----- Problem 1 -----  A 7 kg block is moving across a horizontal frictionless floor at $v_x = 2$ m/s when an applied force on the block is initiated and then held constant. This applied force is magnitude 25 N and it is directed at 34° above the +x axis.

After 3 m of sliding,

- what was the work done by the applied force?
- what was the work done by gravity?
- what was the work done by the normal force?
- what was the block’s final speed?

----- Problem 2 ----- A 0.48 kg cart rolls down a ramp inclined at 19°. A constant applied force directed up the ramp slows the cart down and brings it to rest over a distance of 0.46 m (along the ramp). At the instant the applied force is initiated, the cart has a speed of 2.2 m/s.

Over the duration of the catch,

- what was the net work done on the cart?
- what was the work done by gravity?
- what was the work done by the normal force?
- what was the magnitude of the applied force?

Answers
1. $W_{Fapp} = 62.178$ J, $W_{mg} = 0$, $W_{FN} = 0$, $v_f = 4.665$ m/s
2. $W_{net} = -1.1616$ J, $W_{mg} = +0.7045$ J, $W_{FN} = 0$, $F_{app} = 4.06$ N