

Guided Lesson Notes

Name: _____ Date: _____

Force of Friction

Directions: Complete this study guide as you move through the lesson. By taking notes, you are more likely to remember what you are learning. The completed study guide can be used for practice activities and to prepare for quizzes and exams. Be sure to save each study guide so you can access it when you need it.

Essential Vocabulary

As you encounter these scientific terms in the lesson, enter the meaning and an example (or two) for each. You can even draw a picture. If there are other unfamiliar words you find, enter them in the blank spaces provided.

<i>kinetic friction</i>	<i>static friction</i>
<i>normal force</i>	<i>friction</i>
<i>coefficient of friction</i>	<i>kinematics</i>

--	--

Introduction

Fill in the blanks below about friction.

The amount of _____ depends on the _____ that are in _____ with one another. The more _____ the surface is, even _____, the more _____ will be produced by that surface _____ past another. It's actually the _____ forces involved with _____ clinging together, but we'll save that for a later discussion. Just know that the " _____ " the _____ is, the more _____ there will be in that interaction.

Coefficient of Friction

1. What is the coefficient of friction?

--

2. Write the formula for force of friction below.

--

3. Identify the two forces used in the ratio that defines the coefficient of friction.

4. What is the difference in the two values μ_s and μ_k ?

μ_s is _____

μ_k is _____

5. How do you know whether to use μ_s or μ_k when doing friction calculations?

Force of Friction Example

1. What form of energy conversion does friction produce? Fill in the blanks below.

Friction converts _____ into _____.

2. Highlight the correct word or phrase to complete this statement.

The force of friction always (opposes / acts in the same direction as) the motion.

3. Define *static friction*.

4. Define *kinetic friction*.

5. Which symbol correctly completes the statement below: <, >, or =?

$$\mu_s \text{ — } \mu_k$$

☐ < ☐ > ☐ =

6. What effect does the speed of an object have on the force of friction?

Force of Friction Practice

Choose one of the problems on this page and complete the table with the associated information. Choose from: Desk, Block of Wood, Statue at Rest, or Moving Statue.

Problem:	
----------	--



Picture	Given/Find	Equation	Solution

Applying Friction to Kinematics

What are the four steps involved when working “forwards” on kinematics problems that involve forces?

Step #	Step Name	Description/Formula(s)
1	Quantify Forces	
2		
3		

4		
---	--	--

Friction and Kinematics Practice

Choose one of the problems on this page and complete the table with the associated information. Choose from: Block of Wood, Forklift, or Box.

Problem:	
----------	--

Picture	Given/Find	Equation	Solution