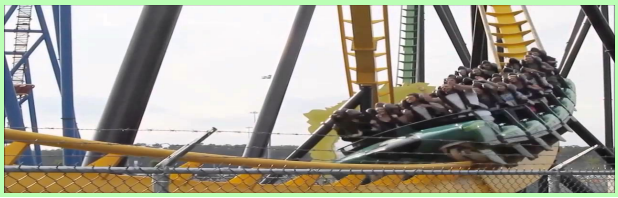
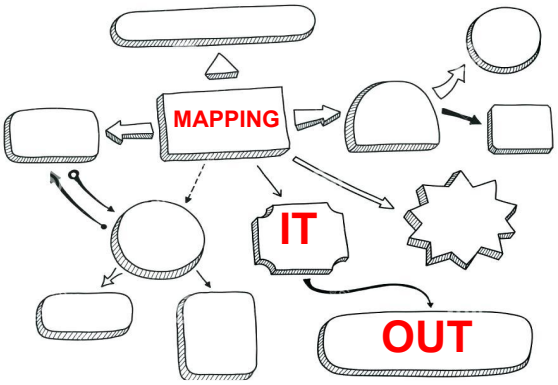
Announcements and Upcoming Events

PRACTICE	LABS	TESTS
Practice Problems (1-10)	Power Stair labs are in PowerSchool	Unit 10 Test Thursday

Work Done By Nonconservative Forces

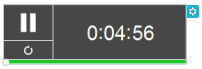
Learning Target	Description
10.3	I can analyze and solve problems involving the Law of Conservation of Energy and the work done by nonconservative forces.





MAPPING IT OUT!

VOCABULARY	EQUATIONS
Conservative forces	$K = \frac{1}{2} m v^2$
Energy	$P = \Delta E / \Delta t$
Gravitational potential energy	$\Delta E = W = F_g d = Fd \cos\theta$
Kinetic energy	$\Delta U_g = mg \Delta y$
Law of conservation of energy	$\Delta U_s = \frac{1}{2} kx^2$
Nonconservative forces	
Power	
Spring potential energy	
Work	
Work-energy theorem	



Working Relationships

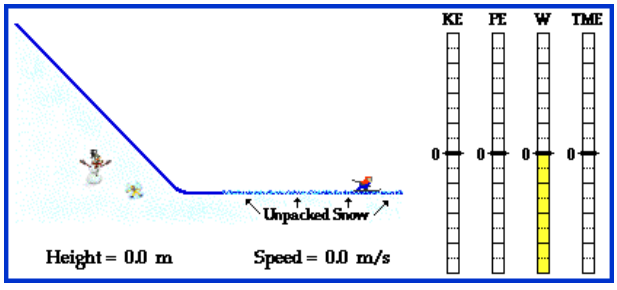
$$W_{total} = W_c + W_{nc}$$

$$W_{total} - W_c = W_{nc}$$

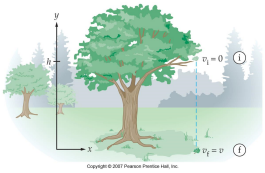
$$W_{total} = \Delta K \qquad W_c = -\Delta U$$

$$\Delta K + \Delta U = W_{nc} = \Delta E$$

Conservation of Energy



Work Done by Nonconservative Forces



Deep in the forest, a 17.0-g leaf falls from a tree and drops straight to the ground. If its initial height was 5.30 m and its speed on landing was 1.3 m/s, how much nonconservative work was done on the leaf?

$E_i = E_f$

$K_i + U_i + W_{nc} = K_f + U_f$

$mgh_i + W_{nc} = \frac{1}{2}mv_f^2$

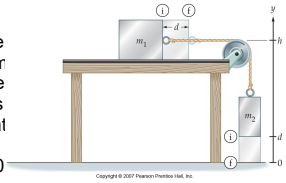
$W_{nc} = \frac{1}{2}mv_f^2 - mgh_i$

$W = -0.87\,J = F \cdot d \cos 180$

Work Done by Nonconservative Forces

9. A 95.0-kg diver steps off a diving board and drops in the water 3.00 m below. At some depth *d* below the water's surface, the diver comes to rest. If the nonconservative work done on the diver is W_{nc} = -5120 J, what is the depth, *d*?

10. A block of mass m_1 = 2.40 kg is connected to a second block of mass m_2 = 1.80 kg, as shown here When the blocks are released from rest, they move through a distance *d* = 0.500 m, at which point m_2 hits the floor. Given that the coefficient of kinetic friction between m_1 and the horizontal surface is μ_k = 0.450 find the speed of the block just before m_2 lands.



Work Done by Nonconservative Forces

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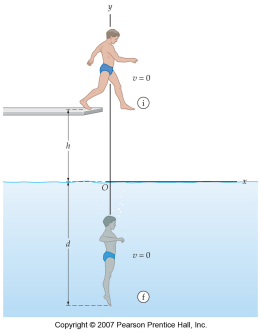

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Work Done by Nonconservative Forces

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