

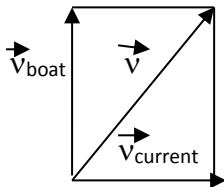
## Answer on question #75693, Physics / Molecular Physics | Thermodynamics

A boat travels at the rate 25 in still water. If the rate of the current is 18 , what is the rate of the boat

- upstream
- downstream
- across the river?

### Solution

- Rate of the boat upstream:  $v = v_{\text{boat}} - v_{\text{current}} = 25 - 18 = 7$ .
- Rate of the boat downstream:  $v = v_{\text{boat}} + v_{text{current}} = 25 + 18 = 43$ .
- Rate of the boat across the river:



By the Pythagorean theorem  $v^2 = v_{\text{boat}}^2 + v_{\text{current}}^2$

$$v = \sqrt{v_{\text{boat}}^2 + v_{\text{current}}^2}$$

$$v = \sqrt{25^2 + 18^2} \cong 30.8$$

**Answer:** a. 7

b. 43

c. 30.8