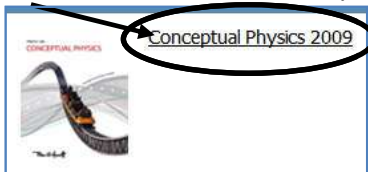


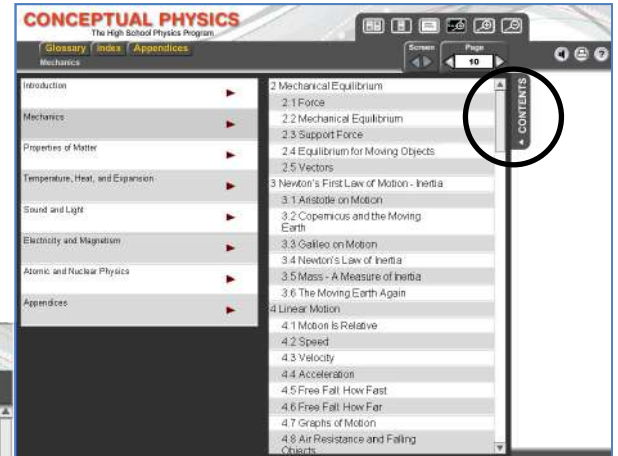
Online Textbook Access for Rochester High School Students: Prentice Hall Conceptual Physics Online Textbook

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CONCEPTUAL PHYSICS
The High School Physics Program

Glossary Index Appendices

Mechanics / 2 Mechanical Equilibrium / 2.5 Vectors

VIEW BY CONTENTS

The equilibrium rule, $\Sigma F = 0$, provides a reasoned way to size all things at rest – balanced rockwalkers in your room, or the steel beams in bridges. Whenever their configurations, if at rest, all acting forces always balance to zero. The same is true of objects that move steadily, not speeding up, slowing down, or changing direction. For such moving things, all acting forces also balance to zero. The equilibrium rule is one that allows you to see more than meets the eye of the casual observer. It's good to know the rule for the stability of things in our everyday world. Physics is everywhere.

CONCEPT CHECK: How are static and dynamic equilibrium different?

2.5 Vectors

Look at Figure 2.8. When german ballerina Natalia is suspended by a single vertical strand of rope (Figure 2.8a), the tension in the rope is 300 N, her weight. If she hangs by two vertical strands of rope (Figure 2.8b), the tension in each is 150 N, half her weight. Rope tensions pull her upward and greater pulls her downward. In the figures, we see that the vector representing rope tension and weight balance out: $\Sigma F = 0$, and she is in equilibrium.

FIGURE 2.8
a. The tension in the rope is 300 N, equal to her weight.
b. The tension in each rope is now 150 N, half of her weight. In each case, $\Sigma F = 0$.

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1. Go to www.phschool.com
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3. Click under the correct unit to go the chapters for additional materials to study with.

Each chapter includes 2 sections:

“Learning Links” and **“Simulations”** that provide web links to related materials found on the Internet.

