



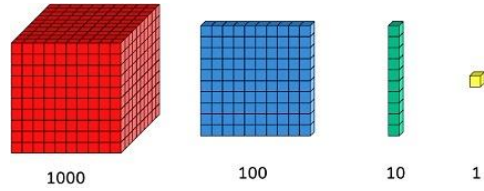
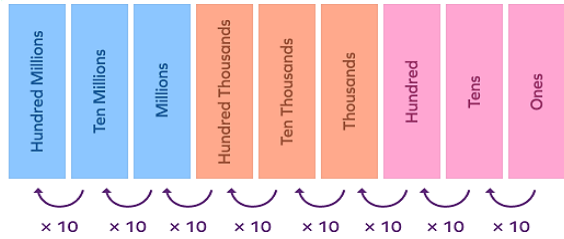
First Name: _____ Last Name: _____ Grade: _____
 Teacher: _____ Parent's email: _____

Place Values and Number Riddles

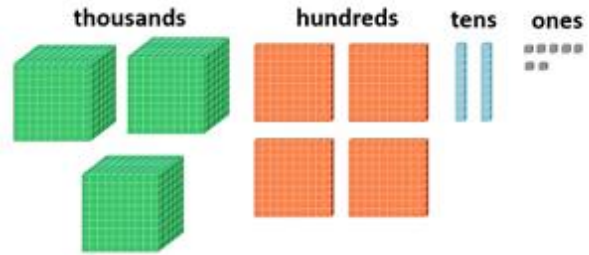
Welcome to Math Challenge #1.

In math, every digit in a number has a place value. **Place value** is the value of a digit in a number based on its place or position. These positions start from the ones place (units place). Its order starting from the far right to the left is ones/units (1s), tens (10s), hundreds (100s), thousands (1,000s), ten thousands (10,000s), and so on.

Place Value Chart (as shown on the right) is a particularly useful table format that helps us in finding the place value of each digit based on its position in a number. For example, the place value of 7 in 1,752 is 7 hundred or 700. However, the place value of 7 in 7,125 is 7 thousand or 7,000.



Base Ten Blocks are colored plastic or wooden blocks that are used to represent numbers.



The place value of digits in numbers can also be represented using base-ten blocks and can help us write numbers in their expanded form. For example, the picture on the right shows the number 3,427, which can be expanded to $3,000 + 400 + 20 + 7$.

Kinder & First Grade: solve at least 3 problems.
Second & Third Grade: solve at least 7 problems.
Fourth Grade and above: solve at least 12 problems.

Answer

1.	Rayna has the following cubes. How many cubes does she have in total? 	
2.	Maria has a number of cubes. She has more than 10 but less than 15 cubes. When she writes the number, the ones digit is 2 more than the tens digit. How many cubes does Maria have?	
3.	Tanisha is using base ten blocks to show the number 19. How many more small cubes does she need? 	

4. Tommy has 2 tens and 12 ones. What number is represented by 2 tens and 12 ones?																					
<p>5. Guess My Number!</p> <p>a. I am a 2-digit number. My tens digit is 2 more than my ones digit. I am between 60 and 80. I am not even.</p> <p>b. I am between 30 and 50. My ones digit is greater than my tens digit. The sum of my digits is 10. I am not 37.</p> <p>c. I am a 2-digit number. My tens digit is 3 more than my ones digit. The sum of my digits is 11.</p>	<p>a.</p> <p>b.</p> <p>c.</p>																				
<p>6. Arrange the given digits to make a number that meets the given criteria.</p> <p>a. An odd number between 320 and 580. Digits: 5, 3, 8.</p> <p>b. An even number between 280 and 382. Digits: 8, 2, 9.</p>	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="width: 20px; height: 20px;">H</td> <td style="width: 20px; height: 20px;">T</td> <td style="width: 20px; height: 20px;">O</td> </tr> <tr> <td style="width: 20px; height: 20px;">H</td> <td style="width: 20px; height: 20px;">T</td> <td style="width: 20px; height: 20px;">O</td> </tr> </table> <p>a.</p> <p>b.</p>	H	T	O	H	T	O														
H	T	O																			
H	T	O																			
<p>7. Arrange the given digits to make possible numbers that meet the given criteria. For each, list all possible numbers in order (least to greatest).</p> <p>a. Between 630 and 890. Digits: 2, 6, 8.</p> <p>b. Between 7500 and 9000. Digits: 2, 1, 7, 8.</p>	<p>a.</p> <p>b.</p>																				
<p>8. Guess My Number!</p> <p>a. I am a number less than 100. I am odd and my tens digit is also odd. I am a multiple of 7. When you count up by 10, starting at 0, you won't say my name. My ones digit is 2 more than my tens digit. What number am I?</p> <p>b. I am more than 650 and less than 750. I have the digit 8 in my ones place. The sum of my three digits is 18. What number am I?</p>	<p>a.</p> <p>b.</p>																				
<p>9. You have two sets of cards with the digits from 0 to 9.</p> <div style="text-align: center; margin: 10px 0;"> <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 5px;">0</td><td style="padding: 5px;">1</td><td style="padding: 5px;">2</td><td style="padding: 5px;">3</td><td style="padding: 5px;">4</td><td style="padding: 5px;">5</td><td style="padding: 5px;">6</td><td style="padding: 5px;">7</td><td style="padding: 5px;">8</td><td style="padding: 5px;">9</td> </tr> <tr> <td style="padding: 5px;">0</td><td style="padding: 5px;">1</td><td style="padding: 5px;">2</td><td style="padding: 5px;">3</td><td style="padding: 5px;">4</td><td style="padding: 5px;">5</td><td style="padding: 5px;">6</td><td style="padding: 5px;">7</td><td style="padding: 5px;">8</td><td style="padding: 5px;">9</td> </tr> </table> </div> <p>a. Arrange 5 cards to form the greatest odd number. The number is _____.</p> <p>b. Arrange 5 cards to form the greatest even number. The number is _____.</p> <p>c. Arrange 5 cards to form the number closest to 50000. The number is _____.</p>	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	<p>a.</p> <p>b.</p> <p>c.</p>
0	1	2	3	4	5	6	7	8	9												
0	1	2	3	4	5	6	7	8	9												

10. Guess My Number!

a. I am a 4-digit number. My hundreds digit is 4 less than my thousands digit. My units digit is 7 less than my tens digit. My tens digit is 3 more than my hundreds digit. My thousands digit is the largest single-digit number. What number am I?

b. I am a 4-digit number. I am a palindrome. My ten's digit is 3 more than my thousand's digit. The sum of my digits is 26.
*A **palindromic number** is a number (such as 16461) that remains the same when its digits are reversed.*

11. The code on Myra's suitcase is a 3-digit odd number. The three digits add up to 9. It is also a perfect square. When Myra reverses the digits, the number is still a 3-digit perfect square. What is the code to Myra's suitcase?
*A **perfect square** is a number that can be expressed as the product of an integer by itself or as the second exponent of an integer. For example, 16 is a perfect square because it is the product of integer 4 by itself, $4 \times 4 = 16$. However, 15 is not a perfect square number because it cannot be expressed as the product of two of the same integers.*

12. I am a 4-digit mystery number. Discover what number I am by using the following clues:

- I am even number, and all of my digits are different.
- The sum of all my digits is 10.
- Each of my digits is greater than zero.
- The sum of the digits in my thousands place and hundreds place equals the sum of the digits in my ones place and tens place.
- My largest digit is in the thousands place.

Decimal Place Value

- The place value after the decimal point represents the fractional part of the number. For example, the number 0.56 is made up of 5 tenths and 6 hundredths. This can also be written as $0.56 = 0.5 + 0.06$. In other words, it means, $0.56 = 5/10 + 6/100$.
- Just like each digit in a whole number, each digit behind the decimal point also has a name. You can see in the visual that the names go in the same order in the opposite direction from the whole number place value names.

Each time you move one column to the left, the place value is 10 times larger than the place value of the preceding column. Vice versa, each time you move one column to the right, the place value is $1/10$ of the place value of the preceding column.

Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones	.	tenths	hundredths	thousandths	ten thousandths	hundred thousandths
HTH	TTh	Th	H	T	0	.	t	h	th	tth	hth
100,000	10,000	1,000	100	10	1	.	$\frac{1}{10}$	$\frac{1}{100}$	$\frac{1}{1,000}$	$\frac{1}{10,000}$	$\frac{1}{100,000}$
Whole Number Part						↓ Decimal Point	Fractional Part				

13. I am a mystery decimal between 0 and 100. Discover what number I am by using the following clues:

- I am greater than 25.
- The sum of my digits is 13.
- The product of my digits is 48.
- My tenths digit is a quarter of my ones digit.
- My tens digit is odd, and my ones and tenths digits are even.

Tens	ones	Tenths

14.	<p>I am a mystery 3-digit decimal number. Discover what decimal number I am by using the following clues:</p> <ol style="list-style-type: none"> I am less than 5. My ones digit is half of the tenths digit. Two of my digits are even. The sum of my digits is 13. My hundredths digit is less than the other two digits. 	
15.	<p>I am a mystery 3-digit decimal number. Discover what number I am by using the following clues:</p> <ol style="list-style-type: none"> I am less than 70 and greater than 35. The sum of my digits is equal to ten. My ones digit times my tenths digit equals 6. The product of all three of my digits is 30. My ones digit is greater than my tenths digit. The sum of my tenths digit and my ones digit is equal to my tens digit. 	
16.	<p>I am a mystery 4-digit decimal number. Discover what number I am by using the following clues:</p> <ol style="list-style-type: none"> I am less than 100 and one of my digits is odd. My hundredths digit is the sum of my tens and ones digits. My tens digit is three times my ones digit. My tens digit is two times my tenths digit. 	
17.	<p>I am a 6-digit mystery whole number. Discover what number I am by using the following clues:</p> <ol style="list-style-type: none"> Only two of my digits are the same. The digit in the tens place is 9 more than the digit in the thousands place. I am an odd number. The digit in the ones place is 6 more than the digit in the hundred thousands place. Only one digit in the number is even. The digit in the ten thousands place is larger than the digit in the hundreds place. The sum of my digits is 33. 	
18.	<p>Larissa wrote a number between 1 and 100 on a piece of paper. Can you figure out the number based on these clues?</p> <ol style="list-style-type: none"> It's a two-digit number. The ones digit is greater than the tens digit. It's NOT a prime number. It's NOT a perfect square. It's NOT divisible by 3. It DOESN'T contain any 8's. The sum of the digits is NOT a prime number. The sum of the digits is NOT 8. 	

Solution is available on September 27, 2024
www.mathinaction.org