

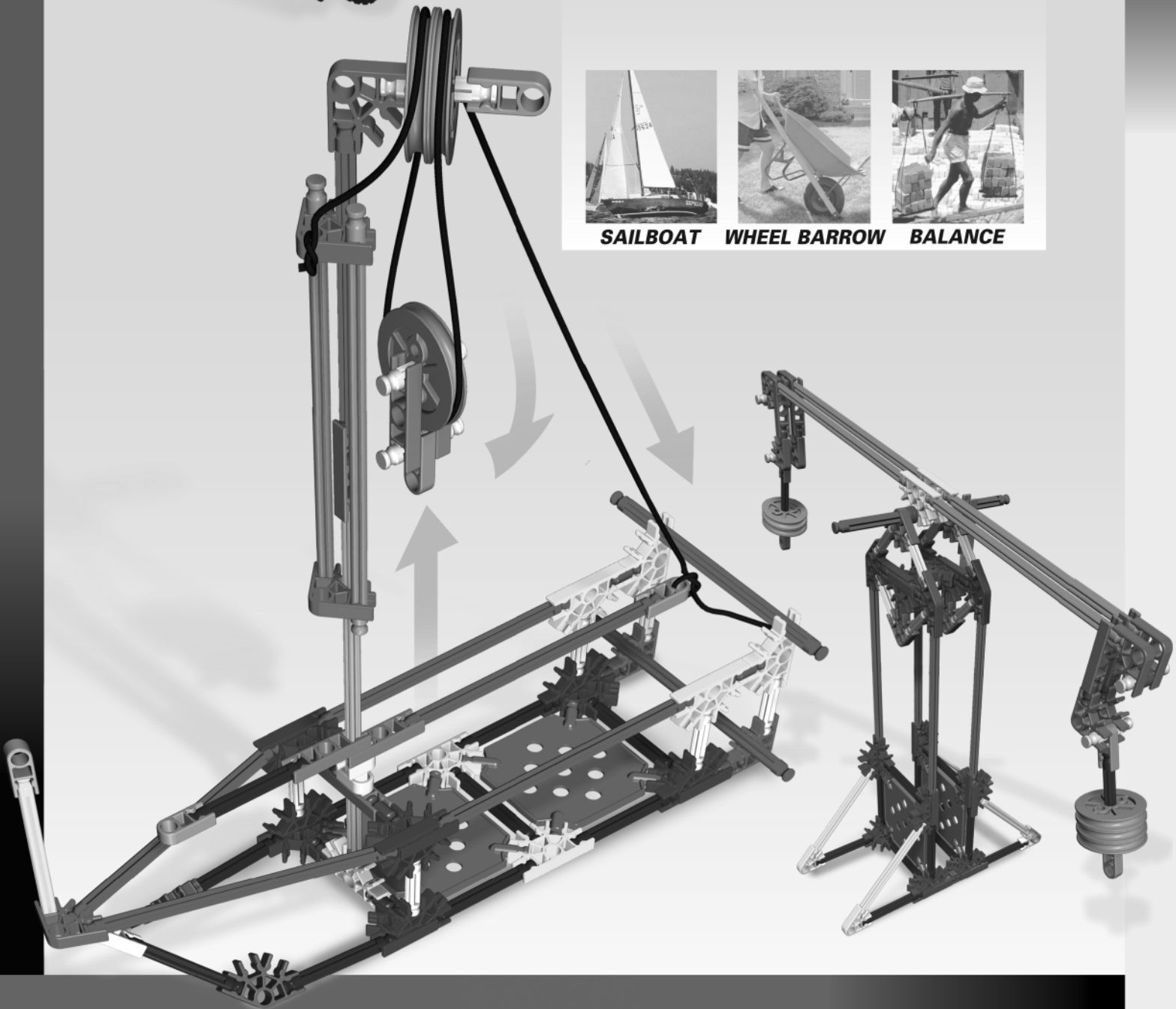
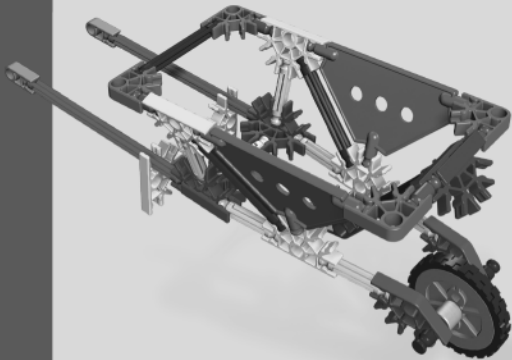
KNEX[®]

Education

TEACHER'S GUIDE™

LEVERS AND PULLEYS™

INTRODUCTION TO SIMPLE MACHINES



SAILBOAT



WHEEL BARROW



BALANCE

Introduction:

OVERVIEW

This Teacher’s Guide has been developed to support you as your students investigate the K’NEX Introduction to Simple Machines: Levers and Pulleys set. In conjunction with the K’NEX materials and individual Student Journals, the information and resources included here can be used to build your students’ understanding of scientific concepts and channel their inquiries into active and meaningful learning experiences.

K’NEX INTRO TO SIMPLE MACHINES: Levers and Pulleys.

As part of a series, this K’NEX construction set is designed to introduce students to the scientific concepts associated with two types of Simple Machines – levers and pulleys. Students are provided with the opportunity to acquire skills using a hands-on, inquiry-based approach to information and concepts. Working cooperatively, students are encouraged to interact with each other as they build, investigate, discuss, and evaluate scientific principles in action.

TEACHER’S GUIDE.

Designed as a resource for the teacher, this guide provides a glossary of key terms and definitions, includes an overview of the concepts associated with levers and pulleys, identifies student objectives for each unit, and offers plans and scripts to successfully present each simple machine model and its associated activities. Most of the units can be completed in 30-45 minutes. There are also extension activities that can be used to explore the concepts more deeply. We recommend that teachers review their curriculum and science education standards to identify which of the activities provided in this guide best meet their needs.

STUDENT JOURNALS.

It is expected that students will always have journals available for recording information. They should be encouraged to enter initial thoughts at the start of an inquiry – what they “think” will happen. These initial thoughts may be amended, based on their ongoing inquiry and analysis, until the students feel comfortable about drawing conclusions. Their journal entries will help make a connection between the models they have built, the experiments they have conducted, and how this information is applied to the real-world machines they use on a regular basis. The journals will also provide students with a place to practice making drawings and diagrams of systems. Finally, the journals will serve as a method of assessment for the Simple Machines unit. Journal Checklists are also included in the Teacher’s Guide for each model and it’s associated inquiry activities.

TABLE OF CONTENTS

Levers	3-38
Objectives	3
Key Terms & Definitions	3-4
Key Concepts	4-11
Seesaw	13-20
Balance	21-25
Wheelbarrow	27-30
Hockey Stick	31-34
Scissors	35-38
Pulleys	39-60
Objectives	39
Key Terms & Definitions	39-40
Key Concepts	40-42
Flag Pole	43-47
Sailboat	49-53
Block and Tackle	54-60

