

### 3.4 Boat x River Quizlette (turn this in)

Name \_\_\_\_\_

**1. A boat with a velocity in still water of 3.50 m/s points straight across a 520. m wide river with a current of 0.820 m/s**

- What time will it take to cross the river?
- How far downstream will the boat be carried in crossing the river?
- What is the velocity (in angle magnitude notation) of the boat as it moves across the river? Draw a picture of the velocity and label and calculate the angle it makes downstream, and the magnitude of the velocity.

a) 148.6 s, b) 121.8 m, c) 3.59 m/s at 13.2° downstream of straight across

Ac	Ds
X	X
V	V
t	t

**2. A boat pointed straight across a 257 m wide river crosses it in 54.0 s. The river has a current of 0.460 m/s.**

- What is the speed of the boat with respect to the water?
- How far downstream will the boat be carried in crossing the river?
- What is the velocity (in angle magnitude notation) of the boat as it moves across the river? Draw a picture of the velocity and label and calculate the angle it makes downstream, and the magnitude of the velocity.

a) 4.76 m/s, b) 24.84 m, c) 4.78 m/s at 5.52° downstream of straight across

**3. A boat points straight across a river that is 142 m wide, with a current of 1.20 m/s. It lands 45.0 m downstream of where it started.**

- What time will it take to cross the river?
- What is the speed of the boat with respect to the water?
- What is the velocity (in angle magnitude notation) of the boat as it moves across the river? Draw a picture of the velocity and label and calculate the angle it makes downstream, and the magnitude of the velocity.

a) 37.5 s, b) 3.787 m/s, c) 3.97 m/s at  $17.6^\circ$  downstream of straight across

**4. A boat pointed straight across a 116 m wide river crosses in 67.0 seconds. In crossing it is carried 82.0 m downstream.**

- What is the speed of the boat with respect to the water?
- What is the speed of the current?
- What is the velocity (in angle magnitude notation) of the boat as it moves across the river? Draw a picture of the velocity and label and calculate the angle it makes downstream, and the magnitude of the velocity.

a) 1.73 m/s, b) 1.22, c) 2.12 m/s at  $35.3^\circ$  downstream of straight across