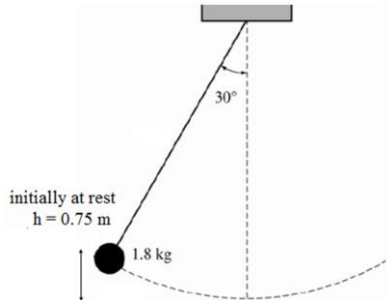


Conservation of Energy Calculations
Honors Physics

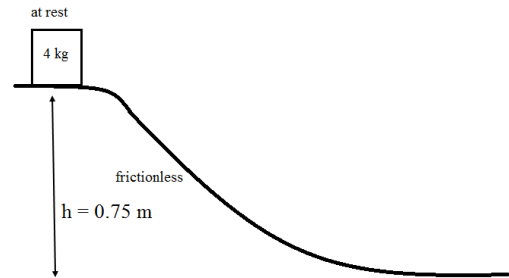
Name _____

1. A 1.8 kg pendulum is dropped from a height of 0.75 m above the bottom of its swing. What's the velocity of the pendulum at the bottom of its swing?



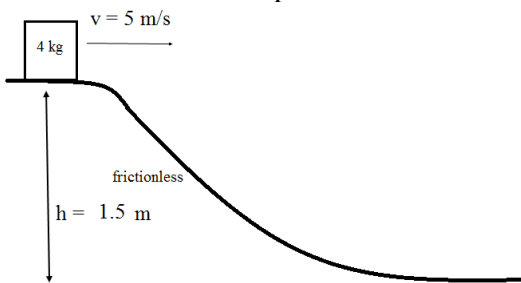
At point of release	At bottom of swing
PE = _____	PE = _____
KE = _____	KE = _____
Total= _____	Total= _____
	Velocity = _____

2. A 4.0 kg block is released from rest at the top of a frictionless slope. The height of the slope is 0.75 m. What is the velocity of the block at the bottom of the slope?



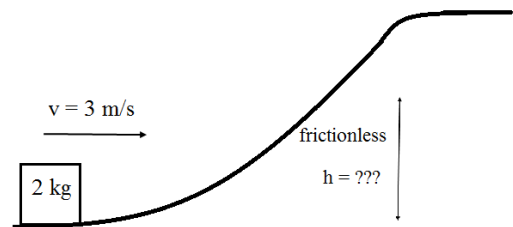
At point of release	At bottom of slope
PE = _____	PE = _____
KE = _____	KE = _____
Total= _____	Total= _____
	Velocity = _____

3. A 4.0 kg block is initially sliding at 5 m/s at the top of a frictionless slope. The height of the slope is 1.5 m. What is the velocity of the block at the bottom of the slope?



At point of release	At bottom of slope
PE = _____	PE = _____
KE = _____	KE = _____
Total= _____	Total= _____
	Velocity = _____

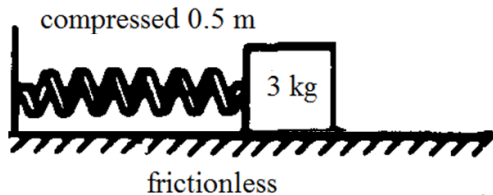
4. A 2 kg block is sliding with an initial velocity of 3 m/s at the bottom of a frictionless slope. The block comes to a momentary stop at its maximum height. How high up the slope will the block slide?



At bottom of slope	At maximum height
PE = _____	PE = _____
KE = _____	KE = _____
Total= _____	Total= _____
	h = _____

5. A spring with a spring constant of 20 N/m is compressed 0.5 m. A 3 kg block is placed at rest against the compressed spring. What is the velocity of the block when the spring is released?

$k = 20 \text{ N/m}$



When spring's compressed After launched off spring

PE = _____ PE = _____

KE = _____ KE = _____

Total = _____ Total = _____

v = _____

6. A 3.0 kg block is initially at rest. The block is pulled by a constant, horizontal force of 18 N over a displacement of 2 meters on a frictionless surface.



At end of 2 meters

Initial KE of block = _____

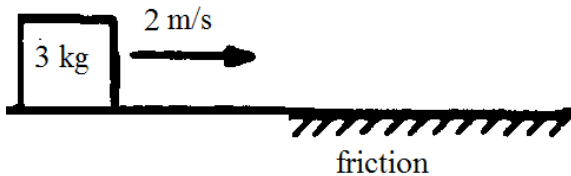
Energy added to the block = _____

Work done by the force on the block = _____

Final KE of the block = _____

velocity = _____

7. A 3 kg block is initially sliding at 2 m/s on ice when it hits a patch of concrete and skids to a stop. The average force of friction while on the concrete is 8 N. How far did the block skid on the concrete?



Initially sliding When stopped Work done by friction

PE = _____ PE = _____

KE = _____ KE = _____

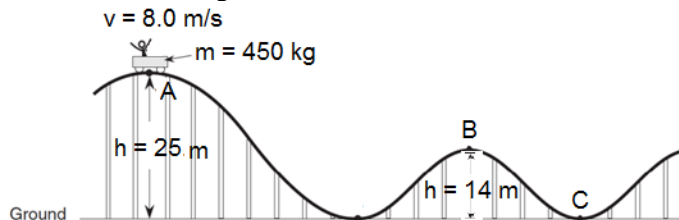
Total = _____

Work = _____

F = _____

distance = _____

8. A roller coaster with a mass of 450 kg is at the top of a 25 m hill. The car is initially traveling at 8 m/s at the top of the hill. What is the velocity of the roller coaster at the top of the 2nd hill at a height of 14 m?



At top of 1st hill

At top of 2nd hill

PE = _____

PE = _____

KE = _____

KE = _____

Total = _____

Total = _____

v = _____