Fast Ferries

Two ferries start at the same time on opposite sides of a river. Then, they travel across the water on routes perpendicular to the shores. Each ferry travel at a constant speed, one faster than the other. They pass at a point 720 metres from the nearest shore. Both ferries remain docked for 10 minutes before starting their return trip. On the way back, they meet 400 metres from the other shore. How wide is the river?

From Okanagan college problem of the month

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SOLUTION

1760 metres

When the ferries meet for the first time, the combined distance travelled by the boats is equal to the width of the river. When they reach the opposite shore, the combined distance is twice the width of the river. When they meet the second time, the total distance is three times the river's width. Since the boats move at a constant speed for the same length of time, then each boat has gone three times as far as when they first met and had travelled a combined distance of one width of the river. Since one ferry had travelled 720 metres when the first meeting occurred, its total distance at the time of the second meeting must be 3x 720 mtres or 2160 metres. The second time, the distance is 400 metres more than the river's width. Hence wesubtract 400 from 2160 to obtain 1760 metres as the width of the river.

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