Synchronizing Clocks

Recording when and where an event occurs is very important in relativity. Every observer has their own set of clocks to record the time and location of various events, but these clocks need to be synchronized.

You have two clocks separated by a distance of 300 m. Come up with a way to synchronize them. Think about the implications of relativity in coming up with your method.

Justin is traveling past you at 0.75 c in his rocket which, according to him, measures 300 m. He also has two clocks, one at each end of his rocket. Can he use the method you designed to synchronize his clocks?

You synchronize your clocks so they both read 0 at the same instant (in your reference frame). Justin synchronizes his clocks so they both read 0 at the same instant (in his reference frame). You and Justin also agree that at the instant he passes you the clock next to him (in the rocket) reads 0 and the clock next to you (in your reference frame) reads 0.

When Justin passes your other clock does his clock agree with your other clock?

When Justin's second clock passes you does that clock agree with your clock?

Why or why not? What are the issues we have to consider when answering these questions?