Review of Previous Lesson
12/13/2017

- State as many Vocabulary words and Learning Objectives that you remember from the last lesson as you can.
- Now complete the content learning objectives.
- Remember to grade yourself from 0 – 3.

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Vocabulary
12/13/2017

Language:	Start	End
define		
identify		
distinguish		
draw		
calculate		
determine		
centre/center		
square/dot		

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Friction
12/13/2017

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Learning Objectives
12/13/2017

Content:	Start	End
Calculate frictional force given mass for horizontal motion.		

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Vocabulary
12/13/2017

Content:	Start	End
force		
friction		
horizontal		
motion		
mass		

3

Learning Objectives
12/13/2017

Language:	Start	End
Calculate and determine.		

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Slide 7

Two kinds of coefficient of friction:
1. Static Friction
2. Kinetic Friction

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Slide 8

Two kinds of coefficient of friction:
1. Static Friction
2. Kinetic Friction

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Slide 9

Friction Equations

Static and Kinetic Friction

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Slide 10
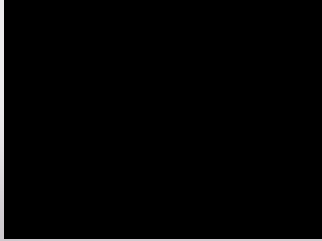
Friction Equation

- $F_f = \mu F_N$
  - F_f is the resistive force of friction
  - μ is the coefficient of friction for the two surfaces (Greek letter "mu")
  - **N** is the normal or perpendicular force pushing the two objects together
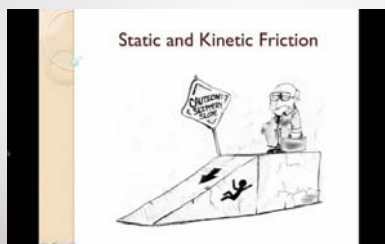 - μN is μ times **N**

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Slide 11

How do you calculate coefficient of friction?

- To calculate the coefficient of **static** friction between two materials:
  1. Place an object made of one material on a surface made of the other material.
  2. Slowly incline the surface and measure the angle of elevation, θ_c, when the object first begins to break free and slide down the surface.
  3. The inverse tangent of that "critical angle" will be the coefficient of static friction.
     - $\tan^{-1}(\theta_c) = \mu_s$

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Slide 12

How do you calculate coefficient of friction?

- To calculate the coefficient of **kinetic** friction between two materials:
  1. Steps 1 & 2 on the last slide to measure the static friction.
  2. Now lower the angle slightly and measure this slightly smaller angle of elevation θ_{sc}, when giving the object a very slight push causes it to slide down the plane at constant velocity.
  3. The inverse tangent of that slightly smaller angle is the coefficient of kinetic friction.
     - $\tan^{-1}(\theta_{sc}) = \mu_k$

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Problems and Solutions:

- https://www.khanacademy.org/science/physics/forces-newtons-laws/inclined-planes-friction/a/what-is-friction
- http://www.softschools.com/formulas/physics/static_friction_formula/30/
- https://sciencenotes.org/friction-example-problem-physics-homework-help/
- https://www.varsitytutors.com/ap_physics_1-help/force-of-friction
- http://formulas.tutorvista.com/physics/friction-formula.html
- http://www.physicslessons.com/quiz/quiz4.html
- http://www.bbc.co.uk/bitesize/quiz/q83969509
- http://www.ducksters.com/science/quiz/friction_questions.php
- https://quizizz.com/admin/quiz/57f55f7698fce5f703cc6dd2