Leap Day, Week 7

Today: Chapter 5, Applying Newton's Laws

Homework #5, Due March 5.
Mastering Physics: 10 problems from chapters 4 and 5
Written Question: 5.74

Exam #2 now in mailboxes. Percentage on top of page is *with* curve.

If interested in Physics 110, please see me after lecture.

Incline Example

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Weight components!
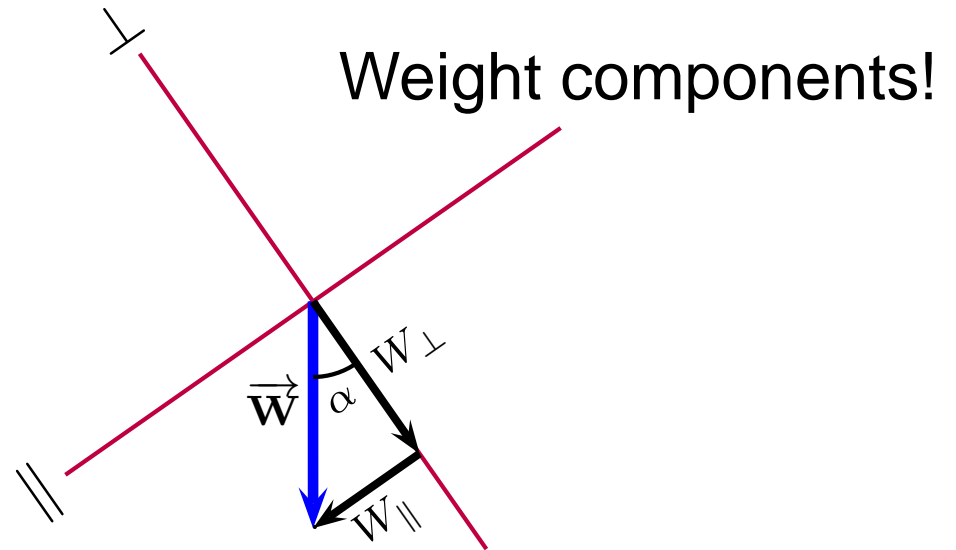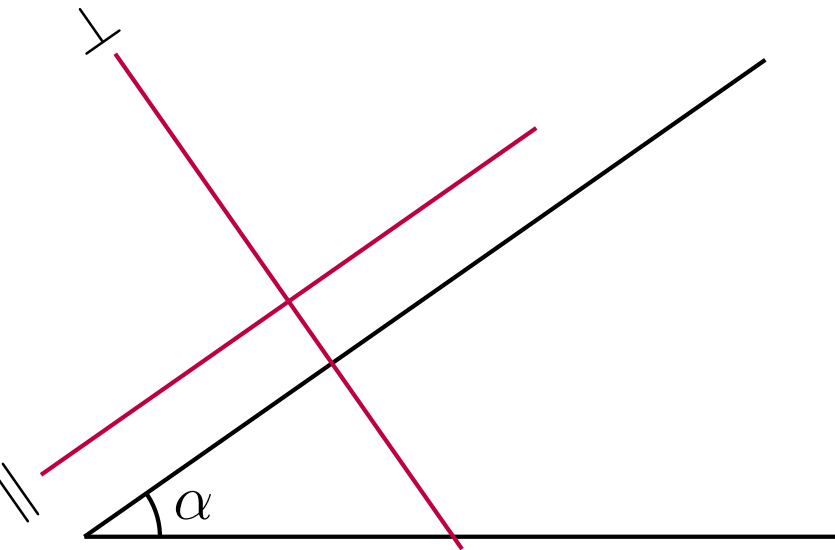
$$W_\parallel = W \sin \alpha = Mg \sin \alpha$$
$$W_\perp = W \cos \alpha = Mg \cos \alpha$$

Maximum Static Friction

Experiments show that the static friction's maximum value obeys a simple equation.

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Example: A $5\,kg$ wooden block is placed on a wooden ramp which is initially horizontal. To what maximum angle can the ramp be lifted before the block slides?
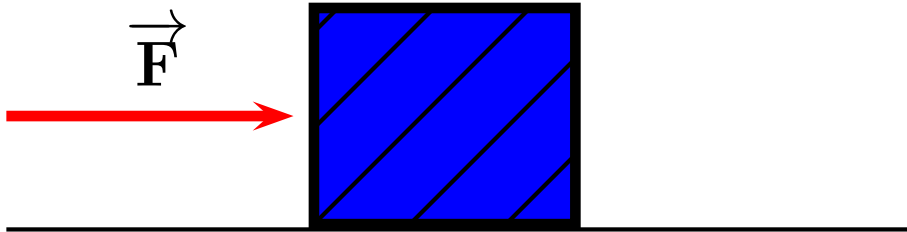
Clicker Quiz

A 30-N mass is placed on a flat, horizontal surface. A horizontal force $F = 10\,N$ is applied to it. It does not move. If the coefficient of static friction between the mass and the surface is $\mu_s = 0.5$, how much static friction is acting on the mass?

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$\overrightarrow{\mathbf{F}}$
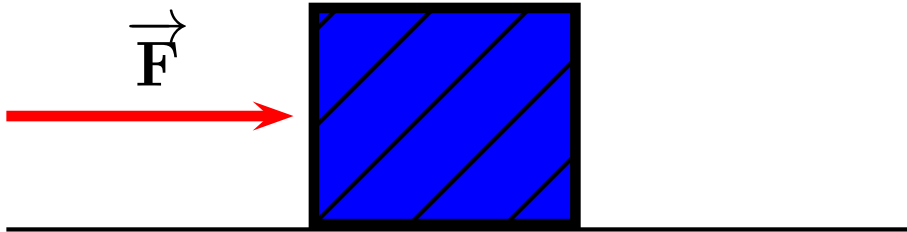
(a) $30\,N$

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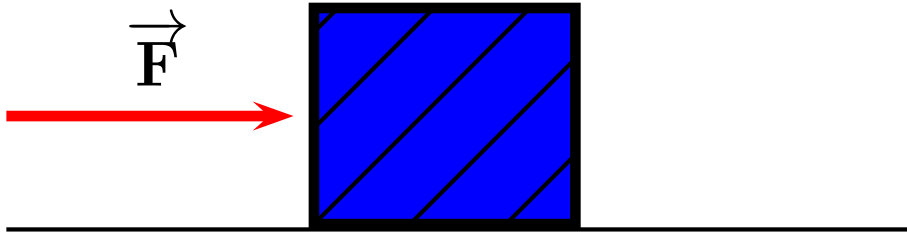

(a) $30\,N$ (b) $15\,N$

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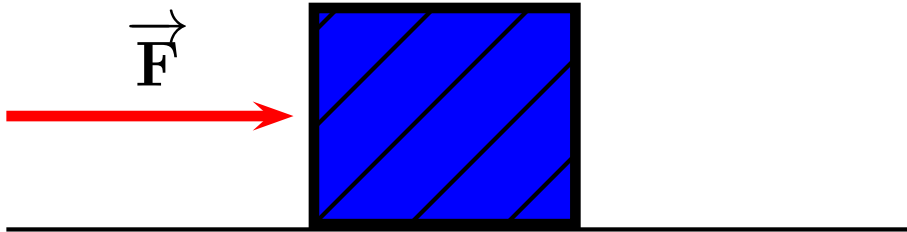

(a) $30\,N$ 　　　　 (b) $15\,N$ 　　　　 (c) $10\,N$

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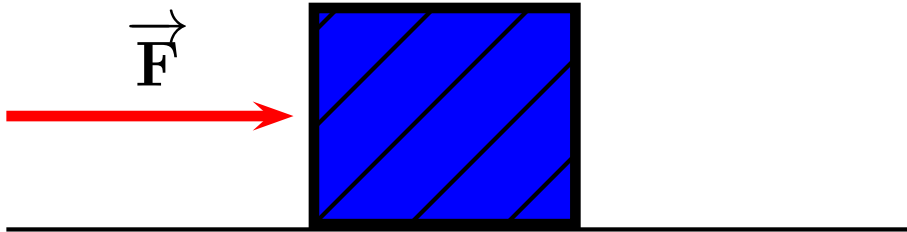

(a) $30\,N$ (b) $15\,N$ (c) $10\,N$ (d) $0.5\,N$

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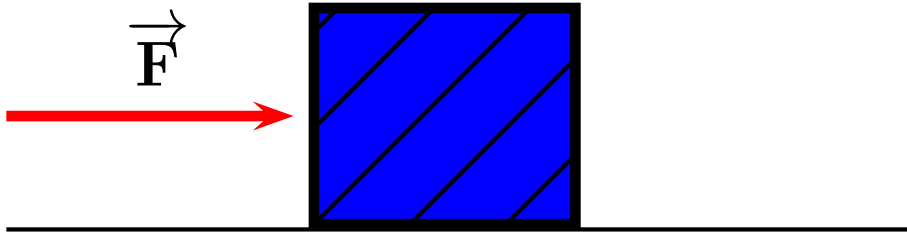

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Example: A wooden block is sliding down a $37°$ wooden incline. What is its acceleration?