

The Train Buffs

9 March 2019

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Here is another train puzzle, this time from J. A. H. Hunter's *Entertaining Mathematical Teasers* ([1] p.46):

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Mike had made the [train] trip many times. "That's the morning express from Tulla we're passing," he said. "It left Tulla one hour after we pulled out from Brent, but we're just 25% faster."

"That's right, and we're also passing Cove, two-thirds the distance between Brent and Tulla," Martin agreed. "So we're both right on schedule."

Obviously a couple of train buffs! Assuming constant speeds and no stops, how long would it be before they reached Tulla?

Solution

We have the Tulla express train (T) traveling at a speed v a distance $1/3$ in t hours. Thus

$$vt = 1/3.$$

Then we have the Brent train (B) traveling at a speed $(5/4)v$ a distance $2/3$ in $1 + t$ hours to meet the Tulla train at Cove. Thus

$$(5/4)v(1 + t) = 2/3$$

Substituting for t in the two equations yields

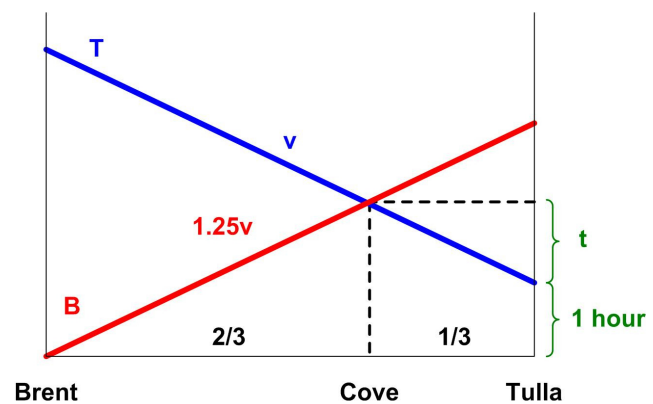
$$(5/4)v(1 + 1/3v) = 2/3$$

$$3v + 1 = 8/5 \text{ or } v = 1/5$$

Therefore the time t' for the Brent train to go from Cove to Tulla is $(5/4)v t' = 1/3$ or $t' = 4/3$ hour or **1 hr 20 min**.

References

- [1] Hunter, J. A. H. (James Alston Hope), *Entertaining Mathematical Teasers And How To Solve Them*, Dover Publications, 1983



Problem Statement