

Fan Cart

Key words: Force vectors, acceleration, fan



Equipment List:

1. Cart track
2. Battery-powered fan cart

How to assemble and operate:

- Place the cart on the track with the switch facing away from the stop on the end of the track
- Rotate the fan so the arrow points to 0 degrees
- Turn the fan on and let go
- Retrieve the cart to the start of the track, change fan angle, let go again, observe different rate of acceleration
- Repeat for various angles (we recommend 30, 60 and 90 degrees)

Description/Theory:

Although the force generated by the fan is constant, the track and wheels restrict the movement, and thus the component of force in the direction of movement is proportional to the sine of the angle.

Comments/Notes:

Fan is battery-powered, batteries may run out, test before use in lecture. The fan has both high and low speeds, could be interesting to show the different rates of acceleration. Keep fingers clear of the fan.