

54. We choose upstream as the $+\hat{i}$ direction, and use Eq. 4-42.

(a) The subscript b is for the boat, w is for the water, and g is for the ground.

$$\vec{v}_{bg} = \vec{v}_{bw} + \vec{v}_{wg} = (14 \text{ km/h})\hat{i} + (-9 \text{ km/h})\hat{i} = (5 \text{ km/h})\hat{i}$$

(b) And we use the subscript c for the child.

$$\vec{v}_{cg} = \vec{v}_{cb} + \vec{v}_{bg} = (-6 \text{ km/h})\hat{i} + (5 \text{ km/h})\hat{i} = (-1 \text{ km/h})\hat{i}$$