

## Eighth Grade Mental Math, Estimation, and Fact to Know Strategies

**MM = Mental Math Strategy**

**ES = Estimation Strategy**

**FK = Fact to Know Strategy**

1. [MM] **Multiply or Divide by 10, 100, 1000, etc.** Tack on or remove zeros or move the decimal place [M, D]  
*Example:*  $470,000 \div 100 = 4,700$ .  $8.6 \times 1000 = 8600$ .
2. [MM] **Front End Addition Strategy.** Perform the operation from left to right. [A]  
*Examples:*  $378 + 120 = 498$ .  $369 \div 9 = 41$ .  $48,320 \div 8 = 6040$ .
3. [MM] **Front End Subtraction Strategy.** Perform the operation from left to right. [S]  
*Examples:*  $378 - 120 = 258$ .  $300 - 40 = 260$ .
4. [MM] **Front End Multiplication Strategy.** Perform the operation from left to right. [M]  
*Examples:*  $3,010 \times 2 = 6,020$ .
5. [MM] **Front End Division Strategy.** Perform the operation from left to right. [D]  
*Examples:*  $9663 \div 3 = 3221$ .  $369 \div 9 = 41$ .
6. [FK] **Double any number up to 20.**  
*Examples:*  $18 \times 2 = 36$ .  $2 \times 17 = 34$ .
7. [MM] **Compatible Numbers for Addition.** [A]  
*Examples:*  $25 + 8 + 6 + 12 + 25 = (25 + 25) + (8 + 12) + 6 = 50 + 20 + 6 = 76$ .
8. [MM] **Compatible Numbers for Subtraction.** [S]  
*Examples:*  $32 + 16 - 12 - 6 = (32 - 12) + (16 - 6) = 20 + 10 = 30$ .
9. [MM] **Compatible Numbers for Multiplication.** [M]  
*Examples:*  $2 \times 8 \times 5 \times 7 = (2 \times 5) \times (8 \times 7) = 10 \times 56 = 560$ .
10. [MM] **Break Apart.** [A,S,M] (For division, use "Front End.")  
*Examples:*  $7 \times 12 = 7 \times 10 + 7 \times 2 = 70 + 14 = 84$ .  $3 \times 42 = 3 \times 40 + 3 \times 2 = 120 + 6 = 126$ .  $215 - 83 = (210 - 80) + (5 - 3) = 130 + 2 = 132$ .
11. [MM] **To Divide by 5 Double it and Divide by 10.** [D]  
*Example:*  $28 \div 5 = 56 \div 10 = 5.6$ .
12. [MM] **Compensation.** [A,M]  
*Examples:*  $18 \times 5 = 20 \times 5 - \text{"compensation"} = 20 \times 5 - 2 \times 5 = 100 - 10 = 90$ .  $65 + 38 = 65 + 40 - \text{"compensation"} = 105 - 2 = 103$ .
13. [MM] **Solve Proportions with Doubling or Halving** [M,D]  
*Example:* Solve  $\frac{x}{7} = \frac{20}{14}$ ,  $x = 10$ .
14. [MM] **Drop the Zeros, Add, Subtract, or Multiply, Then Put Them Back On.** [A,S,M]  
*Example:*  $300 \times 60 = 18000$ .  $5,200 - 300 = 4,900$ .
15. [FK] **Halve the even numbers from 30 to 40.**  
*Examples:*  $38 \div 2 = 19$ . Half of 34 is 17.