STICK HOUSE KIT
CAT# 80-50-W044

This simple scale model of a stud frame house represents the standard model for much of the construction we see around us. Having a basic understanding of how it is created helps students build a framework of knowledge around constructing structurally sound buildings. This simple structure is the foundation of modern wood framing, helping students visualize how more complex structures are built off of a simple model.

PRIMARY DIVISION: GRADES 1-3

Overall Expectation: STEM, Structures and Mechanisms Focus
Explore structures and mechanisms, including the roles of materials in supporting structures and making devices work.

Specific Expectation
Identify and describe the purpose of simple structures and how they support loads.

Activity
Students use the Scale Model Stud Frame House to understand how basic structural elements like studs, beams, and joists work together to support a building. They explore how different materials and designs can affect the strength and stability of the structure. Students can build simple frame sections and test their ability to hold weight.

JUNIOR DIVISION: GRADES 4-6

Overall Expectation: STEM, Structures and Mechanisms Focus
Investigate the principles of forces, energy, and control in simple machines and structures.

Specific Expectation
Explore the relationships between the components of structures and the forces acting on them.

Activity
With the Scale Model Stud Frame House, students investigate how forces like tension and compression affect building stability. They experiment with different bracing techniques and materials to see how these changes impact the model's ability to withstand various loads. Students also learn about load distribution and the importance of a solid foundation.

INTERMEDIATE DIVISION: GRADES 7-8

Overall Expectation: STEM, Structures and Mechanisms Focus
Investigate how technological problem-solving meets human needs and leads to innovation.

Specific Expectation
Analyze the impact of different materials and designs on the efficiency and stability of structures.

Activity
Students use the Scale Model Stud Frame House to explore advanced concepts like load-bearing walls and shear strength. They experiment with different types of wood and other materials to understand how material properties affect building performance. Discussions on real-world applications, such as earthquake-resistant designs, enhance their understanding of innovation in construction.

SECONDARY DIVISION GRADES 9-12

Overall Expectation: Physics Focus
Apply principles of physics to understand the operation and efficiency of structural systems.

Specific Expectation
Analyze the mechanical advantage and efficiency of different structural designs.

Activity
Using the Scale Model Stud Frame House, students delve into structural engineering principles. They calculate load capacities and analyze the efficiency of various framing techniques. They also explore the environmental impact of different building materials and the importance of sustainable design practices.

CROSS-CURRICULAR CONNECTIONS

Mathematics
Students can calculate load distribution, structural efficiency, and material strength using mathematical formulas.

Technology
They explore modern construction techniques, sustainable building practices, and advancements in materials science.

Language Arts
Students can write reports or presentations on the history of building construction, advancements in structural engineering, and future trends in sustainable architecture.

Summary
By experimenting with the Scale Model Stud Frame House, students engage in hands-on learning experiences that deepen their understanding of structural principles while meeting curriculum expectations. This project promotes critical thinking and curiosity in STEM disciplines, encouraging students to explore the world of architecture and engineering and understand the importance of building safe and efficient structures.