

NEXT-TIME QUESTION



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Draw it!



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Answer:

The windy trip will take more time, as any numerical example will show. Suppose the cities are 600 km apart, and the airspeed of the plane is 300 km/h (relative to still air). Then time each way with no wind is 2 hours. Roundtrip time is 4 hours. Consider a 100 km/h tailwind going, so groundspeed is $(300 + 100)$ km/h. Then the time is $600 \text{ km} / 400 \text{ km/h}$, or 1 hour and 30 minutes.

Returning groundspeed is $(300 - 100)$ km/h, and the time is $600 \text{ km} / 200 \text{ km/h}$, or 3 hours. The windy round trip takes 4.5 hours longer than with no wind at all.

Since this is one of those "greater than, equal to, or less than" questions, use exaggerated values — like wind speed equalling airspeed. Then it's easy to see the plane cannot make the return trip with such a headwind. As windspeed approaches airspeed, roundtrip time approaches infinity. For any windspeed, roundtrip time is always greater than with no wind.



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