

## Approximating Raising a Number to a Higher Power:

A. Approximating higher power uses [Squaring Numbers](#) (many kinds), [Multiplying 2 Numbers](#), and [Multiplying 3 Numbers](#).

B. This method is easy if you understand all 3 rules listed above.

1. If the power is 4, then square the number and use the multiplying 2 numbers strategy.
2. If the power is 3, then expand the 3 numbers and use the multiplying 3 numbers strategy.

C. Examples:

Ex [1]  $35^4 =$  \_\_\_\_\_.

- a. Since 4 is even, we square 35.  $35^4 = 1225^2$ .
- b. Using the multiplying 2 numbers strategy, we can change this to be  $1200 \times 1250 = 1500000$ .
- c. The answer can be between 1425594 and 1575656.

Ex [2]  $48^3 =$  \_\_\_\_\_.

- a. Think of this as  $48 \times 48 \times 48$ .
- b. Using the multiplying 3 numbers strategy, we can change this to be  $50 \times 50 \times 43 = 2500 \times 43 = 107500$ .
- c. The answer can be between 105063 and 116121.