

## Using Arrow Cards

Adapted from: [http://www.bsdt.org/schools/wheeler/math/Arrow\\_cards.htm](http://www.bsdt.org/schools/wheeler/math/Arrow_cards.htm)

### Introductory activities

Draw students' attention to the arrows on the right ends of the cards. These arrows must always be on top of each other when you are making a number.

1. Students sort cards into groups of ones, tens, hundreds and thousands. (May need to demonstrate). "The ones, the tens, the hundreds and the thousands".
2. When the students have sorted the cards begin by asking them to show the following numbers. Students can take turns in their pairs showing the numbers. The frequency of numbers can be reduced if the students are successful. When they show the number you can say for example "how many tens in 30 to reinforce the idea of counting different referents.

"Show me 1, 2, 5, 7, 9".

"Show me 10, 20, 50, 70, 90".

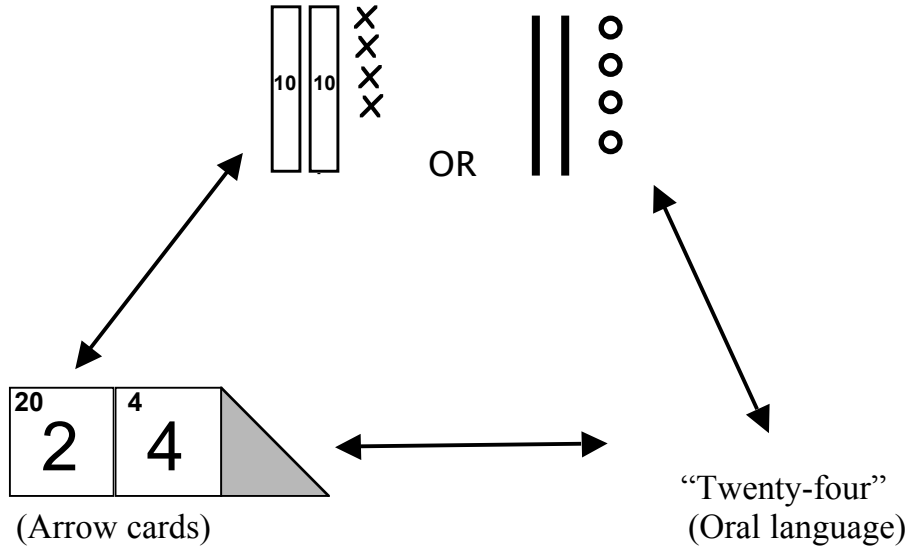
"Show me 100, 300, 500, 900".

"Show me 1000, 3000, 5000, 7000".

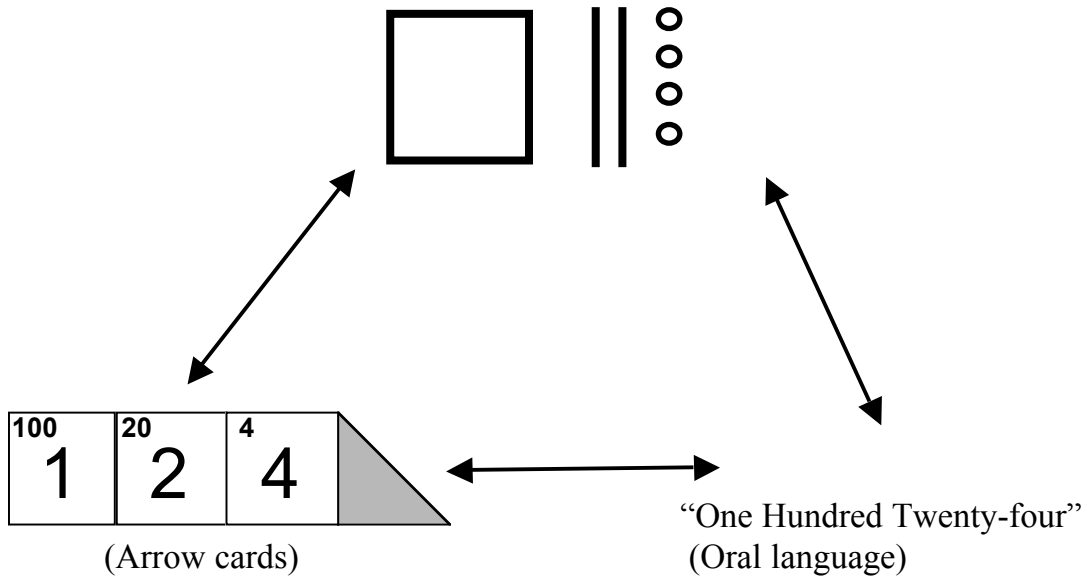
At this point the students should know the different components of the arrow cards and how to use them. Some students may still be trying to place a 3 next to a 5 to Build 35. When this happens remind them that the arrows need to go on top of each other when numbers are being built.

**Base Ten/Place value**  
**Triangle of meaning relating model, arrow cards, and words**

(Tens sticks 'drawn' model)      OR      (Base ten blocks 'drawn' model)



(Base ten blocks 'drawn' model)



This triangle can be used to develop the associations between:

- a) The number of objects
- b) The numeral, and
- c) The spoken word for that number

The arrows show that each representation can be a stimulus for responses using the other two representations. Students do not automatically learn all six relationships.

Show (a)      Ask “How many?”    Say, “Show me the number for this many”

Show (b)      Ask “What number is this?”    Say, “Show me this many”.

For (c)        Say “Show me five cubes”    Say, “ Show me the number five”.

As the students build the numbers they will build many observations and connections. They should be encouraged to share these observations with the class.

For example, some students will notice that building the numbers is the same as adding the numbers. The idea of expanded notation can then be developed using written notation showing the addition of each number as in  $368 = 300 + 60 + 8$ . Some students may be concerned that the equation is written in an opposite way from what they are used to. This can lead to a discussion of the purpose and value of the = symbol (equality is a relationship, meaning, in this case, “is the same as”).

3.        “Show me 11, 12, 15, 19”

You may need to demonstrate how to put the cards together by matching the arrows. Children in their pairs may work out that one of them can find the ‘ten’ card and one can find the ‘one’ card. They can take it in turns to show the number they have built.

4.        “Show me 34, 46, 57, 89”

Develop the language that another name for 30 is three tens. You may need to remind the students that the 30 is still there. For example the 0 is still there behind the 4. Taking away the 4 will reveal the 0 of the 30. Also, on each card the total value is written in the upper left corner.

If students are showing difficulty grasping the idea that 30 is the same as 3 tens it might be appropriate to use place value manipulatives such as Base Ten blocks, or tens sticks.

5.        “Show me 29 and 92”

One student can build one number and the other student in the pair can build the other. Both numbers should be placed in front of the students so they can discuss the difference between the value of the 9 in 29 and the 9 in 92. Again, the ‘one’ digit can be removed to reveal the value of the 9 in 92.

6.        “Show me 100, 402, 125”

The development of the idea of 0 in the middle of the number can be introduced/reinforced here. Students can be asked to provide the numbers for the class to build.

7.        “Show me 1,000, 1,046, 6,893.

It might be appropriate with some classes to introduce the date, 2007, at this point. This is where the matching of the arrows on top of each other becomes really important. Some students may only see the importance of placing the arrows on top of each other when they come to do this activity.

8. “Show me 2,468, and 8,642“.  
Each student in the pair can build one of the numbers. Again, students’ attention can be drawn to the fact that the numerals in different places have different values.

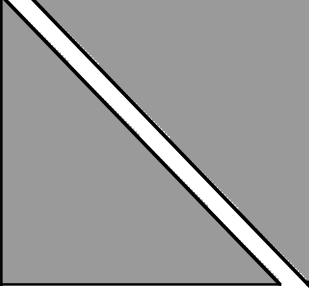
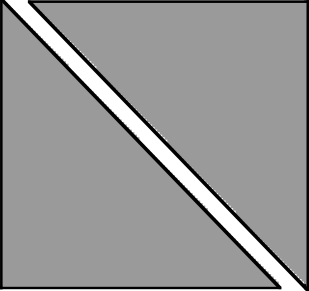
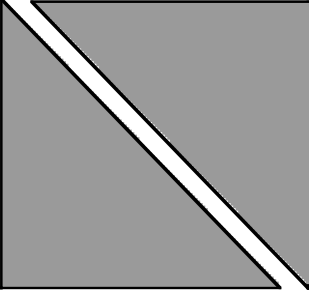
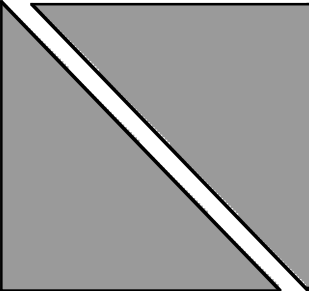
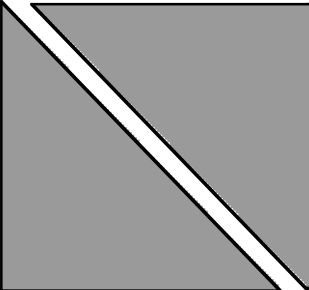
The next activities can be used to develop the ideas of pattern in place value as well as simple mental addition and subtraction ideas. A model for base ten such as Base Ten Blocks can be used with students having conceptual difficulty.

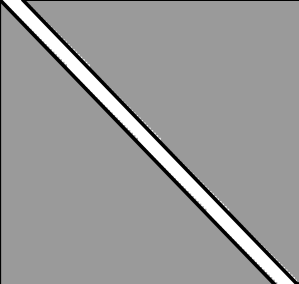
9. Build a number that is 10 more than 25.  
Students may have difficulty with this idea at first even though they may be able to count by tens. Most learning to count by tens occurs on the decade names so the idea of counting by tens from 24 (off the decade) might be very difficult for some students. Holding a sequenced stack of ‘ten’ cards and peeling them away as the students say them helps. The same idea can then be used by holding a ‘one’ in the ones place and having the students count by tens as you peel each ‘ten’ away leaving the ‘one’ card in place.
10. Build a number that is 100 more than 163.  
Students may find counting by 100s easier than by tens because there is not a change in the vocabulary.
11. Build a number that is 1000 more than 4,724.  
Students remove the 4000 card and replace it with the 5000 card. They can then continue counting in 1000s and making the new numbers without changing any of the other place values.
12. Build a number that is 10 less than 76.  
This activity can develop the idea of counting back (off the decade) by 10s.
13. Build a number that is 100 less than 453  
Counting back by 100s
14. Build a number that is 1000 less than 5612.  
Counting back by 1000s
15. Build a number that is 20 more than 25.  
Develop the idea of adding numbers in the tens place without having to do anything to the ones. This is an extension of the counting by tens idea and is very effective when done in conjunction with the use of the Base Ten Blocks (or Tens Sticks with younger students).

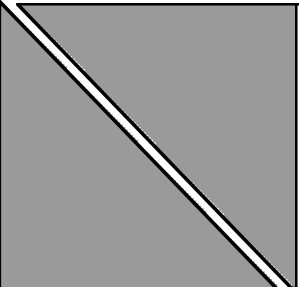
16. Build a number that is 300 more than 265
17. Build a number that is 2,000 more than 5,357
18. Build a number that is 30 less than 56
19. Build a number that is 500 less than 892.
20. Build a number that is 4,000 less than 6,291.

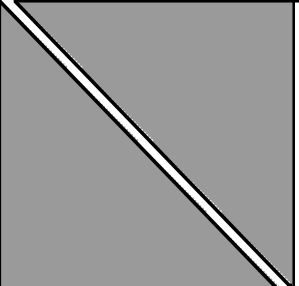
#### Supplemental Activities

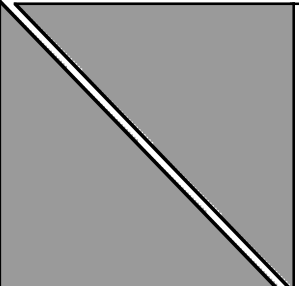
21. Build the number of the year we are in
22. Build the largest number you can build.
23. Build a number that has all the same numerals
24. Build a number that reads the same both ways.
25. Build a number in which all the digits add up to 15.
26. Build a number where all the numerals add up to your age.
27. Build a number that is easy to remember.
28. Build a number that is difficult to remember.
29. Build a number between 239 and 287.
30. Build a number larger than 1,384 but smaller than 1,388.
31. Build a number whose word name rhymes with the word “fine”.
32. Build a 2-digit number whose word name rhymes with ‘late’
33. Build a 3-digit number whose word name rhymes with “you”
34. Build a 4-digit number whose word name rhymes with “line”
35. How many different numbers can you make with two one cards, two ten cards and two hundred cards?

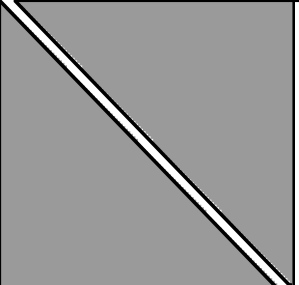
|        |   |        |
|--------|---|--------|
| 4<br>4 |    | 6<br>6 |
| 3<br>3 |    | 8<br>8 |
| 2<br>2 |   | 7<br>7 |
| 1<br>1 |  | 9<br>9 |
| 0<br>0 |  | 5<br>5 |

|         |   |   |   |         |
|---------|---|---|---|---------|
| 40<br>4 | 0 |  | 0 | 6<br>06 |
|---------|---|---|---|---------|

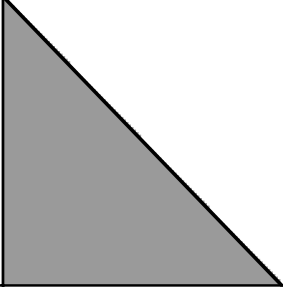
|         |   |   |   |         |
|---------|---|---|---|---------|
| 30<br>3 | 0 |  | 0 | 8<br>08 |
|---------|---|---|---|---------|

|         |   |  |   |         |
|---------|---|--|---|---------|
| 20<br>2 | 0 |  | 0 | 7<br>07 |
|---------|---|--|---|---------|

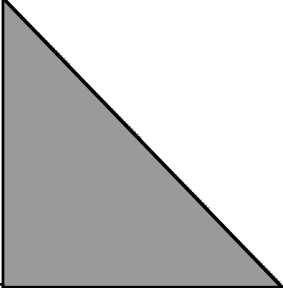
|         |   |   |   |         |
|---------|---|---|---|---------|
| 10<br>1 | 0 |  | 0 | 9<br>09 |
|---------|---|---|---|---------|

|         |   |   |   |         |
|---------|---|---|---|---------|
| 00<br>0 | 0 |  | 0 | 5<br>05 |
|---------|---|---|---|---------|

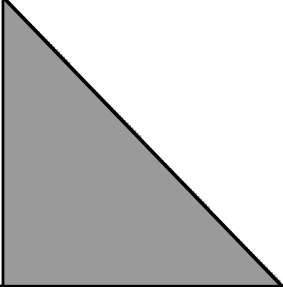
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4 0 0



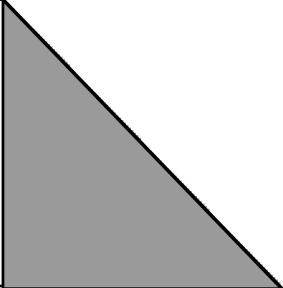
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3 0 0



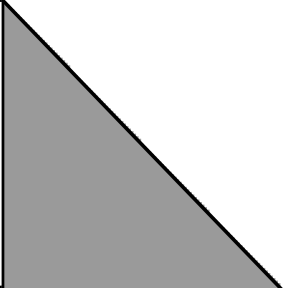
200  
2 0 0



100  
1 0 0

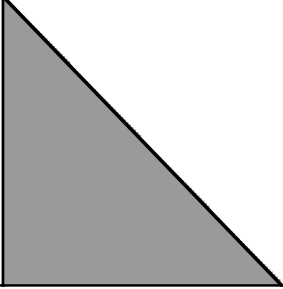


000  
0 0 0

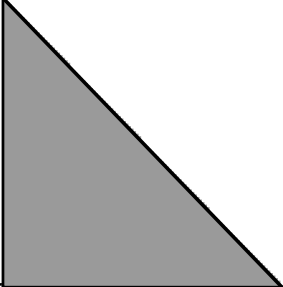




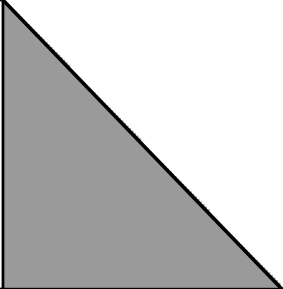
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9 0 0



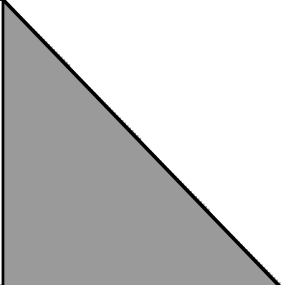
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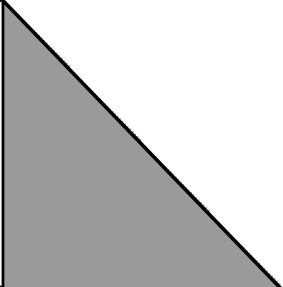
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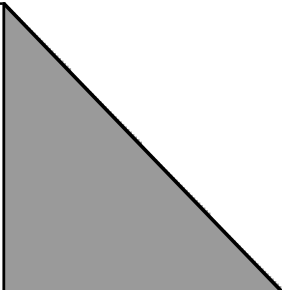


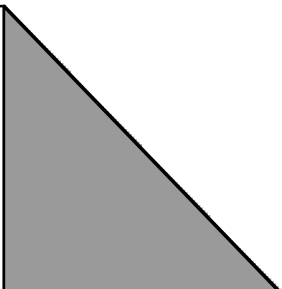
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6 0 0

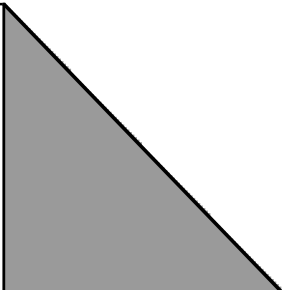


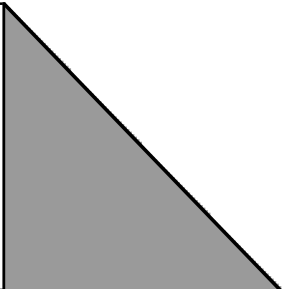
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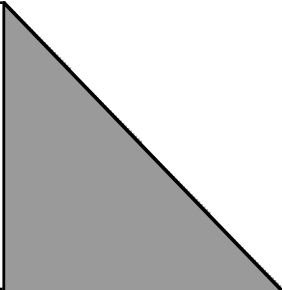


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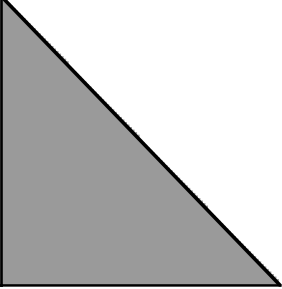
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|-----------|---|---|---|---|
| 3000<br>3 | 0 | 0 | 0 |  |
|-----------|---|---|---|---|

|           |   |   |   |  |
|-----------|---|---|---|--|
| 2000<br>2 | 0 | 0 | 0 |  |
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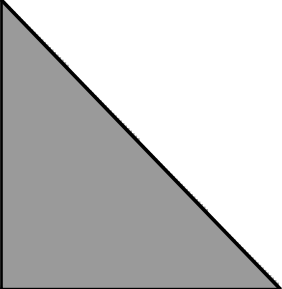
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|-----------|---|---|---|---|
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|           |   |   |   |   |
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| 0000<br>0 | 0 | 0 | 0 |  |
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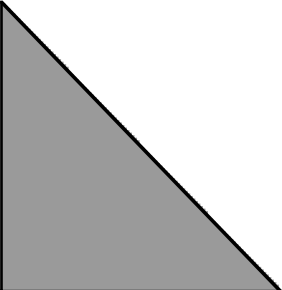
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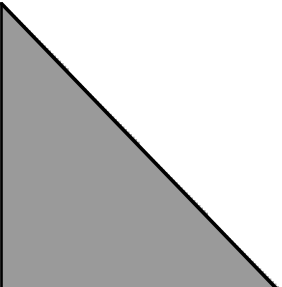
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8 0 0 0



7000  
7 0 0 0



6000  
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5000  
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