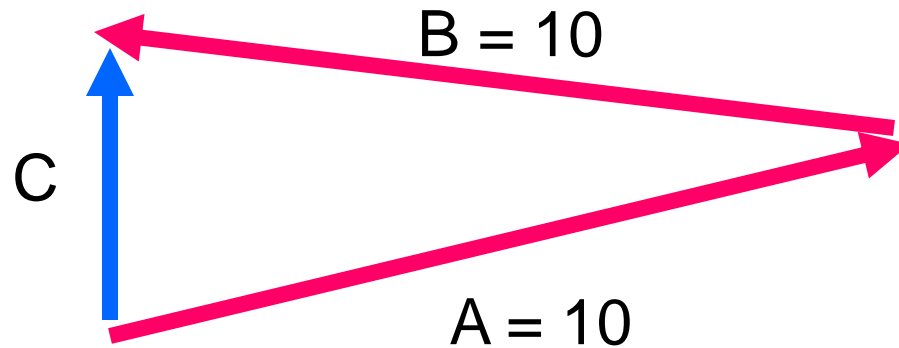


- Adding vectors is not the same as adding numbers

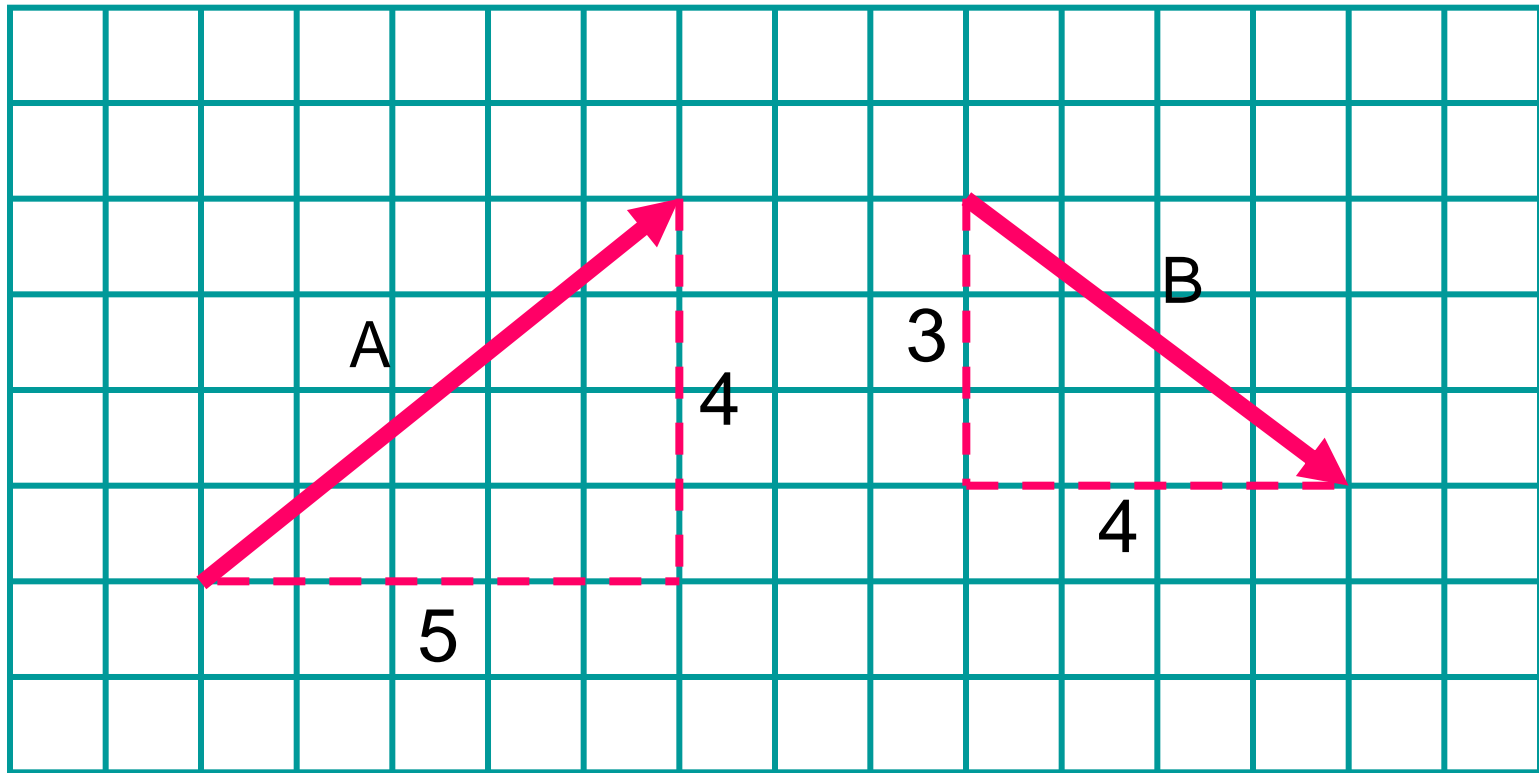


- Obviously  $C \neq 10 + 10$
- How do we add vectors numerically?

$\hat{i}, \hat{j}$  Notation

$+ \hat{i}$  right ( $\rightarrow$ )     $- \hat{i}$  left ( $\leftarrow$ )

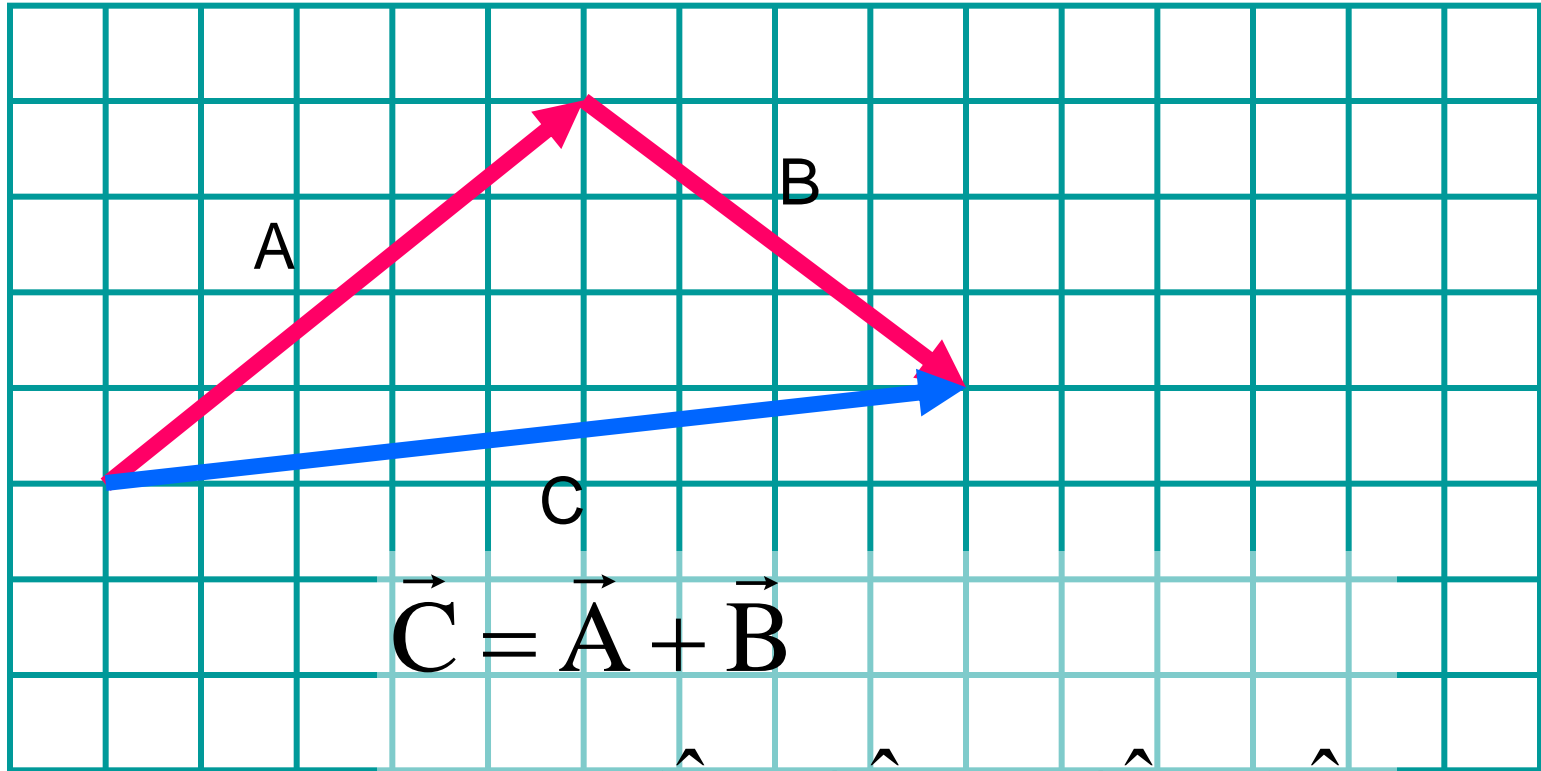
$+ \hat{j}$  up ( $\uparrow$ )     $- \hat{j}$  down ( $\downarrow$ )



$$\vec{A} = 5\hat{i} + 4\hat{j}$$

$$\vec{B} = 4\hat{i} - 3\hat{j}$$

# Numerical Addition of Vectors

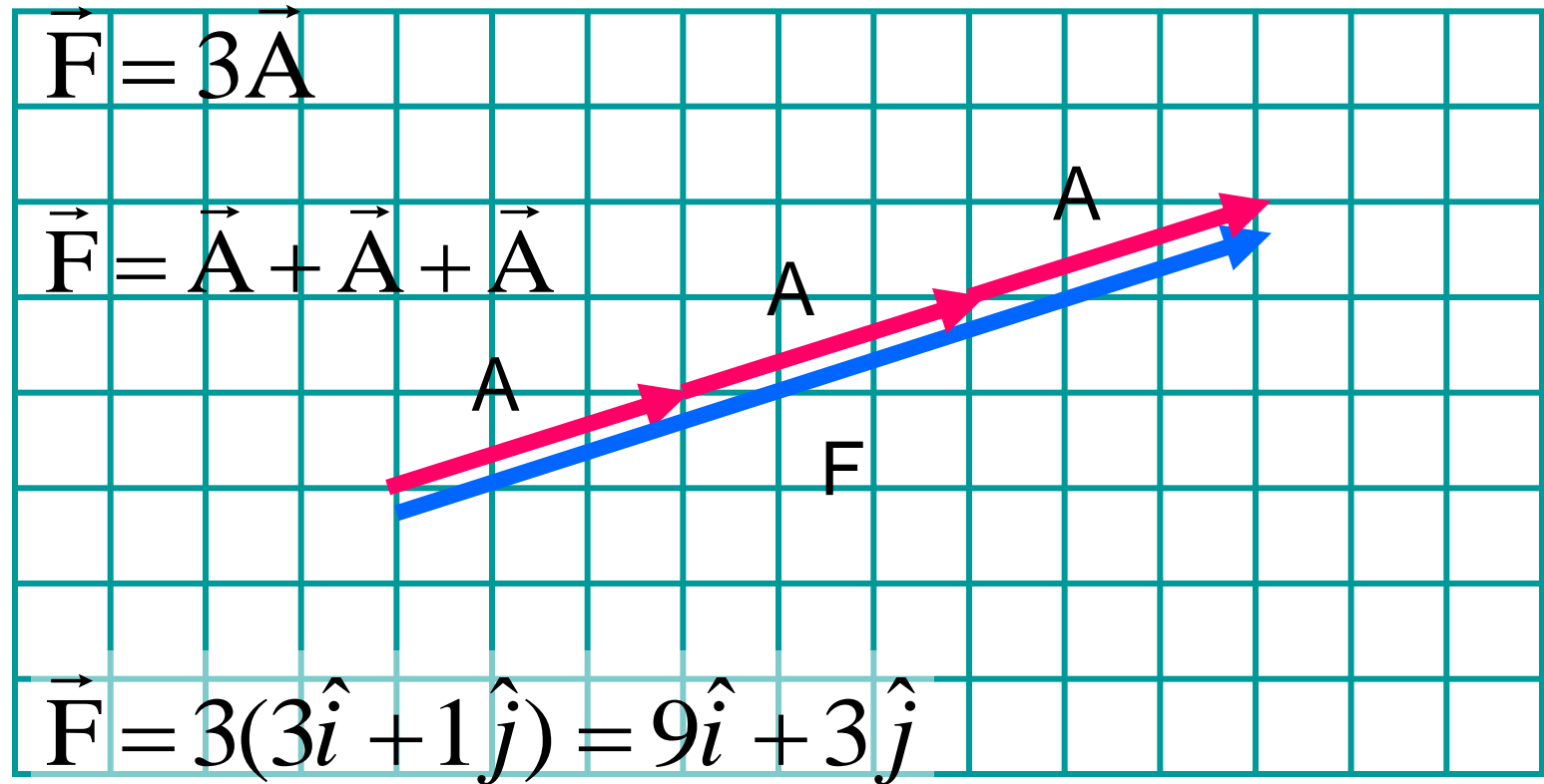


$$\vec{C} = \vec{A} + \vec{B}$$

$$= (5\hat{i} + 4\hat{j}) + (4\hat{i} - 3\hat{j})$$

$$= 9\hat{i} + 1\hat{j}$$

# Multiplication by a scalar



# Numerical Subtraction of Vectors

