

Algebra I Mental Math, Estimation, and Fact to Know Strategies Strategies #16-30

MM = Mental Math Strategy

ES = Estimation Strategy

FK = Fact to Know Strategy

16. [MM] **Multiply by a Unit Fraction by Dividing.** [M]

Example: $\left(\frac{1}{5}\right) 35 = 35 \div 5 = 7.$

17. [MM] **Multiply a Fraction Times a Number by Dividing then Multiplying.** [M]

Example: $\left(\frac{3}{5}\right) 35 = 35 \div 5 \times 3 = 7 \times 3 = 21.$

18. [MM] **Multiplying Decimals by dropping the decimal and putting it back in later.** [M]

Examples: $.80 \times .3 = 24.$ $.5 \times .3 = .15.$

19. [MM] **Dividing by Decimals by dropping the decimal and putting it back in later.** [D]

Example: $.36 \div .3 = 120.$

20. [MM] **Multiplying or Dividing by Decimals by dropping the decimal and putting it back in later.** [M, D]

Examples: $.800 \times .3 = 240.$ $12 \div .3 = 40.$

21. [FK] **Part-Part-Whole on 90 (complementary angle).** [A,S]

Example: $90 - 21 = 69.$

22. [MM] **Solve Proportions using Factor of Change** [M,D]

Example: Solve $\frac{2}{9} = \frac{a}{36}$, $a = 8.$

23. [FK] **Know Basic Percent-Fraction-Decimal Equivalences-multiples of 25%.** (0%, 25%, 50%, 75%, 100%)

Example: $75\% = \frac{3}{4} = .75.$

24. [FK] **Know Basic Percent-Fraction-Decimal Equivalences-multiples of 10%.** (10%, 20%, 30%, ... , 90%)

Example: $60\% = .6 = \frac{6}{10} = \frac{3}{5}.$

25. [MM] **Adding on to Find a Difference (the Change).** [S]

Example: Cost is \$7.55. \$10 paid. Change is \$2.45.

26. [MM] **To Multiply by 5 Multiply by 10 and divide by 2.** [M]

Example: $28 \times 5 = 280 \div 2 = 140.$

27. [MM] **Find 25, 50, and 75% of a Number.** [M]

Example: 50% of 80 is 40. 25% of 80 is 20. 75% of 80 is 60.

28. [MM] **Solve Proportions using the Unit Rate Method** [M,D]

Example: Solve $\frac{15}{3} = \frac{a}{4}$, $15 \div 3 = 5$, $5 \times 4 = 20 = a.$

29. [MM] **Percent of a Number with One Non-zero Digit.** [M]

Example: 34% of 2,000 = 680.

30. [MM] **Use Order of Operations to Zoom and Focus.** [A, S, M, D]

Examples: Find $f(4)$, for $f(x) = 5(x - 7)^2 - 1$. $4 - 7 = -3 \rightarrow (-3)^2 = 9 \rightarrow 9 \cdot 5 = 45 \rightarrow 45 - 1 = 44$. Find $g(0)$, for $g(x) = 7x^2 - 9x + 2$. $g(0) = 2$.