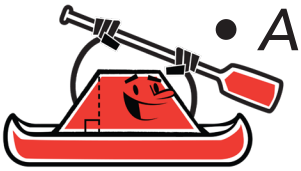

• *Ace Your Dreams* Worksheet (Algebra and Up) •

SOLUTIONS

DATE _____

NAME _____

Problem:

It takes a canoe paddler 1 minute and 20 seconds to paddle a 300 meter course in the direction of the current, when paddling at a constant speed. If the current moves at a rate of 1.5 meters per second, then how fast can the paddler paddle in still water?

2.25 meters per second

How did you get your answer? Use words.

The speed at which the paddler paddles the course is his own paddling speed, plus the rate of the current. If he paddles 300 meters in 80 seconds, then he's moving 3.75 meters per second. So, 3.75 mps is equal to his own paddling plus the 1.5 mps the current is pushing him: 3.75 = P + 1.5. P, the rate at which the paddler paddles, is therefore 2.25 meters per second.

Larry says that if a feather starts floating down the course just as the paddler begins paddling, it'll reach the end 2 minutes after the canoe crosses the finish line. Is he right or wrong?

Larry is right. The feather travels with the current, 1.5 meters per second. That means it takes the feather 300 ÷ 1.5 = 200 seconds to reach the end. That's 3 minutes and 20 seconds, 2 minutes after the paddler.

Find all correct answers based on the original problem.

a) After 30 seconds, the paddler has paddled $37\frac{1}{2}$% of the course.

b) After 45 seconds, the paddler has paddled $56\frac{1}{4}$% of the course.

c) After 1 minute, the paddler has paddled $66\frac{1}{3}$% of the course.

a) and b) are correct.

If the paddler paddles the same course in the opposite direction, against the current, how long will it take him?

Instead of increasing the paddler's speed, the current will decrease the paddler's speed if he travels upstream. He paddles at a rate of 2.25 meters per second, minus the rate of the current: 2.25 – 1.5 = 0.75 meters per second. He has to paddle for 300 meters ÷ 0.75 = 400 seconds, or 6 minutes and 40 seconds.