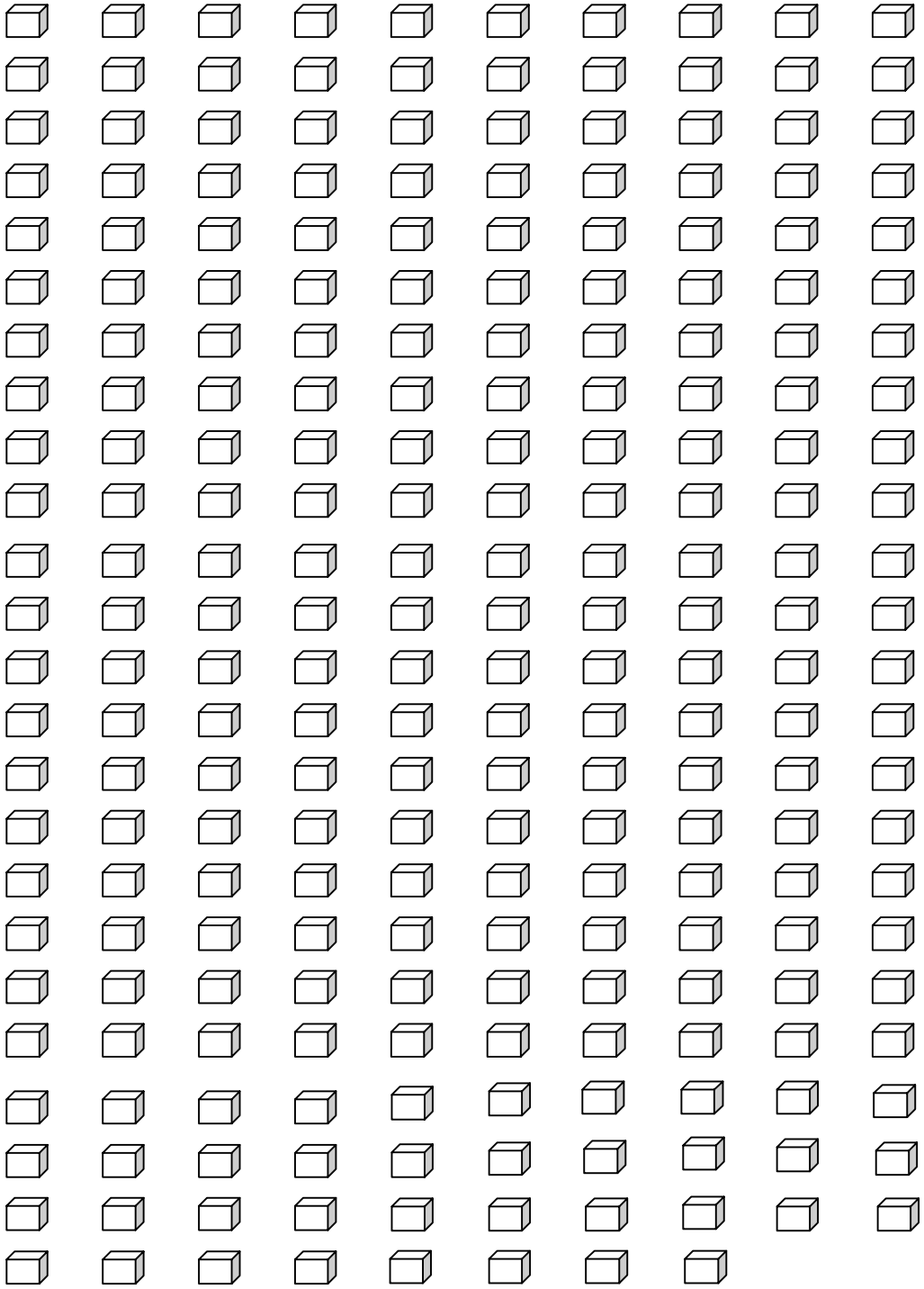
You Try: **7 + 50 + 1 + 60 + 9 + 600 + 50**

(7)+(50)+(1)+(60)+(9)+(600)+(50)
= 600 + (50 + 50) + 60 + (1 + 9) + 7
= 600 + 100 + 60 + 10 + 7
= 700 + 70 + 7
= 777

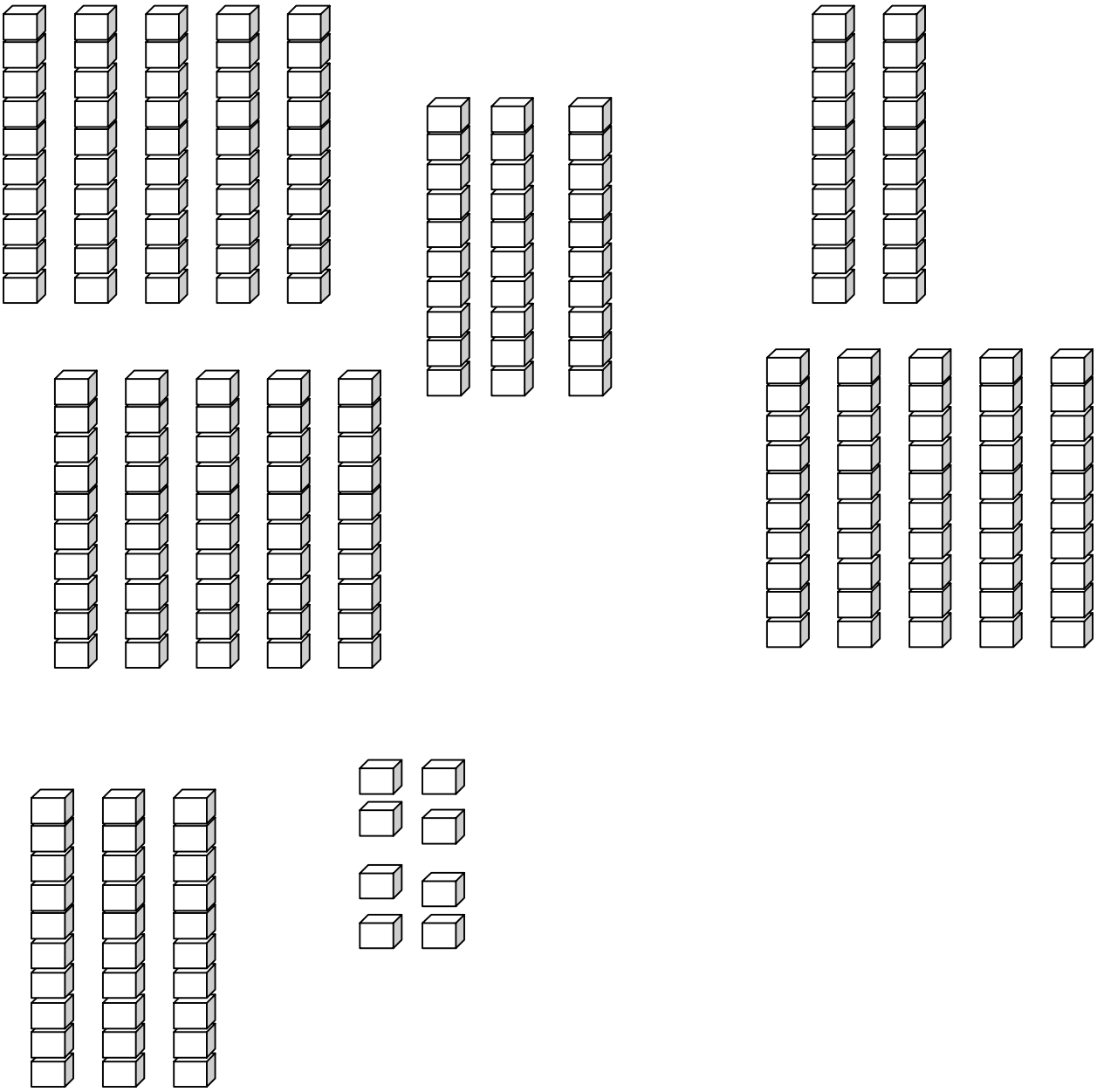
Challenge You Try: **3 + 30 + 4 + 50 + 1 + 500 + 20 + 3 + 80**

(3)+(30)+(4)+(50)+(1)+(500)+(20)+(3)+(80)
= 500 + (30 + 20 + 50) + 80 + (3 + 4 + 3) + 1
= 500 + 100 + 80 + 10 + 1
= 600 + 90 + 1
= 691

What if you had to count all these? How would you group them?



Now they're grouped into tens. How can we group them to make it even easier?



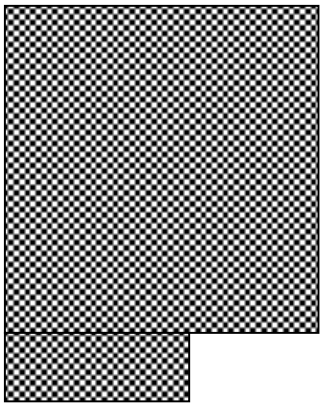
Searching for Tens Part 3
Search for 10 Hundreds (Abbreviated Script)
(Warm Up should include a problem similar to the You Try from Part 2)

(The Warm Up should include a review problem from Part 2. It could also include a new list of "Sums of 1,000" to go with the Sums of 10 and Sums of 100 lists.)

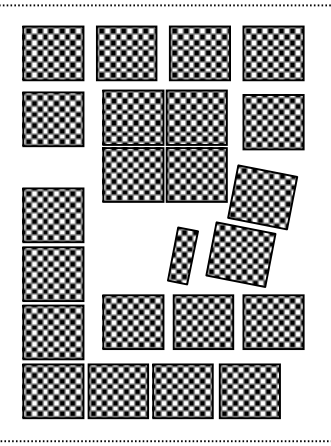
Sums of 10	Sums of 100 (or 10 tens)	Sums of 100 (or 10 hundreds
5 + 5	50 + 50	500 + 500
6 + 4	60 + 40	600 + 400
4 + 6	40 + 60	400 + 600
8 + 2	80 + 20	800 + 200
2 + 8	20 + 80	200 + 800
7 + 3	70 + 30	700 + 300
3 + 7	30 + 70	300 + 700
9 + 1	90 + 10	900 + 100
1 + 9	10 + 90	100 + 900
3 + 2 + 3 + 2	30 + 20 + 30 + 20	300 + 200 + 300 + 200

(Begin the lesson by showing a concrete representation of a number over 1,000.)

What if you had to count this many cubes? Would you group them into tens or hundreds?



These are the same cubes grouped into hundreds. How could we group them to make it even easier? (Group them into thousands) *(Circle groups of one thousand and count as a class. 2, 265)*



Today we will look for ten hundreds, (or one thousand).

We Do: 900 + 500 + 300 + 500 + 700 + 100 + 6,000

(900) + (500) + (300) + (500) + (700) + (100) + (6,000)
= 6,000 + (900 + 100) + (500 + 500) + (300 + 700)
= 6,000 + 1,000 + 1,000 + 1,000
= 9,000

Do you see any thousands? (Yes) Which addend? (6,000) Let's put that first. Do you see any other ways to make a thousand? (Yes, 900 and 100, 500 and 500, and 300 and 700.) Let's use the commutative and associative property to move and group them together.

We Do: 20 + 100 + 80 + 900 + 5,000 + 7 + 400

(20) + (100) + (80) + (900) + (5,000) + (7) + (400)
= 5,000 + (100 + 900) + 400 + (20 + 80) + 7
= 5,000 + 1,000 + 400 + 100 + 7
= 6,000 + 400 + 100 + 7
= 6,000 + 500 + 7
= 6,507

Do you see any thousands? (Yes) Which addend? (5,000) Let's put that first. Do you see any other ways to make a thousand? (Yes, 100 and 900). Let's move and group them together. Do we have any hundreds? (Yes, 400). Do we group it with anything? (No.) Do we have any ways to make 100? (Yes, 20 and 80.) Any ways to make 10? (No.). What's left? (7) What do we do with the 7? (Just add it.)

Which of these lines is expanded form? (6,000 + 500 + 7) Why isn't 6,000 + 400 + 100 + 7 expanded form? (The hundreds are not all together.)

You Try: 90 + 7,000 + 500 + 4 + 500 + 10 + 60

(90) + (7,000) + (500) + (4) + (500) + (10) + (60)
= 7,000 + (500 + 500) + (90 + 10) + 60 + 4
= 7,000 + 1,000 + 100 + 60 + 4
= 8,000 + 100 + 60 + 4
= 8,164

Challenge You Try: 60 + 2,000 + 300 + 4 + 600 + 10 + 300 + 100 + 30 + 3

(60) + (2,000) + (300) + (4) + (600) + (10) + (300) + (100) + (30) + (3)
= 2,000 + (300 + 600 + 100) + 300 + (30 + 10 + 60) + (4 + 3)
= 2,000 + 1,000 + 300 + 100 + 7
= 3,000 + 400 + 7
= 3,407

We Do: 600 + 300 + 400 + 5,000 + 5 + 6 +70 +5

(600)+(300)+(400)+(5,000)+(5)+(6)+(70)+(5)
= 5,000 + (600 + 400) + 300 + 70 + (5 + 5) + 6
= 5,000 + 1,000 + 300 + 70 + 10 + 6
= 6,000 + 300 + 80 + 6
= 6,386

Do you see any thousands? (Yes) Which addend? (5,000) Let's put that first. Do you see any other ways to make a thousand? (Yes, 600 and 400). Let's move and group them together. Do we have any hundreds? (Yes, 300). Do we group it with anything? (No.) Do we have any tens? (Yes, 70). Any ways to make 10? (Yes, 5 + 5). What's left? (6) What do we do with the 6? (Just add it.)

Do you recognize this notation? Is this standard form, word form, or expanded form? (expanded form)

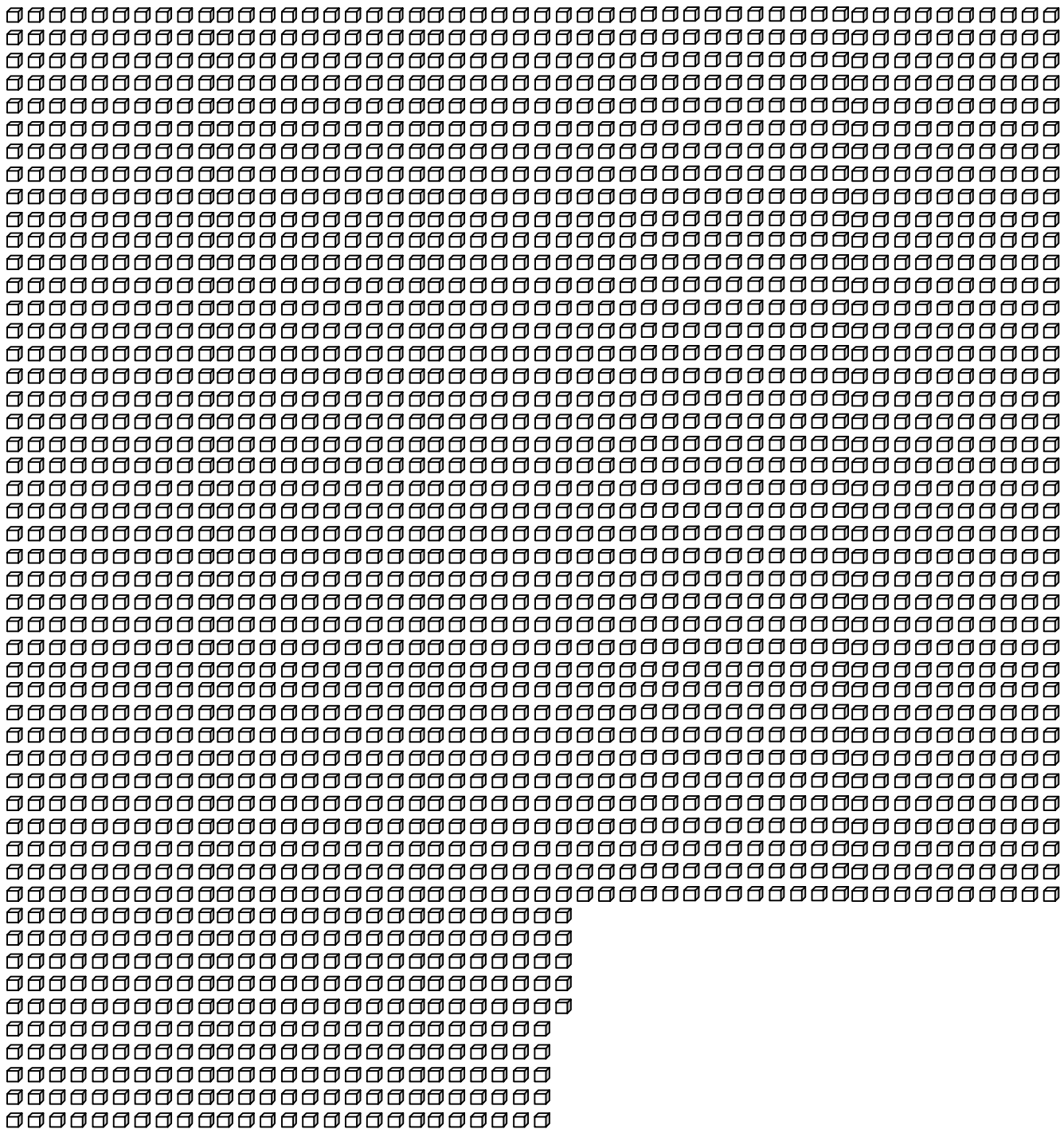
You Try: 800 + 9 + 8,000 + 100 + 200 + 1 +30 + 5

(800)+(9)+(8,000)+(100)+(200)+(1)+(30)+(5)
= 8,000 + (800 + 200) + 100 + 30 + (9 + 1) + 5
= 8,000 + 1,000 + 100 + 30 + 10 + 5
= 9,000 + 100 + 40 + 5
= 9,145

Challenge You Try: 100 + 30 + 4,000 + 800 + 1 + 30 + 3 + 100 + 40 + 90 + 7

(100)+(30)+(4,000)+(800)+(1)+(30)+(3)+(100)+(40)+(90)+(7)
= 4,000 + (800 + 100 + 100) + (30 + 30+ 40) + 90 + (7 + 3) + 1
= 4,000 + 1,000 + 100 + 90 + 10 + 1
= 5,000 + 100 + 100 + 1
= 5,000 + 200 + 1
= 5,201

How would you organize these cubes to make them easier to count?



Now they're grouped by hundreds. How can we make it easier?