

QUESTION:

Prella and Bodo travel at a rate of 6.5 kph for 0.25 hour until they reach the river's edge. The river is 100 meters wide. They hop on their raft and cross the river at a speed of 2 kph. Once on the other side of the river, they then spend 20 minutes passing through the sacred burial grounds at a rate of 2.5 kph and finally arrive at the castle. What was their average speed, in kilometers per hour, for their journey back to the castle? Express your answer as a decimal to the nearest tenth.

SOLUTION:

For leg 1: Traveling at a rate of 6.5 kph for 0.25 hour means they would have traveled $6.5 \times 0.25 = 1.625$ km to reach the river.

For leg 2: Since a meter is $1/1000$ km, traveling $100 \times 1/1000 = 0.1$ km at a rate of 2 kph means they would have taken $2 \times 0.1 = 0.05$ hour to cross the river.

For leg 3: Since a minute is $1/60$ hour, traveling at a rate of 2.5 kph for $20 \times 1/60 = 1/3$ hour means they would have traveled $2.5 \times 1/3 = 5/6$ km to reach the castle.

So, Prella and Bodo traveled a total of $1.625 + 0.1 + 5/6 = 307/120$ km in $0.25 + 0.05 + 1/3 = 19/30$ hour.

Therefore, Prella and Bodo traveled at an average rate of $307/120 \div 19/30 = 307/120 \times 30/19 \approx \mathbf{4.0}$ kph.