## CONCEPT: ENERGY CONSERVATION WITH PENDULUMS

● In pendulum problems, objects travel in a <u>curved path</u>, so we use Energy to solve.

　- *Usually*, the distance between the pendulum and the floor is unknown, so we set **y = 0** at the _____.

<u>EXAMPLE</u>**:** A pendulum is made of a block of unknown mass and a 2-m long massless rope. You pull the block up until it makes a 37°angle with the <u>vertical</u>, then release. Calculate the pendulum's maximum speed.
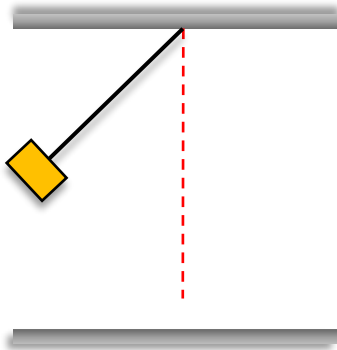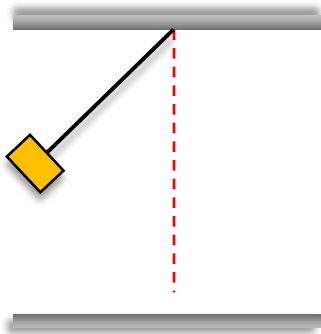
CONSERVATION OF ENERGY
1) Draw Diagram
2) Write Cons. of Energy EQ
3) Eliminate & expand terms
4) Solve

● In pendulum problems where no heights are given, you'll need the "**Pendulum Equation**"**:**   _____ = _____
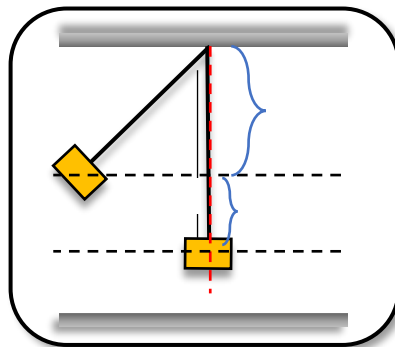
PROBLEM: A pendulum built from a 2-kg block and a 3-m long massless rope is attached to the ceiling. You pull the block up until is 1m above its lowest point, then release. Calculate the **a)** pendulum's max. speed; **b)** rope's tension at the bottom.

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