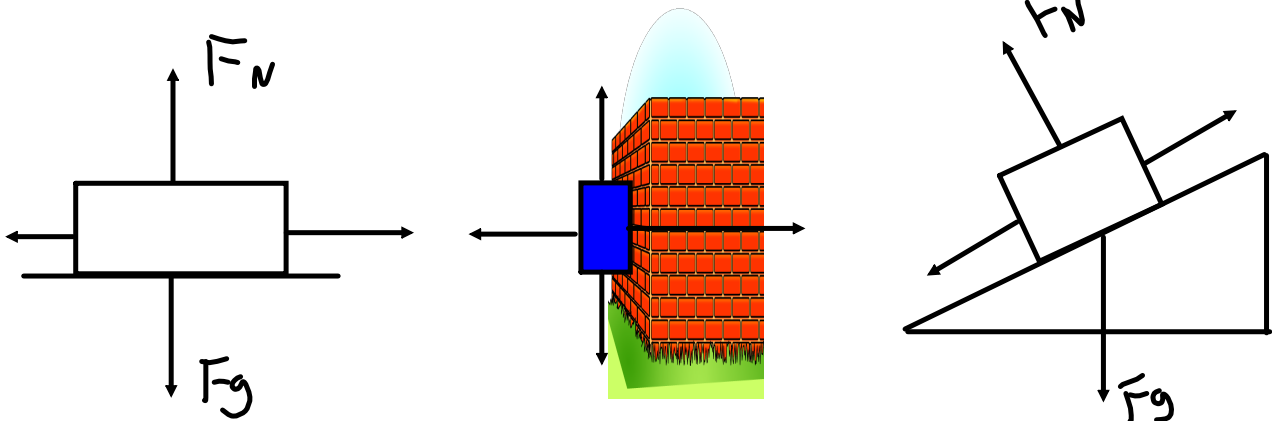


## Common Forces

$F_a$ : an *applied* force  
- a push or pull you exert on an object

$F_N$ : the *normal* force  
- a force that acts perpendicular to the surface where they contact.

**NOTE:** "normal" means perpendicular

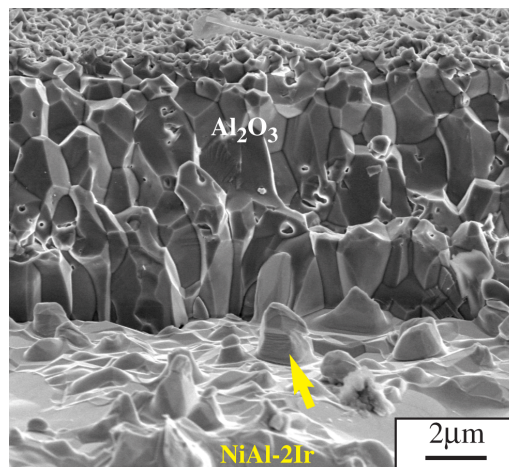
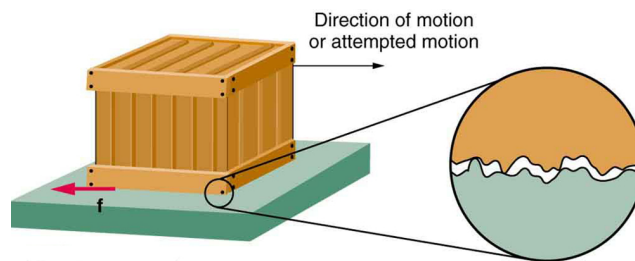
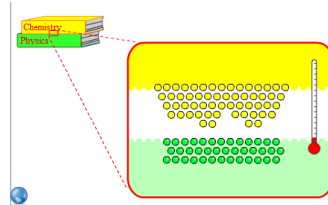


$F_T$ : *tension*  
- the force that acts along a rope, wire, string, etc.

$F_e$ : *elastic*  
- the force that acts in a spring (elastic) opposite the direction it moves.

## The Force of Friction

1. What is friction?
2. What causes it?

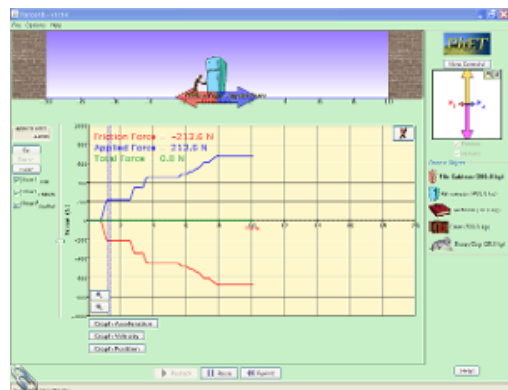
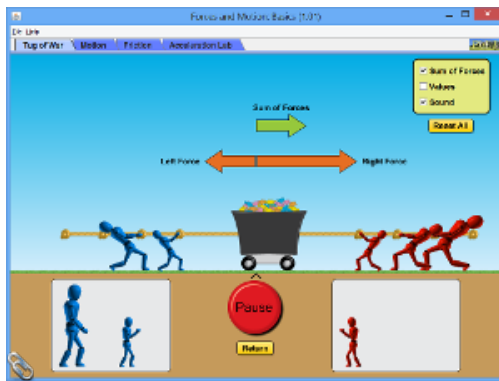


It is very important to have a detailed understanding of friction as all motion is affected by some type of friction (surface, fluid, air, etc).



## Friction Demos:

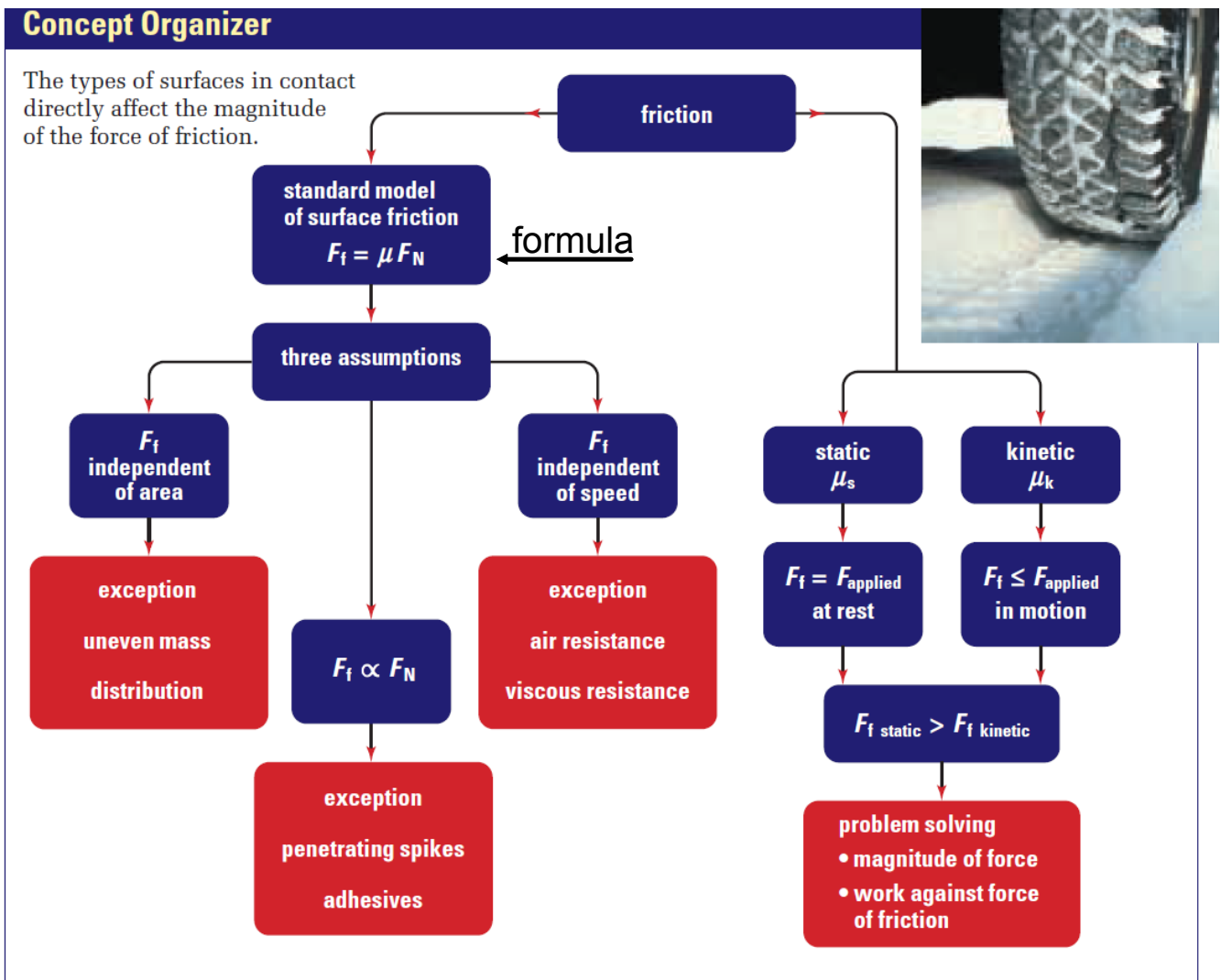
1. Pulling a block of wood varying the mass.
  1. Vary the weight.
  2. Surface area.
2. Pushing objects (PhET).
  1. Visualize the vectors.
  2. Graphical Analysis.



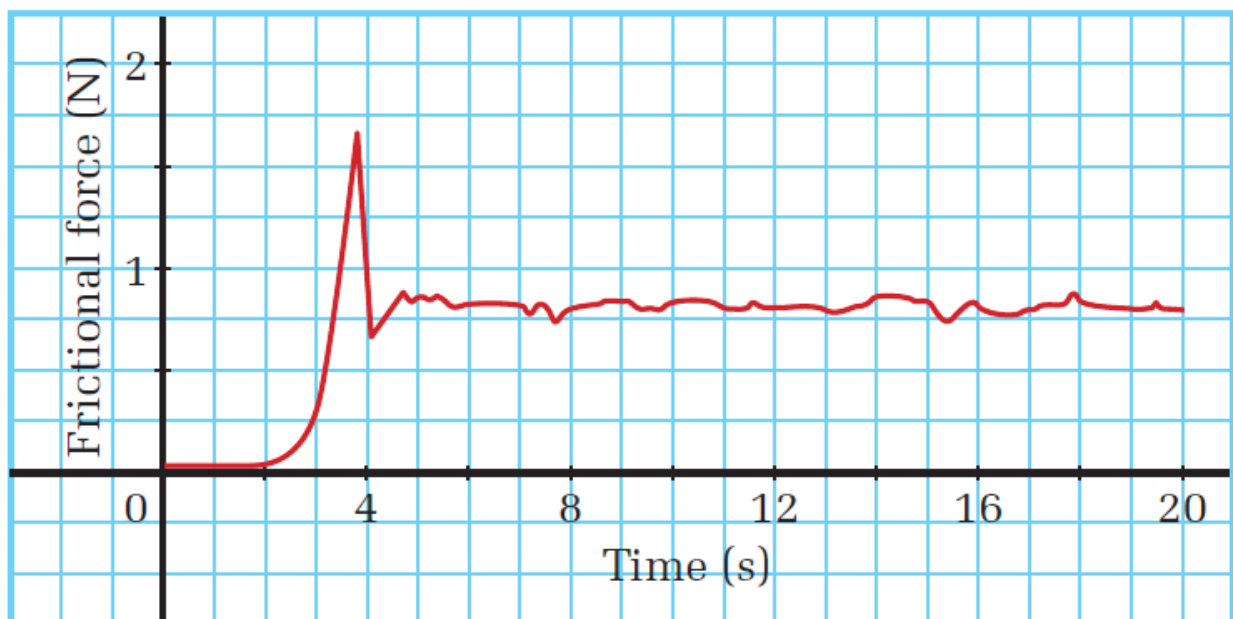
## Close Reading: Friction

MHR: Pg. 137 - 141    **Follow Up Questions:**

1. In detail and with physics terminology, what is friction the result of?
2. Does the force of friction have a dependance on surface area? Provide an explanation.
3. Summarize 3 situations where we will not apply the basic theory of surface friction.
4. Suppose I have two smooth (to the touch) pieces of iron, how come they do not fuse when I bring them together?



In the above formula  $F_N$  is equal to the weight supported by the reference surface.



## Attachments

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forces-and-motion-basics\_all.jar

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