

Ship and Seaplane Puzzle

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This is a puzzle from Boris Kordemsky's 1972 *Moscow Puzzles* ([1]).



Wikipedia

A diesel ship leaves on a long voyage. When it is 180 miles from shore, a seaplane, whose speed is ten times that of the ship, is sent to deliver mail. How far from shore does the seaplane catch up with the ship?

My Solution

Let D be the distance traveled by the ship after the seaplane has taken off and T the time it takes the seaplane to reach the ship. Let v be the speed of the ship, and so $10v$ is the speed of the seaplane (Figure 1).

Then

$$vT = D \text{ and } 10vT = 180 + D.$$

So

$$10D = 180 + D \Rightarrow D = 20 \text{ miles.}$$

Therefore the distance traveled by the seaplane is

$$180 + 20 = 200 \text{ miles}$$

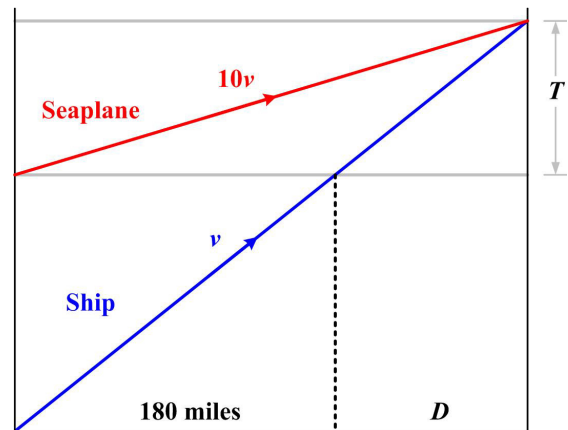


Figure 1

Kordemsky's Solution

Kordemsky assumes you can solve this directly without algebra. It seems to me it would take some quick mental trial and error to come up with the actual value of the additional distance (D) that is a tenth of the total.

Perhaps you can spot without any algebra or extended calculation that the seaplane goes 200 miles while the ship goes another 20.

References

- [1] Kordemsky, Boris A., *The Moscow Puzzles, 359 Mathematical Recreations*, (1972) edited with introduction by Martin Gardner, trans. Albert Perry, Dover Publications, Garden City, New York, 1992. Problem 230.

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