**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**

a. What time will it take to cross the river?

b. How far downstream will the boat be carried in crossing the river?

c. 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 13.2o downstream of straight across

|  |  |
| --- | --- |
| Ac | Ds |
| x  v  t | x  v  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.**

a. What is the speed of the boat with respect to the water?

b. How far downstream will the boat be carried in crossing the river?

c. 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 5.52o 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.**

a. What time will it take to cross the river?

b. What is the speed of the boat with respect to the water?

c. 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 17.6o 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.**

a. What is the speed of the boat with respect to the water?

b. What is the speed of the current?

c. 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 35.3o downstream of straight across