# Mental Math Strategies

*Remember these strategies are here to help simplify Mental Math questions, however you still must have a solid knowledge of your times table chart*

1. **Multiplying by 10** ( Move the decimal one to the right or just add a zero)
      EX: 4535 x 10 = 45350
  **Multiplying by 100** (Move the decimal two to the right or add 2 zeros)
      EX: 4535 x 100 = 453500
  **Multiplying by 1000** (Move the decimal three to the right or add 3 zeros)
      EX: 4535 x 1000= 4535000

2. **Dividing by 10** (Move the decimal one to the left) EX: 4535/10 = 453.5

   **Dividing by 100** (Move the decimal 2 to the left) EX: 4535/100 = 45.35

   **Dividing by 1000** (Move the decimal 3 to the left) EX: 4535/1000= 4.535

3. **Multiplying by ½ or Multiplying by 0.5** (Cut the number in half)
      EX: 60 x ½ = 30    OR   60 x 0.5 = 30

4. **Dividing by ½ or Dividing by 0.5** (Double the number)
      EX: 60/ ½ = 120   OR   60/0.5 = 120

5. **Multiplying by 20** (Double the number and add a zero)
      EX: 34 x 20= 680 {Double 34 to get 68 : then add a zero to make 680}

6. **Dividing by 20** (Cut the number in half and move the decimal one to the left)    EX: 2500/20= 125 {Half of 2500 is 1250 :Move the decimal=125}

7. **Multiplying by 5** (Cut the number in half and move the decimal1 to the right)  EX: 120 x 5= 600 {Half of 120 is 60:Move Decimal 1 right = 600}
      EX: 25 x 5= 125 {Half of 25 is 12.5: Move Decimal 1 right = 125}

8. **Halving and Doubling** (Cut the even number in half and double the odd number until it works out easy) EX: (36 x 25) ⟩ (18 x 50) ⟩ (9 x 100)=900

9. **Adding and Subtracting Simple Fractions** (Find a common denominator and add the two top numbers while keeping the bottom number as is.)

EX: 1/6 + 5/12 = 7/12 {Common Denominator is 12; Double 1/6 to get 2/12, then add the top numbers 2 + 5 = 7, leave the bottom as 12. Answer is 7/12}

10. **Rounding off $ Values**  (Round to the nearest dollar and subtract the extra cents added on)
EX: $2.97 + $3.99 becomes $3.00 + $4.00= $7.00, however, now you must subtract 3 cents that made the $3.00 and 1 cent which made $4.00. Therefore, you must take 4 cents away from $7.00 leaving you with $6.96.

11. **Rounding off a Subtraction Question** (Round the subtracted value off to the nearest hundreds place, then add back to the total the extra amount taken away) EX: 500 - 194 …Take away 6 more to make the expression
500 - 200 = 300. Now you must add the extra 6 on you took away,
so 300 + 6= 306 which is the answer.

12. **Tack on the Trailing Zeros** ( In a question containing extra zeros, simply remove them from the question and add them back to the final answer)
EX: 3000 x 4000 = 12000000 {Focus on the front end by removing the zeros and just multiply 3 x 4 = 12, then add on the 6 zeros that were removed to give you an answer of 12000000.

13. **Grouping Multiplication Numbers** ( In a multiplication question involving more than two numbers, look to group numbers that will make the question easier and then multiply)
EX: 4 x 18 x 25 {Instead of going in order, multiply 4 x 25 to get 100 and then multiply the 100 by 18 to get 1800}

14. **Develop and apply divisibility rules for 2,3,4,5,6,8,9, and 10. See pg. 12**

15. **Addition, Subtraction and Multiplication of Decimals. See pgs. 96-107** (When adding and subtracting decimals line up the place values and add as normal. When multiplying, simply multiply as normal to find your answer then count the number of spaces the decimal is from the last digits and move the decimal in your answer this many spaces. When dividing you must estimate your answer first by rounding.)
EX: adding – 2.37 + 42.1 = ? We would line up the numbers using our knowledge of place value then add accordingly: 42.1
                           +   2.37
                              44.47
Mulitpling – 1.2 x 0.003 Simply think "12 x 3 = 36". Then count how many spaces the decimal is moved from the right. In the case of 1.2 it is one space over. In the case of

0.003 it is 3 spaces over. Therefore, in our answer we have to move the decimals a total of 4 places = 0.0036

Dividing – When dividing you must first estimate then do your normal calculations if given the question 50.1 ÷ 1.9 you would estimate the question to be 50 ÷ 2 = 25

16. **Front End Strategy.** When multiplying a single digit number by a two or three digit number start from the front and work backwards

EX: 6 x 26 = (6 x 20) + (6 x 6) = 120 + 36 = 156