Beth Mark Switch

Judge View | Tree View | List of Debates | Hide notes | Side: None | Phase: **Make Argument** Remaining: **10:00**

At root

0 Q (H): When the train is switched to the smaller track, how will its speed change? (assume no friction, and ignore small effects or effects that aren't related to angular momentum or kinetic energy) (A) Increase, (B) Decrease, (C) unchanged

H: To a good approximation, the speed stays unchanged; in reality, it will probably slow down slightly

D:

Notes:

Q: To a good approximation, does the translational kinetic energy of the train stay unchanged?

H: Yes D: Yes

1 Payment: H D None Recurse

Notes:

Q: Does train/track system contains a component that exerts external work?

H: No D: No

4 Payment: H D None Recurse

Notes:

Q: Is the speed of the train proportional to its translation kinetic energy?

H: Yes D: Yes

2 Payment: H D None Recurse

Notes:

Q: If there is no external work, then will the energy of the system remain constant?

H: Yes D: Yes

5 Payment: H D None Recurse

Notes:

Q: In reality, does the translational kinetic energy of the train decrease slightly?

H: Yes D: No

3 Payment: H D None Recurse

Notes:

Q: Is rotational kinetic energy of an object is equal to the moment of inertia times the square of the angular velocity?

H: Yes D: Yes

6 Payment: H D None Recurse

Notes:

Q: Is the moment of intertia of an object of mass M rotating around a point at distance L equal to ML^2?

H Yes, for a point mass (for a large object you have to calculate this for all the different parts of the object)

D Yes

7 Payment: H D None Recurse

Notes

Q When the train switches tracks, does the moment of inertia decrease, resulting in an increase in angular velocity?

H Yes

D Yes

8 Payment: H D None Recurse

Notes

Q Is this increase in angular velocity balanced out by the decrease in radius such that the total velocity remains the same?

H Not necessarily

D Yes

9 Payment: H D None Recurse

Notes