

0 Question: A train is coasting around a large circular track. It is then switched to a smaller circular track. How does its speed change? Assume no friction.

A1: It goes slower

A2: It goes faster

Arguments for A1

1 Question: Is angular momentum conserved?

A1: Yes

A2: No

2 Question: If angular momentum is conserved, does it go around the smaller circle in the same amount of time it goes around the larger circle?

A1: Yes

A2: Yes

3 Question: If it takes the same amount of time, does it mean it have to go slower?

A1: Yes

A2: Yes

Arguments for A2

5 Question: If there is no horizontal acceleration, then is velocity constant?

A1: Yes

A2: Yes

4 Question: If velocity is constant, is speed constant?

A1: Yes

A2: Yes

6 Question: If there is no horizontal force acting on the train, then there is no horizontal acceleration?

A1: Yes

A2: Yes

7 Question: Is there any horizontal force acting on the train?

A1: Yes

A2: No