**Mental Math “Tricks” for the SAT**

* **Adding Big Numbers**

*Let’s say we’re trying to add 592 and 383. First, round the numbers up until you reach a multiple of ten. So 592 will become 600 and 383 will become 390. Then add the new numbers together to get 600+390=990. Then subtract what you added from each when you rounded up. We added 8 to 592 and 7 to 383 for a total of 15, so subtract 15 from 990 to get the final answer: 592+383=975*

 $573+288=$ $449+281=$ $319+607=$

* **Subtracting Any Number from 1000**

*In order to subtract a number from 1000 quickly, all you need to do is subtract each number except the last one from 9. The last number will be subtracted from 10. Let’s take a look at this trick in action:*

*If you’re presented with the problem 1000*$-$*348, you should approach it with the following steps:*

*Step 1: 9*$-$*3=6*

*Step 2: 9*$-$*4=5*

*Step 3: 10*$-$*8=2*

*Those three numbers form the answer. Therefore, 1000*$-$*348=652*

$1000-617=$ $1000-144=$ $1000-16=$

* **Multiplying a Two-Digit Number by 11**

*Let’s consider the example of 11x14. First, take the two-digit number and add an extra space between the digits. So 14 becomes 1\_\_4. Then add the numbers together and make the blank space be their sum. So the answer is 154.*

*If the numbers on either side add up to a number that’s two digits, insert the second digit into the blank space and then add 1 to the first digit. For example, 11x91 becomes 9\_\_1. Since 9+1=10 which is two digits, we’ll insert 0, giving us 901. Then we’ll add 1 to the first digit, giving us 1001.*

$17∙11=$ $26∙11=$ $83∙11=$

* **Squaring a Two-Digit Number Ending in 5**

*Let’s try to square 65. First, multiply the first digit by whatever 1+ that digit is. So 6 will be multiplied by 7, giving us 42. Then add the digits 25 to your answer. 65 squared is 4225.*

$25^{2}=$ $85^{2}=$ $45^{2}=$

* **Multiplying Numbers that End in 0**

*To multiply numbers that end in 0, simply multiply the digits that aren’t 0 and then add the total number of zeroes in the two numbers to your answer. For example, 150x30 can be done as 15x3=45. Add on two zeroes to get the answer of 4500.*

$120∙300=$ $90∙1000=$ $75∙200=$

* **Multiplying a Number by 5**
	+ *If multiplying an* ***even*** *number by 5, take the number you’re multiplying by 5 and divide it by 2. Then, add a 0 to the answer. For example, 5x8. 8*$÷$*2=4. Adding a 0 gives us 40. So 5x8=40*

$12∙5=$ $14∙5=$ $28∙5=$

* + *If multiplying an* ***odd*** *number by 5, it’s a little trickier. For example, 5x17. First subtract one from whatever number you’re multiplying by 5. In this case, 17 will become 16. Then divide the result by 2. In this case 16*$÷$*2=8. Add on a 5 as the last digit so 8 becomes 85. Therefore, 5x17=85.*

$5∙5=$ $13∙5=$ $27∙5=$

* **Knowing if a Number is Divisible by Another Number**
	+ *If the number ends in 0, it’s divisible by* ***10***
	+ *If the number’s digits add up to a number divisible by 9, the number is divisible by* ***9***
	+ *If the final three digits of the number are divisible by 8 or are 000, the number is divisible by* ***8***
	+ *If it’s an even number whose digits, when added together, are divisible by 3, the number is divisible by* ***6***
	+ *If it ends in 0 or 5, it’s divisible by* ***5***
	+ *If it ends in 00 or any two-digit number that’s divisible by 4, it’s divisible by* ***4***
	+ *If you add the digits together and the answer is divisible by 3, the number is divisible by* ***3***
	+ *If it ends in an even number, it’s divisible by* ***2***