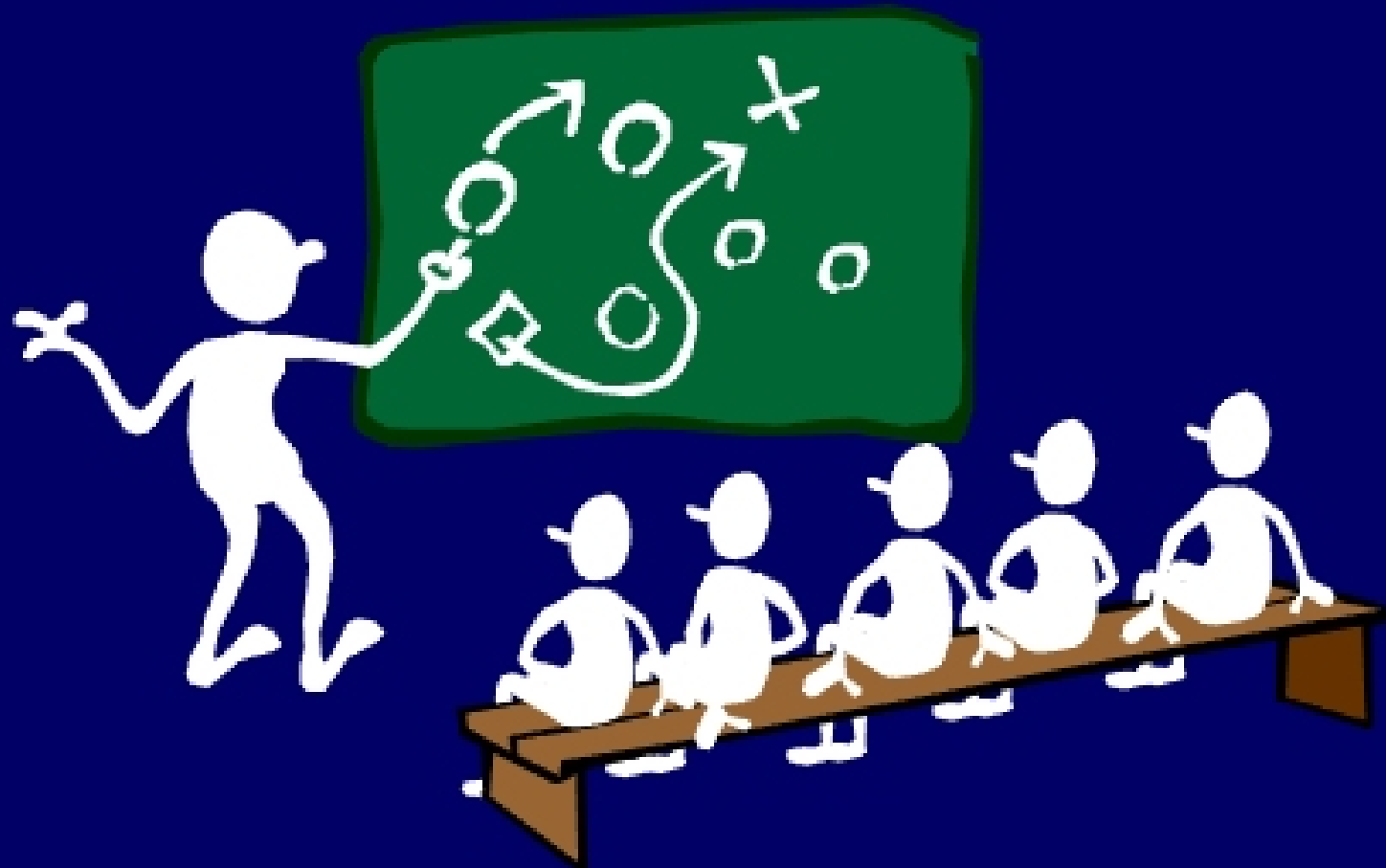


# Grade School Revisited: How To Multiply Two Numbers



# Time complexity of grade school addition

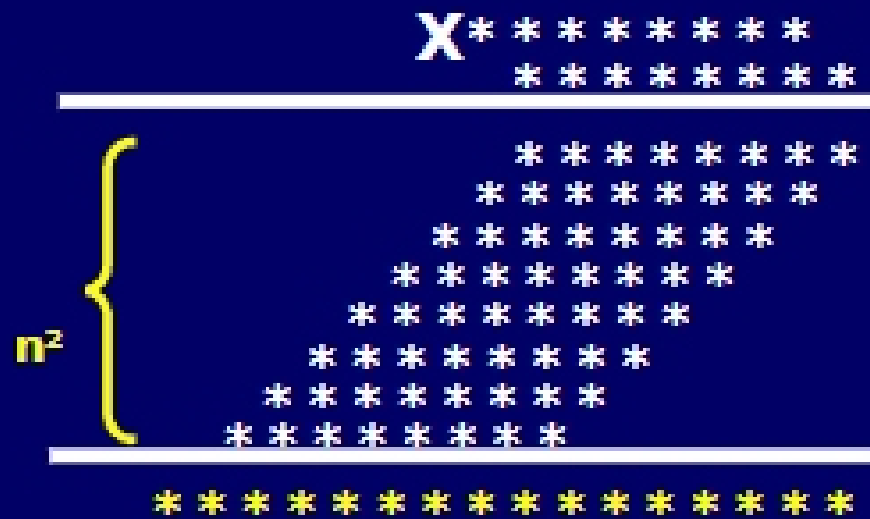


**$T(n)$**  = amount of time grade school addition uses to add two  **$n$** -bit numbers

$T(n)$  is linear:

$$T(n) = \Theta(n)$$

# Time complexity of grade school multiplication



**$T(n)$**  = The amount of time grade school multiplication uses to multiply two  **$n$** -bit numbers

$T(n)$  is quadratic:

$$T(n) = \Theta(n^2)$$