
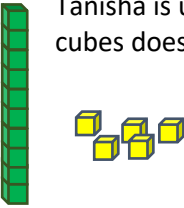


Math Challenge #1



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?  $5+1+1+4$ or $6+4+1 = 11$	<i>11</i>						
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? <i>We can list possible numbers: 11, 12, 13, 14. Since the ones digit is 2 more the tens digit, the only number that works is 13.</i>	<i>13</i>						
3.	Tanisha is using base ten blocks to show the number 19. How many more small cubes does she need?  <i>Tanisha needs 9 cubes, she has 15. She will need $19 - 15 = 4$ cubes</i>	<i>4 [cubes]</i>						
4.	Tommy has 2 tens and 12 ones. What number is represented by 2 tens and 12 ones? $2 \text{ tens} = 20$, and $20 + 12 = 32$	<i>32</i>						
5.	Guess My Number! 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. <i>64 and 75, but 64 is even. So, it is 75</i> 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. c. I am a 2-digit number. My tens digit is 3 more than my ones digit. The sum of my digits is 11. <i>$11 = 2 + 9, 3 + 8, 4 + 7, 5 + 6$. Only 74 works with all the clues.</i>	<i>a. 75</i> <i>b. 46</i> <i>c. 74</i>						
6.	a. <table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="padding: 2px 5px;">3^H</td><td style="padding: 2px 5px;">8^T</td><td style="padding: 2px 5px;">5^O</td></tr></table> b. <table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="padding: 2px 5px;">2^H</td><td style="padding: 2px 5px;">9^T</td><td style="padding: 2px 5px;">8^O</td></tr></table>	3 ^H	8 ^T	5 ^O	2 ^H	9 ^T	8 ^O	<i>a. 385</i> <i>b. 298</i>
3 ^H	8 ^T	5 ^O						
2 ^H	9 ^T	8 ^O						
7.	a. 682, 826, 862 b. 7812, 7821, 8127, 8172, 8217, 8271, 8712, 8721	<i>a. 682, 826, 862</i> <i>b. 7812, 7821, 8127, 8172, 8217, 8271, 8712, 8721</i>						
8.	Guess My Number! a. Multiple of 7: 7, 14, 21, 35, 42, 49, ... and 35 fulfill the condition (the ones digit is 2 more than the tens digit). b. Possibilities: 6_8 or 7_8. Since the sum of the 3 digits is 18, if we start with 6, then the middle number must be $18 - 8 - 6 = 4$, and the number will be 648 (less than 650). If we start with 7, the middle number must be $18 - 8 - 7 = 3$. 738 fits the condition.	<i>a. 35</i> <i>b. 738</i>						

9.	<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 _____. $50000-49988=12$, $50011-50000=11$. The closest number is 50011</p>	<p>a. 99887</p> <p>b. 99886</p> <p>c. 50011</p>
10	<p>a. We can start with 9___. The hundreds digit is $9 - 4 = 5$. The tens digit is $3+5 = 8$. The ones digit or units digit is $8-7 = 1$. The number is 9581.</p> <p>b. Possibilities: 1441, 2552, 3663, 4774, 5885 ... The number with digits added up to 26 is 5885.</p>	<p>a. 9581</p> <p>b. 5885</p>
11.	<p>We can list 3 digit perfect squares: 100, 121, 144, 169, 196, 225, 256, 289, 324, 361, 400, 441, 484, 529, 576, 625, 676, 729, 784, 841, 900, 961. Since we look for odd number, 3-digit, digits that add up to 9, we can exclude all even numbers, 169, and 961. We then look for a number that when it's reversed, it's still a perfect square. The code is 441.</p>	441
12.	<p>Since the sum of all four digits is 10, and the sum of the digits in the thousands place and the hundreds place is equal to the sum of the digits in the tens place and the ones place, then you know that each of these sums is equal to 5. Because all of the digits in the mystery number are different and none of them are equal to zero, the four digits must be some combination of 1, 2, 3, and 4.</p> <p>You also know that the ones digit is an even number, so the ones digit is either 2 or 4. Finally, the last clue says that the largest digit is in the thousands place, so the mystery number must be 4132.</p>	4132
13.	<p>We can start with clue #5 and #2 and list the possibilities: 3_2 or 1_6. With clue #1 or #5, we eliminate 1_6. With clue #3 we can conclude the mystery number is 38.2.</p>	38.2
14.	<p>Three-digit number less than 5, must be 4.__ With clue #2 we will get 4.8_. With clue #4, we conclude that the mystery number is 4.81.</p>	4.81
15.	<p>We can start with clue #3 and list the possibilities: _6.1, _1.6, _2.3, _3.2. With clue #4, we can conclude that the tens digit must be 5. So now we have: 56.1, 51.6, 52.3, and 53.2. The only one that fit the rest of the clues is 53.2.</p>	53.2
16.	<p>We can start with __.__. With clue #3, possibilities are 93.__, 62.__, and 31.__. And we can eliminate 93.__. With clue #2 & #4, we conclude that the mystery number is 62.38.</p>	62.38
17.	<p>We can start with clue #2: __0_9_. Then with clue #3 and #4, we have 1_0_97 or 3_0_99. With clue#5, we have 170997 or,350799, 370599. With clues #1 and #6, we eliminate 360699, 170997, and 350799. The mystery number is 370,599.</p>	370,599
18.	<p>One way to solve is using a 100 chart or writing down the numbers from 1 to 100 in a ten-by-ten grid and then go through the clues one by one. Cross off all the numbers that don't satisfy each clue. The only number remaining is 46.</p>	46