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› K'NEX Education STEM Explorations: Levers & Pulleys Building Kit Instruction Manual

**K'NEX 79319**

# K'NEX Education STEM Explorations: Levers & Pulleys Building Kit Instruction Manual

**Brand:** K'NEX | **Model:** 79319

## INTRODUCTION

This instruction manual provides guidance for assembling and utilizing the K'NEX Education STEM Explorations: Levers & Pulleys Building Kit. This kit is designed to introduce fundamental STEM concepts, including lever classes, pulley systems, resistance, effort, and mechanical advantage, through hands-on construction. The set allows for the creation of three distinct models: a balance, a wheelbarrow, and a sailboat. It is suitable for children aged 8 and above, aligning with National STEM standards for grades 3-5.

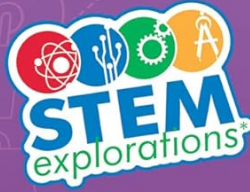


Figure 1: K'NEX Education STEM Explorations Levers & Pulleys Building Kit packaging.

## WHAT'S INCLUDED

The K'NEX Education STEM Explorations: Levers & Pulleys Building Kit contains the following components:

- Approximately 193 K'NEX pieces (rods, connectors, wheels, pulleys, string, weights).
- One comprehensive Instruction Booklet, detailing assembly steps for the balance, wheelbarrow, and sailboat models, along with experiment guides.



## LEVERS AND PULLEYS BUILDING SET LEVIERS ET POULIES JEU DE CONSTRUCTION

**Key Concepts:** Lever Classes, Fixed Pulleys,  $W=Fd$  and more!  
**Concepts Essential :** Classes de levier, fixe Poulies,  $W=Fd$  et plus encore !  
**Conceptos Clave:** ¡Clases de Palancas, Poleas Fijas,  $W=Fd$  y más!  
**Schlüsselkonzepte:** Hebel Klassen, fest montierte Seilrollen,  $W=Fd$  und vieles mehr!  
**Idea Fondamentale:** Classi leva, Pulegge Fisse,  $W=Fd$  e di più!  
**Conceitos-chave:** Classes alavanca, fixo polias,  $W=Fd$  e muito mais!  
**Kernbegrippen:** Lever Klassen, vaste schijven,  $W=Fd$  en nog veel meer!



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Vendus séparément  
Se venden por separado  
Separat erhältlich  
Venduti separatamente  
Vendidos separadamente  
Afzonderlijk verkrijgbaar.

Figure 2: An assortment of K'NEX pieces and the instruction booklet included in the kit.

## SETUP AND ASSEMBLY

Before beginning assembly, ensure all components listed in the "What's Included" section are present. Refer to the provided Instruction Booklet for detailed, step-by-step assembly instructions for each model. The booklet contains visual guides and text to facilitate construction.

### General Assembly Tips:

- **Identify Parts:** Familiarize yourself with the different types of K'NEX rods and connectors by color and shape as indicated in the instruction booklet.
- **Follow Steps Sequentially:** Build each model by following the steps in the instruction booklet in the order they are presented.
- **Secure Connections:** Ensure all rods are firmly clicked into the connectors to create stable structures.

- **Work on a Flat Surface:** A clear, flat workspace is recommended to prevent loss of small pieces and to ensure stable construction.



Figure 3: Children engaged in the assembly process, demonstrating the hands-on nature of the kit.

## OPERATING THE MODELS AND EXPERIMENTS

Once a model is assembled, refer to the Instruction Booklet for specific experiments and activities designed to demonstrate scientific principles. Each model provides unique learning opportunities.

### The Balance Model:

The balance model allows for exploration of first-class levers and equilibrium. Use the included weights or other small objects to observe how different masses affect balance and leverage points.



Figure 4: The assembled balance model, demonstrating a first-class lever system.

### **The Wheelbarrow Model:**

The wheelbarrow model illustrates the principles of second-class levers, focusing on how effort and resistance are applied to move a load. Experiment with different loads and lifting techniques.

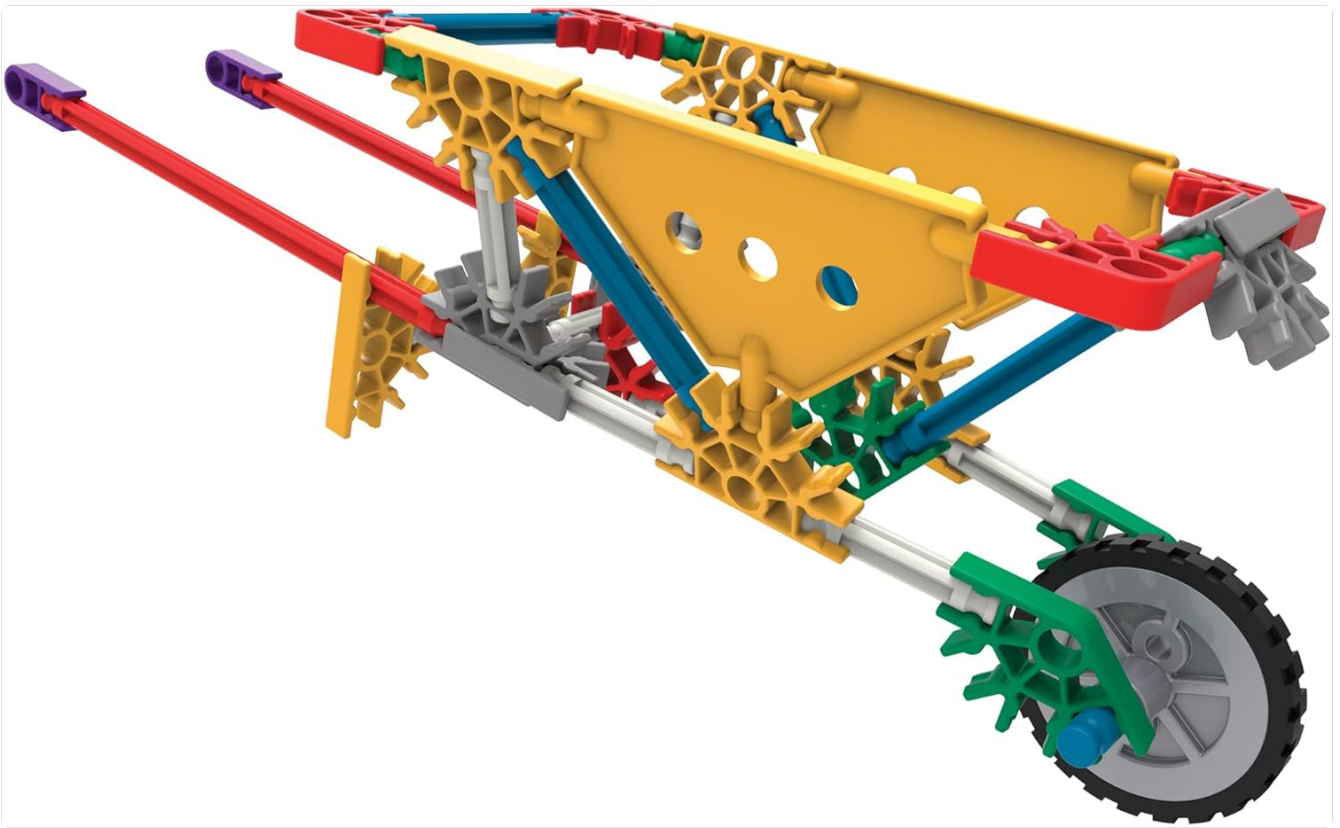


Figure 5: The assembled wheelbarrow model, showcasing a second-class lever.

### **The Sailboat Model:**

The sailboat model demonstrates pulley systems and their role in changing the direction of force and gaining mechanical advantage. Observe how the pulley system allows for easier manipulation of the sail.

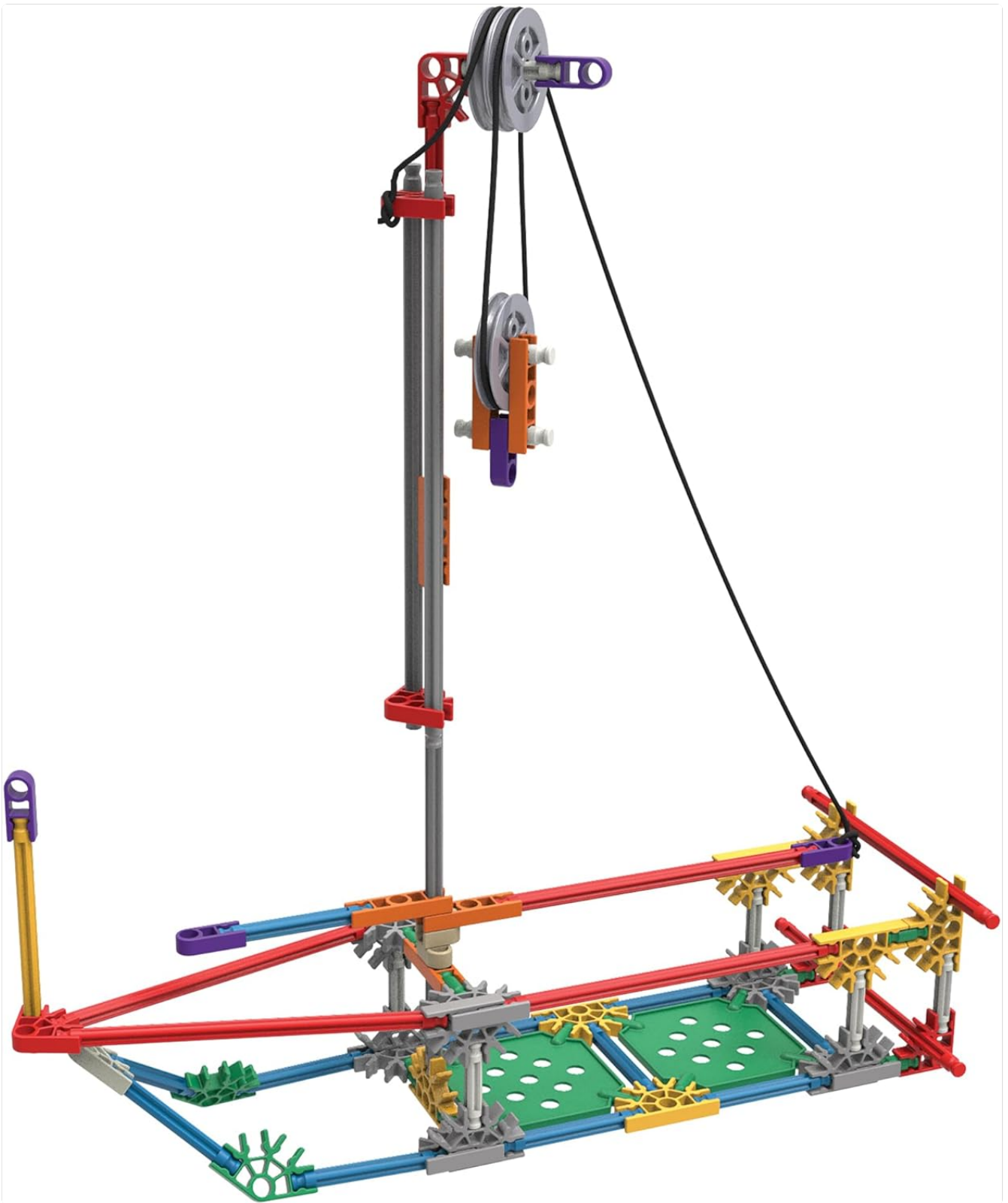


Figure 6: The assembled sailboat model, illustrating the use of pulleys.

## MAINTENANCE

Proper care and maintenance will extend the life of your K'NEX kit.

- **Cleaning:** K'NEX pieces can be cleaned with a damp cloth and mild soap if necessary. Avoid harsh chemicals or abrasive cleaners.
- **Storage:** Store all K'NEX pieces in a dry, cool place, away from direct sunlight. Keep small pieces in a

container to prevent loss.

- **Inspection:** Periodically inspect pieces for any damage or wear. Discard any broken or severely worn pieces to ensure safe play.

## TROUBLESHOOTING

If you encounter issues during assembly or use, consider the following:

- **Missing Pieces:** Carefully check the packaging and your workspace. If pieces are genuinely missing, refer to the "Warranty and Support" section for contact information.
- **Difficulty Connecting Pieces:** Ensure you are using the correct rod and connector types as indicated in the instruction booklet. Apply firm, even pressure to snap pieces together.
- **Model Instability:** Double-check all connections to ensure they are secure. Review the assembly steps in the instruction booklet to confirm no steps were missed or incorrectly performed.

## PRODUCT SPECIFICATIONS

<b>Brand Name</b>	K'NEX
<b>Model Number</b>	79319
<b>Set Name</b>	Levers & Pulleys
<b>Educational Objective</b>	STEM
<b>Age Range Description</b>	8 - 15 years
<b>Manufacturer Minimum Age</b>	96 months (8 years)
<b>Included Components</b>	193 K'NEX pieces and Instruction Booklet
<b>Material Type</b>	Plastic
<b>Item Dimensions (L x W x H)</b>	9 x 2 x 9 inches
<b>Item Weight</b>	0.5 Pounds

## WARRANTY AND SUPPORT

K'NEX offers a lifetime warranty against manufacturer's defects for this product.

For customer support, missing parts, or warranty claims, please contact K'NEX directly. Refer to the contact information provided in your Instruction Booklet or visit the official K'NEX website.

**Manufacturer:** K'NEX

**Manufacturer Warranty Description:** Lifetime warranty against manufacturer's defects

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